

South Carolina Department of Natural Resources

Board Meeting Agenda and Materials and Monthly Division Reports



DNR

**Board Meeting Scheduled
for**

VIDEOCONFERENCE MEETING

<https://scdnr2.webex.com/scdnr2/j.php?MTID=m3c0dc0d1eda7fa1d6d221997c721a1b8>

Telephone: 1-844-992-4726

Access Code: 2631 125 9673##

January 20, 2022 10:00 AM

Agenda

AGENDA

VIDEOCONFERENCE MEETING

SC DEPARTMENT OF NATURAL RESOURCES BOARD

January 20, 2022 10:00 AM

Virtual Participation Only

<https://scdnr2.webex.com/scdnr2/j.php?MTID=m3c0dc0d1eda7fa1d6d221997c721a1b8>

Telephone: 1-844-992-4726
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- I. Call to Order..... Norman Pulliam, Chairman, SC DNR Board
- II. Videoconference Guidelines..... Valerie Shannon, Facilitator
- III. Invocation
- IV. Pledge of Allegiance..... Mike Hutchins, Vice Chairman, SC DNR Board
- V. Chairman's Comments
- VI. Introduction of GuestsBlaik Keppler, Acting Deputy Director for Marine Resources
- VII. Constituent Comments (Comments are limited to 5 minutes)Blaik Keppler
- VIII. Introduction of Staff
- IX. Approval of Minutes from November 18, 2021 meeting
- X. Presentations/Commendations
- XI. Advisory Committee Reports
 - Marine Duane Swygert, Chairman
- XII. Item(s) for Board Information
 - A. Climate Update..... Hope Mizzell, Land, Water and Conservation Division
 - B. Overview of Oyster Shell Recycling ProgramBen Dyar, Marine Resources Division
- XIII. Director's Briefings
 - A. Executive OfficeRobert H. Boyles, Jr., Director
 - 1. Legislative Report..... Kevin R. Ryan, Director, Government Affairs
 - 2. Environmental Report..... Lorianne Riggan, Director, Office of Environmental Programs
 - B. Deputy Directors' Reports
 - 1. Wildlife and Freshwater Fisheries Emily Cope
 - 2. Law Enforcement..... COL Chisolm Frampton
 - 3. Marine Resources.....Blaik Keppler
 - 4. Administration.....Angie Cassella
 - 5. Land, Water and Conservation Ken Rentiers

XIV. Item(s) for Board Action

Approval of Craven Creek Fish Kill Report Ross Self
Wildlife and Freshwater Fisheries Division

XV. Executive Session (if necessary)

XVI. Comments..... Board Members

XVII. Time and Location of Next Board Meeting..... Board Members

XVIII. Adjournment

Minutes

Minutes
Board of the South Carolina Department of Natural Resources
Rembert C. Dennis Building, RM 335
1000 Assembly Street
Columbia, SC
November 18, 2021 10:00 AM

The regular meeting of the Board of the South Carolina Department of Natural Resources was held at 10:00 a.m., November 18, 2021. Notice of the date, time and place of the meeting was posted and mailed to the news media. Chairman Norman Pulliam presided at the meeting. Board members present included Dr. Mark Hartley, Mike Hutchins, Jerry Lee, Carlisle Oxner, Jake Rasor, Jr. and Duane Swygert. Director Boyles and staff members of the Department of Natural Resources were present at the meeting.

I. Call to Order

Chairman Norman Pulliam called the meeting to order and welcomed everyone to the meeting.

II. Executive Session

Mr. Hutchins made a motion that the DNR Board go into executive session pursuant to SC Code Section 30-4-70(A)(1) to discuss personnel matters related to Item III (Leadership and Personnel Training Presentation). Mr. Lee seconded the motion and the motion carried unanimously.

III. Open Session

Mr. Rasor made a motion that the DNR Board return to open session, noting that no action was taken during executive session. Mr. Hutchins seconded the motion and the motion carried unanimously.

IV. Adjournment

Mr. Hutchins made a motion that the meeting be adjourned. Mr. Rasor seconded the motion and the motion carried unanimously.

Minutes
Board of the South Carolina Department of Natural Resources
Rembert C. Dennis Building, RM 335
1000 Assembly Street
Columbia, SC
November 18, 2021 11:00 AM

The regular meeting of the Board of the South Carolina Department of Natural Resources was held at 11:00 a.m., November 18, 2021. Notice of the date, time and place of the meeting was posted and mailed to the news media. Chairman Norman Pulliam presided at the meeting. Board members present included Dr. Mark Hartley, Mike Hutchins, Jerry Lee, Carlisle Oxner, Jake Rasor, Jr. and Duane Swygert. Director Boyles and staff members of the Department of Natural Resources were present at the meeting.

I. Call to Order

Chairman Norman Pulliam called the meeting to order and welcomed everyone to the meeting.

II. Invocation

Chaplain Eric Skidmore, SC Law Enforcement Assistance Program (SC LEAP), offered the invocation.

III. Pledge of Allegiance

Mr. Hutchins led the group in the Pledge of Allegiance.

IV. Presentations/Commendations

Director Boyles and Chairman Pulliam unveiled a plaque in honor of former Director Alvin Taylor's service to the DNR and the State of SC.

Director Boyles and Chairman Pulliam presented the Meritorious Service Award to Lorianne Riffin, Director, Office of Environmental Programs.

Director Boyles commended the 2021 Regional Officers of the Year listed below as well as 2021 Statewide Officer of the Year and Southeastern Association of Fish & Wildlife Agencies (SEAFWA) L/Cpl Blake Baxley from Clarendon County in Region 3. The 2020 State Boating Officer of the Year is PFC Tanner Riley from Dorchester County in Region 4. Region 1: PFC Jay Harvey; Region 2: PFC Charlie Poeta; Region 3: L/Cpl Blake Baxley; Region 4: PFC Courtney Angotti-Smith; and INV: SSGT Damian Yongue

Director Boyles commended Zadok Moss, April Atkinson and Alicia Farrell of Wildlife and Freshwater Fisheries for responding to an alligator incident involving a 79-year-old resident from Sun City on Hilton Head on October 4 and the outstanding job they did gathering information and exhibiting a professional attitude.

Director Boyles commended Lynn Quattro of Wildlife and Freshwater Fisheries on her election as President Elect of the Fisheries Administrators Section of the American Fisheries Society where she will serve as the first woman in the history of this position. The Fisheries Administrators Section works together to deal with common issues across the country and provide support for state, regional and national issues.

Director Boyles commended the Diversity Outreach Program for being recognized as the recipient of the 2021 Diversity Outreach and Inclusion Award at the Southeastern

Association of Fish and Wildlife Agencies' (SEAFWA) 75th annual meeting. Alix Pedraza of the Division of Administration Office of Media and Outreach accepted the award on behalf of the Diversity Outreach Program.

Director Boyles commended Marcel Reichert of Marine Resources on his recognition by the Board of Leadership South Carolina and the Governor's Office for 30 years of service presenting to upcoming SC Leaders about our state's rich natural resources, highlighting South Carolina's beautiful coastal waters.

Director Boyles commended Joey Frazier of the Division of Administration Office of Media and Outreach on his recognition by the Southeastern Outdoor Press Association (SEOPA) with a First-Place award for Excellence in Craft Award for Magazine Feature, for his article "Window to the Past, Key to the Future," November-December 2020, South Carolina Wildlife.

Director Boyles commended Land, Water and Conservation Deputy Director Ken Rentiers on his election as Chairman of the Environmental Certification Board. The Environmental Certification Board licenses individuals engaged in the operation of environmental systems, including the treatment of water and wastewater distribution systems, whose duties include making process control and system integrity decisions about water quality or quantity and well system.

Director Boyles commended Keith Bradley of Land, Water and Conservation and Joe Lemeris of Wildlife and Freshwater Fisheries for their outstanding work on the U.S. Fish and Wildlife Service's 5-year review of the federally threatened swamp pink (*Helonias bullata*) and providing swamp pink element occurrence data which was used throughout the review to update status information and conservation activities for the single South Carolina occurrence.

Director Boyles commended Tyler Brown of Land, Water and Conservation on his selection as 2022 Secretary of the National Association of State Conservation Agencies (NASCA). Mike Brown, Executive Director, NASCA, noted that this will put Tyler in line to become President of the organization in 2024. Mr. Brown said that "Tyler has demonstrated extraordinary leadership for the southeast region, and I am confident he will do the same in this new role."

Director Boyles commended Maria Cox Lamm of Land, Water and Conservation on her appointment to FEMA's Technical Mapping Advisory Council for a three-year term. The Technical Mapping Advisory Council is a federal advisory committee established to review and make recommendations to FEMA on matters related to the National Mapping Program activities.

Director Boyles commended Hope Mizzell and staff of the State Climate Office for being rated as an Exemplary Office and receiving the highest rating in all six categories during their five-year review by the American Association of State Climatologists. The six review categories are 1) Areas of Expertise, 2) Resources/Support, 3) Office Plan, 4) Engagement, 5) Constituency, 6) Collaboration.

V. Introduction of Guests

Emily Cope, Deputy Director for Wildlife and Freshwater Fisheries, introduced Riley Egger, SC Coastal Conservation League and Scott Whitaker, SC Coastal Conservation Association.

VI. Constituent Comments

Mrs. Cope reported that there were no requests for comment.

VII. Approval of Minutes

Chairman Pulliam asked if there were any additions, deletions or corrections to the September 16, 2021 meeting, October 6, 2021 meeting and October 14, 2021 workshop minutes. *Dr. Hartley made a motion that the Board approve the minutes of the September 16, 2021 meeting, October 6, 2021 meeting and October 14, 2021 workshop as presented. Mr. Rasor seconded the motion and the motion carried unanimously.*

VIII. Advisory Committee Reports

A. Law Enforcement

LTC Jamie Landrum reported that the Law Enforcement Advisory Committee met September 21, 2021. The Advisory Committee received updates/reports on DLEO changes, fatalities, hiring, the FY 2022 budget and the FY 2023 budget request.

B. Marine

Mr. Swygert reported that the Marine Advisory Committee met October 1, 2021. The Advisory Committee received a presentation on the Development and Implementation of Flounder Stocking. The Advisory Committee also received an overview of coastwide environmental data.

C. Saltwater Recreational Fisheries

Mr. Lee reported that the Saltwater Recreational Fisheries Advisory Committee met virtually on October 19, 2021. The Advisory Committee received an update on the saltwater license revenue and a presentation on the flounder stocking plan.

D. Heritage Trust

Mr. Rasor reported that the Heritage Trust Advisory Board met November 4, 2021. The Advisory Board received updates from the Cultural Preserves Management Program and the Region 3 Heritage Preserves Program. The Advisory Board approved three items which will be presented later in the meeting.

E. Land, Water and Conservation

Tyler Brown, Land, Water and Conservation Division, reported that the Land, Water and Conservation Advisory Committee met November 1, 2021. The Advisory Committee received a presentation on the Palmetto Leadership in the Environment, Agriculture and Forestry Initiative. The Advisory Committee approved conservation district commissioner appointments and reappointments.

F. Governor's Cup Billfishing Series

Blaik Keppler, Acting Deputy Director for Marine Resources, reported that the Governor's Cup Billfishing Series Advisory Board met November 4. The Advisory

Board reviewed the final revenue for the 2021 series. The Advisory Board approved the reappointment of Advisory Board Members Justin Kohl, Robert McClam and Chad Sanders.

IX. Items for Board Information

A. Climate Update

Hope Mizzell, Land, Water and Conservation Division, gave a recap of the 2021 hurricane season. Dr. Mizzell provided rainfall totals, precipitation percentiles, streamflow, lake levels, groundwater monitoring wells around the state, precipitation forecast and temperature forecast.

B. Love Farms Shooting Facility

MAJ Billy Downer gave the Board a brief presentation on the Love Farm WMA. MAJ Downer reviewed the opportunities available such as youth special hunt area, dove field, waterfowl impoundments, a pond suitable for hosting youth fishing rodeos, and a State Skeet and Trap Event Area.

X. Director's Briefings

Director Boyles informed the Board that the lease has been signed for a new headquarters building at the State Farmer's Market.

Director Boyles distributed and reviewed a draft 2022-2023 budget hearing presentation.

Director Boyles introduced Blaik Keppler, who has agreed to serve as Acting Deputy Director for Marine Resources.

XI. Legislative Report

Kevin Ryan, Director of Government Affairs, reported that the House and Senate are working on redistricting. Mr. Ryan briefed the Board on S2 – restructuring of DHEC and H4219 – DNR Board Composition.

XII. Environmental Report

Lorianne Riffin, Director of Environmental Programs, informed the Board that the Crab Bank reconstruction has been completed. Mrs. Riffin also reported on the McClellanville Transmission Project.

XIII. Deputy Directors' Reports

A. Law Enforcement

LTC Landrum gave the Board a brief hiring update.

B. Marine

No further report.

C. Administration

No further report.

D. Land, Water and Conservation

Mr. Brown reported that the Broad River Basin public meeting has been held and council meeting will be scheduled soon.

E. Wildlife and Freshwater Fisheries

Mrs. Cope distributed and reviewed reports from public dove fields opening day and black bear harvest.

XIV. Item(s) for Board Action

A. Policies Update

Eva Smith, Director, Human Resources, briefly reviewed the changes to DNR Policy 701.02 (Overtime) and DNR Policy 705.05 (Tuition Assistance Program). *Mr. Hutchins made a motion that the Board approve, pending approval by the Department of Administration, DNR's Policy 701.02 (Overtime) as recommended by staff. Dr. Hartley seconded the motion and the motion carried unanimously.*

Mr. Hutchins made a motion that the Board approve DNR's Policy 705.05 (Tuition Assistance Program) as recommended by staff. Mr. Rasor seconded the motion and the motion carried unanimously.

B. Waccamaw River Heritage Preserve – Horry County Temporary Access and Construction License

Ken Prosser, Assistant Deputy Director for Wildlife and Freshwater Fisheries, reviewed the Waccamaw River Heritage Preserve – Horry County Temporary Access and Construction License. *Mr. Rasor made a motion that the Board accept the recommendation from the Heritage Trust Advisory Board and approve the proposed Temporary Access and Construction License for Horry County's culvert installation under Ellis Road at Waccamaw River Heritage Preserve, as presented. Mr. Hutchins seconded the motion and the motion carried unanimously.*

XV. Executive Session

Dr. Hartley made a motion that the DNR Board go into executive session pursuant to SC Code Section 30-4-70(A)(1) and (A)(2) to discuss appointments related to Item(s) for Board Action (C and F) and to discuss contractual matters and legal advice related to Item(s) for Board Action (D and E). Mr. Lee seconded the motion and the motion carried unanimously.

XVI. Open Session

Dr. Hartley made a motion that the DNR Board return to open session, noting that no action was taken during executive session. Mr. Hutchins seconded the motion and the motion carried unanimously.

XVII. Items for Board Action

C. Conservation District Commissioner Appointments/Reappointments

Dr. Hartley made a motion that the DNR Board approve the following conservation district commissioner appointments, as recommended by the Land, Water and Conservation Advisory Committee.

Jeremy Walther, Aiken – term 11/18/21 – 1/31/23; Melanie Shull, Aiken – term 11/18/21 – 7/5/25; and Clarence Randal Ewing, Sr., Darlington – term 11/18/21 – 7/25/25.

Mr. Rasor seconded the motion and the motion carried unanimously.

Dr. Hartley made a motion that the DNR Board approve the following conservation district commissioner reappointments, as recommended by the Land, Water and Conservation Advisory Committee.

Charles H. Coleman, III, Fairfield – term 7/1/21 – 7/1/25 and C. Ben Setzler, III, Newberry – term 3/3/21 – 3/3/25

Mr. Hutchins seconded the motion and the motion carried unanimously.

D. Property Acquisition in Jasper County

Mr. Swygert made a motion that the Board accept the recommendation from the Heritage Trust Advisory Board subject to standard due diligence and grant final approval of the acquisition of approximately 973 acres in Jasper County that will be dedicated as a heritage preserve and placed into the corpus of the SC Heritage Trust, and the expenditure of \$350,000 in Heritage Trust funds for the purchase. Mr. Rasor seconded the motion and the motion carried unanimously.

E. Potential Property Acquisition in Lancaster County

Mr. Lee made a motion that the Board grant preliminary approval to evaluate the potential purchase of approximately 65 acres near Spring Stevens Fish Hatchery in Lancaster County, as recommended by staff. Dr. Hartley seconded the motion and the motion carried unanimously.

F. Governor's Cup Billfishing Series Advisory Board Reappointments

Mr. Lee made a motion that the Board accept the recommendation of the Governor's Cup Billfishing Advisory Board and approve the following reappointments to the Governor's Cup Billfishing Series Advisory Board.

Justin Kohl, Georgetown – second term 1/1/22 – 12/31/24; Robert McClam, Little Mountain – second term 1/1/22 – 12/31/24 and Chad Sanders, Charleston – second term 1/1/22 – 12/31/24

Dr. Hartley seconded the motion and the motion carried unanimously.

XVIII. Time and Location of Next Board Meeting

The Board's next meeting is scheduled for January 20, 2022.

XIX. Adjournment

Mr. Oxner made a motion that the meeting be adjourned. Dr. Hartley seconded the motion and the motion carried unanimously.

Item(s) for Action

DRAFT FISH KILL INVESTIGATION

Craven Creek

Anderson County

July 06-07, 2021



William Wood
Fisheries Biologist II

Division of Wildlife and Freshwater Fisheries
Emily C. Cope, Deputy Director

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CRAVEN CREEK FISH KILL 06-07 JULY 2021

Introduction

South Carolina Department of Natural Resources (DNR) was notified of a fish kill in Craven Creek, Powdersville, SC at 2:30pm on Tuesday 06 July 2021 (Figure 1). DNR was notified by Jennifer Simmons, an employee of ReWa (Renewable Water Resources) who operates a sewage pump station at the west corner of the I-85 and Hwy 153 intersection. ReWa also contacted the South Carolina Department of Health and Environmental Control (SCDHEC). Ms. Simmons estimated around 450,000 gallons of sewage had accidentally entered Craven Creek due to a simultaneous primary pump failure, bypass pump failure, and emergency staff phone alert system failure. Ms. Simmons said the leak was not shut down sooner due to the leak starting on July 04, and the failure of the emergency staff call system. SCDHEC visited the Clemson DNR office Tuesday afternoon and notified DNR staff that since the cause of the Craven Creek fish kill was known, and self-reported by ReWa, SCDHEC would not be investigating further as to proximate cause of the fish kill event.

Initial Investigation

William Wood, Weston Houck, and Parker Sharpe went to investigate the extent of the fish kill. Staff arrived on site around 4pm. The upstream starting point was quickly established as the pump station, the downstream terminus took more time to establish (Figure 1). A neighborhood pond in The Reserve neighborhood was accessed and no dead fish were observed in the pond ~2/3 of the way between Craven Creek input and the downstream dam. Staff went to Cooper Road splitting up and investigating the extent of the kill. Dead fish were found throughout Craven Creek to the mouth of the pond in The Reserve neighborhood. The stream bottom dropped off sharply where it entered the pond preventing any further investigation of dead fish on the bottom, no dead fish were

observed around the upstream pond edge. Some live fish in good condition were observed in the last ~50 yards of Craven Creek before it entered the pond.

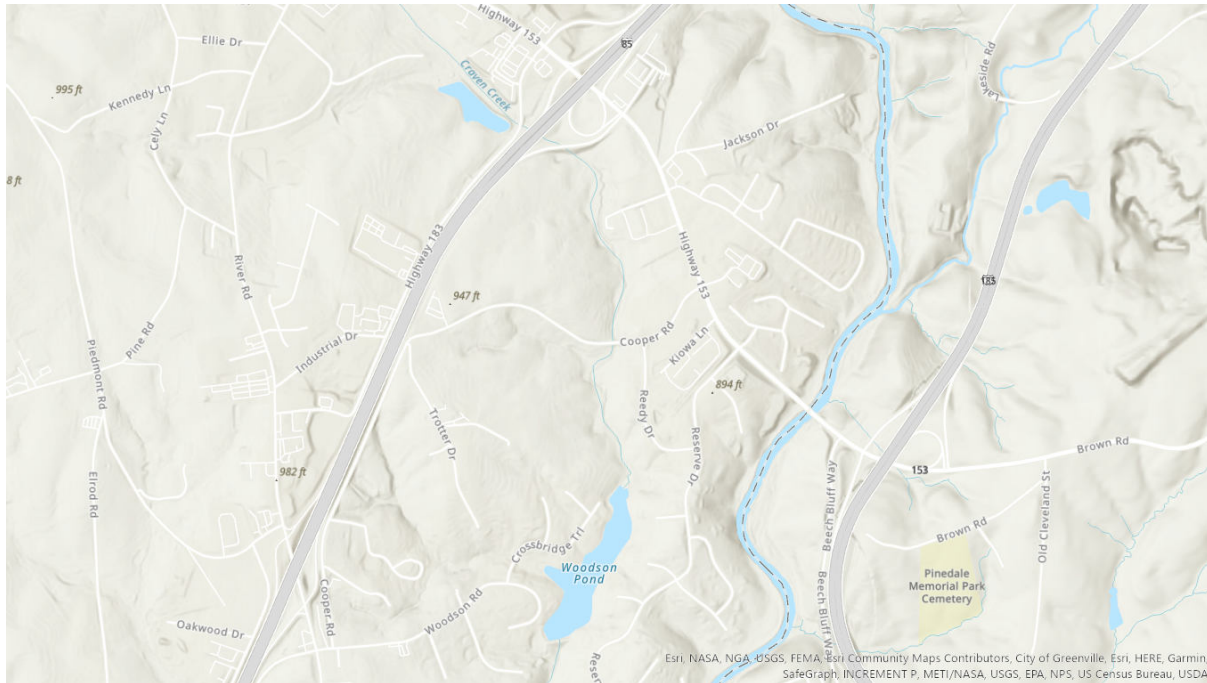


Figure 1. Area on Craven Creek where fish kill occurred.

Primary Investigation

ReWa informed SCDNR in the late afternoon/early evening of 06 July they were going to attempt to suction what waste product they could from Craven Creek on 07 July and would not be able to separate dead fish. Due to limited daylight availability SCDNR staff decided to conduct a subsample of Craven Creek and extrapolate the collected fishes to account for the unsampled sections of the fish kill. Three 100m random segments were selected for complete pickup accounting for approximately 20% of the fish kill area (total stream distance estimated at 1500m.) One section was between Cooper Road and I-85 (upstream segment) and two sections were below

Cooper Road. SCDNR was assisted by ReWa staff in fish collections that were completed by 7:45pm on 06 July. Collected fishes were put on ice overnight to be counted on 07 July by SCDNR staff.

Fish Counting Procedures

Fishes collected on 06 July were counted on 07 July by SCDNR staff. Fish were separated by species and inch class (all *Lepomis spp.* species were counted together as “Sunfish” due to deterioration further identification was not conducted). Fishes collected were Largemouth Bass *Micropterus salmoides*, Bluehead Chub *Nocomis leptcephalus*, various *Lepomis* species grouped together as “Sunfish” for counting purposes, and Greenhead Shiners *Notropis chlorocephalus*. Additionally, dead mayflies (Order Ephemeroptera), salamanders (species unknown), crayfish, and one muskrat were observed in Craven Creek affected by the fish kill.

Results

The subsample collections from three sites yielded 839 dead fish from four species. Species, numbers of fish by inch class, and subsample counts were extrapolated using a conversion factor and shown in Table 1. Expansion to estimate the mortality for the entire 1500 meter reach resulted in an estimated mortality of 2,846 fish. Expanded total counts and percent composition of collected fishes are shown in Table 2. American Fisheries Society fish values are calculated based on Southwick and Loftus (2018) with Expanded Total Value also calculated in Table 3. AFS restitution costs for the mortality event were \$2,266.73 based 2018 costs. Adjusting for inflation using the consumer price index resulted in an AFS restitution value of \$2,484.64. SCDNR staff costs associated with the investigation were \$1,719.14. Travel costs were \$440.45. Total personnel costs for the investigation were \$2,159.59. The total impact of the Craven Creek fish mortality event was \$4,644.23. DNR staff and vehicle expenses are shown in Table 4.

Table 1. Fish species, number of fish by inch group, and calculated expanded number collected from the Craven Creek fish kill on July 6-7, 2021.

Bluehead Chub		<i>Nocomis leptocephalus</i>			
Size (in)	No.	% of Total	Expanded No.	2018 AFS Cost/fish	Expanded Total Value
per fish	169	100.00%	845.22	\$0.12	\$101.43
TOTALS	169	100.00%	845.22		\$101.43
Greenhead Shiner		<i>Notropis chlorocephalus</i>			
Size (in)	No.	% of Total	Expanded No.	2018 AFS Cost/fish	Expanded Total Value
per fish	89	100.00%	445.11	\$0.12	\$53.41
TOTALS	89	100.00%	445.11		\$53.41
Largemouth bass		<i>Micropterus salmoides</i>			
Size (in)	No.	% of Total	Expanded No.	2018 AFS Cost/fish	Expanded Total Value
2-3	11	91.67%	55.01	\$1.24	\$68.22
4-5	1	8.33%	5.00	\$1.69	\$8.45
TOTALS	12	100.00%	60.02		\$76.67
Sunfish		<i>Lepomis sp.</i>			
Size (in)	No.	% of Total	Expanded No.	2018 AFS Cost/fish	Expanded Total Value
0-1	9	1.58%	45.01	\$0.14	\$6.30
1-2	126	22.14%	630.16	\$0.40	\$252.06
2-3	177	31.11%	885.23	\$0.46	\$407.20
3-4	99	17.40%	495.13	\$0.60	\$297.08
4-5	107	18.80%	535.14	\$0.87	\$465.57
5-6	8	1.41%	40.01	\$1.49	\$59.62
6-7	8	1.41%	40.01	\$1.92	\$76.82
7-8	17	2.99%	85.02	\$2.21	\$187.90
8-9	18	3.16%	90.02	\$3.14	\$282.67
TOTALS	569	100.00%	2845.73		\$2,035.22

Table 2. Number and percent composition of fish species killed in Craven Creek on July 6-7, 2021.

Species	# in Sample	% Composition	Expanded Calculated Total
Bluehead Chub	169	20.14%	845
Greenhead Shiner	89	10.61%	445
Largemouth bass	12	1.43%	60
Sunfish	569	67.82%	2,846
TOTALS	839	100.00%	4,196

Table 3. Monetary value of fish species killed in Craven Creek on July 6-7, 2021.

Species	# Killed	Expanded Total Value
Bluehead Chub	845	\$101.43
Greenhead Shiner	445	\$53.41
Largemouth bass	60	\$76.67
Sunfish	2,846	\$2,035.22
2018 COST	4,196	\$2,266.73
CPI ADDED TOTAL COST		\$2,484.64

Table 4. Total DNR investigative costs for the fish kill in Craven Creek on July 6-7, 2021.

Fisheries - Region 1	Personnel Costs	Mileage/Gas Expenses
Regional Coord. Rankin	\$113.78	0.00
Biologist Wood	\$344.79	\$83.95
Biologist Goyette	\$91.66	\$10.35
Technician Houck	\$503.18	\$184.00
Technician Cobb	\$103.15	\$40.25
Technician Sharpe	\$389.23	\$86.25
Technician Roper	\$97.31	\$35.65
Admin Asst	\$76.35	\$0.00
TOTALS	\$1,719.14	\$440.45

Literature Cited

Southwick, R. I., and A. J. Loftus, editors. 2018. Investigation and monetary values of fish and freshwater mollusk kills. American Fisheries Society, Special Publication 35, Bethesda, Maryland.

Submitted by:

Dan Rankin, Project Leader

Reviewed by:

Ross L. Self, Chief of Fisheries

Approved by:

South Carolina Department of Natural Resources

Emily Cope, Deputy Director
Division of Wildlife and Freshwater Fisheries

Environmental Report



Office of Environmental Programs DNR Board Briefing – January 20, 2022

Carolina Bays Parkway Extension, Horry County. Action ID: SAW-2004-00823. See:

<https://www.ncdot.gov/projects/carolina-bays-parkway/Pages/default.aspx>

The project's purpose is to bypass congestion within the areas of Calabash, North Carolina and, in South Carolina, the Little River and Grand Strand areas. The project also intends to improve traffic flow and safety at the intersection of SC Hwy 9 and SC Hwy 57 and provide a more direct route for coastal truck traffic moving through North Carolina. In September of 2017, the DNR provided scoping comments on this project, identifying a number of important coastal habitats in the study area, including intertidal marsh, tidal creeks and freshwater wetlands and the Waccamaw River Heritage Preserve (WRHP). On May 4, 2020, OEP staff participated in a meeting to review preliminary alternatives for the proposed Carolina Bays Parkway Extension project and reach concurrence on the alternatives that will be carried forward for detailed study. Seven of eleven preliminary corridors (1, 1A, 2, 4, 4A, 7 and 8) were identified for detailed study. On October 7, 2021, a NOI to prepare an Environmental Impact Statement (EIS) was public noticed by the FHWA. The study area continues to encompass parts of the WRHP and three of the alternatives (1, 1A and 2) directly impact tributaries downstream of the WRHP; staff provided comment on the NOI Nov 4, 2021, continuing to recommend these alternatives are eliminated. On Oct 18, 2021, a concurrence meeting for the development of the project and the associated EIS was held; the objective of this meeting was to discuss proposed hydraulic structures for all potential alternatives. Following this meeting, staff reviewed additional information including the proposed structures and meeting notes to further provide feedback, comments dated October 26, 2021, on the preferred stream crossing structures to minimize impacts to natural resources. **DNR comments to minimize wetlands to the greatest extent and to utilize bridges and arched/bottomless culverts were included in the 2A concurrence documents and DNR signed this concurrence document Dec 21, 2021.** The Draft EIS approval and publication is expected winter 2021/2022 with a Final EIS approval expected in Summer 2023. DNR project manager: Maggie Jamison

Cherry Grove Canals Maintenance Dredging Project, Horry County. See [PN/SAC-2004-02988](#)

The City of North Myrtle Beach is proposing to conduct maintenance dredging in portions of House Creek/Minor Channel extending from 39th Avenue North to 46th Avenue North, and Cherry Grove Canal extending from 42nd Avenue North through 62nd Avenue North. The project involves dredging approximately 180,000 cubic yards of material from approximately 24 acres of the existing Cherry Grove man-made canals and portions of House Creek/Minor Channel. The project purpose is to provide sufficient water depths in the canals to provide local property owners and the public recreational boating access to navigable coastal waters. The DNR has been involved with the review of this project since its initial proposal in 2004, including participation in numerous meetings and on-site inspections and the submittal of comments in 2004, 2009, 2010, 2011, 2012 and 2013. Throughout the various reviews, the DNR has consistently expressed concern over the loss of important intertidal resources resulting from dredging in this system. The Cherry Grove canals were recently dredged (2017), but canal configuration combined with high siltation rates quickly allow existing intertidal resources to be maintained and shallow water depths to reestablish within the previously dredged channels. The shoreline of House Creek and the adjacent canals support abundant marsh, mud flat and oyster reef habitats. On the December 17, 2021 public notice, the DNR recommended that the permit not be issued until all concerns and recommendations to avoid and minimize impacts to important estuarine resources in the area were addressed. DNR project manager: Stacie Crowe

I-526 Extension Project (Mark Clark Expressway), Charleston County.

<http://www.scdotmarkclark.com/>

The project includes a new location 7-mile roadway from the existing I-526 terminus at US 17 (Savannah Highway) to the James Island Connector (SC 30). On Aug 18, 2021, the SCDOT and FHWA noticed the release of the Draft Supplemental EIS (SEIS) and Draft Section 4(f); staff provided comments on October 15, 2021. In these comments, staff noted that 80% of the project area is comprised of a FEMA-designated 100-year floodplain with 309 acres within the right-of-way of the preferred alternative G. Staff recommended that impacts to floodplains associated with the direct impacts of the proposed project should be thoroughly evaluated in the SEIS, including impacts associated with climate change and sea level rise. Additionally, staff recommended that further evaluation of impacts to SCDNR State Wildlife Action Plan conservation priority species be considered and the location of a bald eagle nest in the right-of-way be further investigated. OEP staff continue to stress the need to fully explore and exhaust least damaging alternatives for meeting project goals. **On December 9, 2021, an update on public and agency comments was provided. According to the data collected classifying the public comment received, which includes agency comments, there is approximately a 50% acceptance and 50% objection rate to the project. DOT will submit permits for the proposed project to DHEC, USACE and the USCG (bridge permit) by January 15, 2022.** DNR project manager: Maggie Jamison

Hydroelectric Energy Projects

Under the Federal Energy Regulatory Commission's (FERC) regulatory authority under the Federal Power Act, natural resource agencies have an opportunity to negotiate and collaborate with utilities to minimize and mitigate impacts to natural resources affected by the operation of hydroelectric facilities. OEP staff serve as the DNR representative as a part of the relicensing process and implementation of the license. DNR FERC Coordinator: Elizabeth Miller

North Georgia Hydroelectric Project (FERC Project No. 2354). The licensee, Georgia Power, filed an application with the FERC to amend the North Georgia Project license on September 24, 2021. The amendment application proposes to upgrade the four generating units in the Tugalo powerhouse. The proposed upgrade includes replacing the turbine runners, generators, and intake trashracks. DNR staff were consulted in July 2021 prior to the amendment application submittal. DNR staff recommended that the licensee conduct a desktop entrainment study in order to determine if the new trashrack spacing would increase turbine entrainment at the Tugalo Project. The entrainment study found that the increased spacing in the trashracks would decrease the approach velocity at the facility and thus lessen the agency's concern regarding increased entrainment of fisheries resources at the Tugalo Project. Recently, there has been interest expressed by Upstate Forever, Chattooga Conservancy and American Whitewater to explore dam removal of the Tugalo dam.

Santee Cooper Hydroelectric Project (FERC Project No. 199). S.C. Public Service Authority (SCPSA) filed with FERC a license application on Mar 15, 2004 and a Final Settlement Agreement (FSA) on May 24, 2007. The license application and FSA propose flows through the project to enhance aquatic habitat and water quality, a low-inflow/drought plan, fish passage and protection prescriptions, plans to protect sensitive species, shoreline management plan, recreation plan, and enhancements at the Santee National Wildlife Refuge. FERC issued its Final EIS in October 2007. A new FERC license for this project is pending now that the National Marine Fisheries Service (NMFS) Section 7 endangered species consultation regarding hydro project impacts to shortnose and Atlantic sturgeon have completed a Biological Opinion (January 22, 2020) and a Modified Prescription for Fishways (January 27, 2020).

In 2018, DNR and SCPSA modified a leased land agreement, which included the Mill Creek parcel. DNR received an environmental consultation request from Newkirk Environmental, Inc on August 19, 2021 regarding a residential development located on and adjacent to DNR's Mill Creek WMA. DNR staff sent a letter to SCPSA inquiring when the FERC approved land use changes took effect and requested initial notice from SCPSA if they intend to revoke our lease agreement in the future since some of the development is overlapping with current lands leased in the WMA program. DNR staff met with SCPSA

and USFWS staff on October 14, 2021, to discuss our concerns regarding the project. DNR staff requested clarification on when land use classifications at the site were changed, discrepancies with the Shoreline Management Plan (SMP) and Recreation Management Plan (RMP) for the proposed developments, and whether SCPSA intends to further alter the WMA lease agreement on the property. SCPSA staff indicated that they had documentation regarding the land use classifications and the conflicts with the SMP and RMP to reflect what they were proposing and would send it to DNR and USFWS. SCPSA did not indicate any plans to alter the WMA lease agreement in the near future.

On November 1, 2021, SCPSA staff sent DNR a letter including corrected land use classification maps and clarification on the "Mill Creek" verbiage in the RMP and SMP. The corrected maps and clarification satisfied DNR staff regarding previous concerns raised at the October meeting. The letter also stated that SCPSA plans to remove 29 acres from the DNR leased Mill Creek WMA. Since this proposal would only leave 83 acres at the site, DNR recommended that the entire parcel be removed from the lease agreement. SCPSA Forestry & Undeveloped Lands staff began discussions with DNR WFF staff to begin the process of removal of the property from the WMA program.

Mitigation Banks and Interagency Review Team

Under the 2008 Mitigation Rule, natural resource agencies have an opportunity to participate collaboratively with resource and regulatory agencies on the Interagency Review Team (IRT) to oversee and provide feedback on mitigation bank or in-lieu fee development. The IRT process ensures that mitigation banks are sited appropriately and provide ecological value, in addition to functional uplift of aquatic resources to offset the loss of aquatic resources associated with U.S. Army Corps of Engineers Section 404 permits. A majority of the OEP staff serve on the IRT to provide expertise on stream restoration and wetland enhancement during this process. The following are a list of recent banks that are under review; this does not include existing banks that are also reviewed during the monitoring phases of the bank's life.

Goose Pond Mitigation Bank Draft Mitigation Banking Instrument

The proposed project consists of establishing a freshwater wetland and stream mitigation bank in the Congaree watershed (8-digit Hydrologic Unit Code 03050110) located in the Level III Southeastern Plains Ecoregion. The proposed 1,185-acre mitigation site includes approximately 23,753 linear feet of nontidal stream and approximately 522.5 acres of freshwater wetlands. The proposal is to enhance and restore approximately 5,488 linear feet of impaired and ditched and channelized streams by replacing undersized and failing culvert stream crossings, stabilizing stream bed and bank by reconnecting streams to the floodplain, installing grade control structures and channel realignment, restoring approximately 4,002 linear feet of stream by re-routing a ditched channel back into a relic channel, preserving approximately 11,163 linear feet of tributaries to the Congaree River and restoring natural hydrology to approximately 192.9 acres of wetlands by filling or plugging drainage ditches. The bank owner and sponsor is Southern Oaks Land & Water, LLC. The long-term steward is proposed to be Palmetto Environmental Consultants, Inc. and the conservation easement holder will be Congaree Land Trust. Prospectus comments were provided to the USACE by DNR on October 18, 2018, and DMBI comments were submitted on August 28, 2020. A revised DMBI dated October 15, 2021 has been received and is currently under review. Project manager: Greg Mixon

Palmetto Umbrella Mitigation Bank: Chicora Draft Instrument Modification (DIM)

The proposed Chicora Mitigation Site is a 2,021-acre parcel in Berkeley County, South Carolina located in the Cooper River Basin (8-digit HUC 03050201) and in the Mid-Atlantic Coastal Plain Level III Ecoregion and is also adjacent to the Big Run PUMBI. The project proposes to vegetatively enhance and preserve existing wetlands through the removal of high-density planted pine and the planting of native hardwoods (1,524.7 acres and 194.2 acres, respectively). Additionally, a total of 29,163 LF of existing streams are proposed for enhancement/restoration (21,384 LF) and preservation (7,779 LF). The site proposes mitigation for freshwater impacts only. The property is owned by Weyerhaeuser NR LLC and the conservation easement will be help by Lord Berkeley Conservation Trust. Staff attended a site visit

on November 17, 2021 and submitted comments on the Draft Instrument Modification on December 20, 2021. Project Manager: Maggie Jamison

Palmetto Umbrella Mitigation Bank: Savannah Branch Mitigation Site

The proposed bank is located on an approximately 2,180-acre parcel in north central Jasper County, South Carolina with the center of the proposed mitigation site being located at approximately 32.617 and -81.093. The Site is in the Calibogue Sound-Wright River Basin (8-digit HUC 03060110) and the Middle Atlantic Coastal Plain Level III Ecoregion. Wetland mitigation is proposed for those areas located both north and south of Gillison Branch Road. Proposed restoration stream restoration and preservation are located within the property and are only bisected with internal soil roads. The southern section of SBMS (1,155 acres) is associated with Calf Pen Bay and the downstream sections of Savannah Branch. This portion of SBMS is located south of Calf Pen Bay Road (State Road 652) and consists predominantly of Non-Alluvial Swamp Forest and managed Pine Flatwoods. The property is sponsored and owned by Weyerhaeuser NR Company and will be protected using a conservation easement held by Lowcountry Land Trust. Staff attended a site visit October 7th, 2021 and submitted comments on the Draft Instrument Modification November 17, 2021. Project Manager: Maggie Jamison

Roberts Swamp Mitigation Bank Prospectus

The proposed project consists of establishing a freshwater stream and wetland mitigation bank in the South Fork Edisto River watershed (8-digit Hydrologic Unit Code 3050204) located in the Level III Southeastern Plain Ecoregion near the Town of Norman, Orangeburg County, SC (33.454108, -81.075959). The proposed 255+ acre bank includes approximately 12,612 linear feet of streams and 165 acres of wetlands. The bank owners are West Stone 123 LLC and Mr. Robert Johnson. The long-term steward will be Roberts Swamp MB, LLC and the (tentative) conservation easement holder is Congaree Land Trust. The USACE public noticed the Prospectus on June 19, and DNR provided comments on July 15, 2020. DNR staff reviewed a DMBI dated October 18, 2021, and provided comments on December 13, 2021. DNR project manager: Greg Mixon

Monthly Division Reports

EXECUTIVE OFFICE

OFFICE OF THE DIRECTOR

NOVEMBER 2021 HIGHLIGHTS

During the month of November, Director Robert Boyles participated in daily telephone conversations and meetings with staff, Deputy Directors, Board Members, legislators, partners, and constituents.

Director Boyles and Shannon Bobertz had a telephone meeting with Jill Hufnagel about upcoming leadership training for agency staff.

Director Boyles participated in the “Coffee and Conversation with Director Boyles” monthly event. Director Boyles chaired the Deputy Directors-Senior Staff meetings on November 2 and November 30 in the Board Room.

Director Boyles chaired the SC Litter Commission Quarterly Meeting at the Municipal Association of SC Building in Columbia. Director Boyles, Deputy Director Angie Cassella and staff met with Bill Stern, landlord for the new Headquarters Building.

Director Boyles participated virtually in the SC Governor’s Cup Billfishing Series Advisory Board Meeting. He also attended the Informal Governor’s Cabinet Meeting in Columbia. He met with Acting Deputy Director Blaik Keppler, Deputy Director Emily Cope and Shannon Bobertz for a discussion about horseshow crabs.

Director Boyles represented SCDNR at the Pheasants Forever/Quail Forever Conservation Summit in Akron, Iowa on November 6-9. While in Iowa, Director Boyles participated virtually with Caleb Cohoon, Deputy Director Cassella and Donna Maples in the Audit Exit Conference with staff of the State Auditor’s Office.

Director Boyles met with Chairman Norman Pulliam in Spartanburg in preparation for the November Board Meeting.

Director Boyles participated in the three-day Leadership Training by Jill Hufnagel with 40 staff from across the agency on November 15-17 at the USC Alumni Center.

Director Boyles participated in the DNR Board Meeting, which included a session with the Board Members with our Leadership Consultant Jill Hufnagel, on November 18 in the Board Room in Columbia.

Director Boyles, Lorianne Riggins and Greg Lucas met with Brad Wyche of Upstate Forever and Buzz Williams of the Chattooga Conservancy, at their request, to discuss FERC rules and the Chattooga River.

Director Boyles, Acting Deputy Director Keppler and Deputy Director Cope and representatives of the Charles River Labs met with staff of the Governor’s Office to discuss the biomedical horseshoe crab fishery.

Director Boyles participated in a Zoom Meeting with Senator Chip Campsen, former Senator Vincent Sheheen, Duane Parrish of SCPRT and Doug Bostick of the SC Battleground Trust, to discuss property stewardship of Fort Johnson.

Director Boyles participated in the SC Sea Grant Consortium Board of Directors Meeting in Charleston. Later, he participated in a telephone call interview with Rachel Menale of DJ Case about the Conservation Leaders for Tomorrow (CLfT) program.

DECEMBER 2021 HIGHLIGHTS

During the month of December, Director Robert Boyles participated in daily telephone conversations and meetings with staff, Deputy Directors, Board Members, legislators, partners, and constituents.

Director Boyles, Craig Jones and Captain Lee Ellis participated in the Law Enforcement Training Council meeting at the Criminal Justice Academy to discuss SC Criminal Justice issues.

Director Boyles, Col. Chisolm Frampton and Lt. Col. Jamie Landrum met with the House Budget Subcommittee to discuss budget issues.

Director Boyles and Lorianne Riggins attended a luncheon meeting with US Army Corps of Engineers Atlantic Division Commanding General Jason Kelly and toured the completed Crab Bank project.

Director Boyles participated in the “Coffee and Conversation with Director Boyles” monthly event.

Director Boyles and Shannon Bobertz had a follow-up meeting with Jill Hufnagel, our Leadership Training consultant.

Director Boyles and staff toured the SC Ports Building in Mt. Pleasant. Later, Director Boyles chaired the Southeast Conservation Adaptation Strategy (SECAS) Committee virtual meeting.

Director Boyles spoke at the Spartanburg Rotary Club Meeting in Spartanburg at the invitation of

Chairman Pulliam.

Director Boyles welcomed participants to the Marine Resources Division Conference at the Marine Center in Charleston and announced the passing of Deputy Director Phil Maier on December 7.

Director Boyles participated in the Executive Office Holiday Luncheon on December 8 in the Board Room in Columbia.

Director Boyles and SCLEAP Chaplain Dave Tafaoa met on December 10 with Phil Maier's widow Beth. Later in December, Director Boyles met with Phil Maier's brother Paul to talk about the celebration of life ceremony planned for January 3 at the Marine Center.

Director Boyles participated virtually in interviews by the Southeast Conservation Adaptation Strategy Committee for a new Executive Director. Director Boyles attended the retirement drop-in in Charleston for Susan Davis of the Office of Environmental Programs and celebrated her 35 years of DNR service.

Director Boyles participated in the Law Enforcement Training Council monthly meeting at the Criminal Justice Academy. Later, Director Boyles met with Alix Pedraza to talk about minority outreach and future plans.

Director Boyles and staff hosted US Fish and Wildlife Service and American Sportfishing Association officials at a "Partner with a Payer" event on December 15-16 highlighting the use of Sportfish Restoration funding to support fisheries and boating business in South Carolina.

Director Boyles, agency staff and conservation partners toured property along the lower coast.

Director Boyles observed the waterfowl hunts on the Cape at the Santee Coastal Reserve and later worked the waterfowl hunt on Murphy Island.

On December 30, Director Boyles and Scott Speares discussed the SCDNR FY23 budget request with House Ways and Means staff.

Marine Resources Division

Marine Resources Research Institute (MRRI)

Grant Proposals

Submitted: Letter of Intent. SC Sea Grant Consortium (Sara Pedigo, Graham Gaines), Aaron Watson, Jason Broach, Fabio Casu, Erin Levesque. Development and application of size-selective zooplankton harvesters for marine finfish production. 2022 Sea Grant Marine Finfish Aquaculture. Three years, \$325,000.

Submitted: PI: F. Casu (SCDNR); Co-PIs: A. Watson (SCDNR), Carl Yeoman (MSU), G. Gaylord (USFWS), Abigail Bockus (AquaRange Research, LLC). Effect of prebiotic supplementation on metabolic profiles and fecal microbiota composition of juvenile cobia fed diets containing high levels of soybean meal and soybean oil. Soy Aquaculture Alliance (SAA). 1 year 2022-2023. Federal: \$137,843; No match.

Submitted: PI: Abigail Bockus (AquaRange Research, LLC); Co-PIs: F. Casu (SCDNR), G. Gaylord (USFWS). Can active compounds in alternative ingredients be used to increase soy inclusion in aquaculture feeds? Soy Aquaculture Alliance (SAA). 1 year 2022-2023. Federal: \$27,813 to SCDNR; No match.

Submitted: Concept Letter. A. Tweel (PI), D. Sanger, W. Doar, K. Luciano. Forecasting changes to the South Carolina salt marsh landscape to inform decision-making. NERRS Science Collaborative. 2 years. \$390,000. No match requirement.

Submitted: Concept Letter. Brandon Puckett (PI, NCDRCM), Gary Sundin (SCDNR), Peter Kingsley-Smith (SCDNR) *et al.* Collaborative development of novel remote sensing workflows for assessing oyster reef condition to inform management and restoration. NERRS Science Collaborative. 2 years. \$400,000. No match requirement.

Submitted: Full Proposal. PI: W. Patterson (UF); Co-PIs: J. Buckel (NCSU), D. Portnoy (TAMU-CC), and W. Bubley (SCDNR). Estimation of Atlantic Red Snapper Population Size. Sea Grant South Atlantic Red Snapper Research Program. 4 years 2022-2025. Federal: \$226,329 to SCDNR; No match requirements.

Funded: FY22 MARMAP funding (June 30, 2022 – July 31, 2023, year 2 of 5): \$736,394, a slight increase relative to FY21.

Submitted: PI: Jennifer Dorton (SECOORA), SCDNR Partners: A. Watson, J. Yost, B. Frazier, A. Galloway. 2022 US Marine Life Observations: Coordinated Marine Biodiversity Observation Network (MBON) and Animal Telemetry Network (ATN) Activities to Ensure Resilient, Productive Ecosystems and Human Communities in the Face of Change. Sub-recipient to SCDNR to tag cobia and blacktip sharks. Three years (\$14,930 to SCDNR).

Publications

Submitted: Kingsley-Smith, P.R., Tweel, A.W., Johnson, S.P., Sundin, G.W., Hodges, M.S., Stone, B.W., Sorg, G.D. & Sanger, D.M. Evaluating the ability of constructed intertidal Eastern oyster (*Crassostrea virginica*) reefs to address shoreline erosion in South Carolina, USA. *Journal of South Carolina Water Resources*.

Submitted: Kim, S., Hooten, M., Darden, T. & Y. Kanno. Linking male reproductive success to effort within and among nests in a co-breeding stream fish. *Animal Behavior/Ethology*.

Submitted: M.E.M. Larkin, A.M. Watson, A.R. Place. “Gluten-free Fish? Marine Carnivores Cobia (*Rachycentron canadum*) and European Sea Bass (*Dicentrarchus labrax*) Have Different Tolerances to Dietary Wheat Gluten”. *Journal of Marine Science and Engineering Special Issue: New Insights into Fish Physiology-Applications Focus: Challenges and Mitigations*.

Presentations

Daniel Sasson, Michael Kendrick, Jeff Brunson, Elizabeth Gooding, Jeanette Huber, Trap Puckette & Peter Kingsley-Smith. The use of salt marsh habitat for spawning by the American horseshoe crab *Limulus polyphemus*. Coastal Estuarine Research Federation virtual conference. Approximately 70 attendees. November 4, 2021

Tracey Smart. Changes in Red Porgy Distribution and Habitat Use off the Southeast U.S. Atlantic Coast. South Atlantic Fisheries Management Council Webinar presentation. November 9, 2021. 40 general and professional audience.

Andrew Tweel. Connections Between Land Use, Stormwater Runoff, and Estuarine Habitat Quality. South Carolina Native Plant Society. 35 attendees, general audience. November 3, 2021.

Ellen Reiber, R. MacNamara (Hubbs SeaWorld), M. Drawbridge (Hubbs SeaWorld), M. Denson, T. Darden. Development of genetic tools for responsible stock enhancement of white seabass. Estuarine Finfish Research (EFR) Section meeting; 20 participants, technical.

Joseph Ballenger. Overview of NC flounder tagging project. EFR Section meeting; 20 participants, technical

Ellen Reiber, R. MacNamara (Hubbs SeaWorld), M. Drawbridge (Hubbs SeaWorld), M. Denson, T. Darden. Development of genetic tools for responsible stock enhancement of white seabass. American Fisheries Society Annual Meeting; Baltimore, MD; 30 participants, technical.

Erickson, K.A., Dance, M.A., Farmer, T.M., Ballenger, J.C., & Midway S.M. 2021. Changing climate associated with the range-wide decline of an estuarine finfish. 151st Annual Meeting of the American Fisheries Society. [Oral]. Baltimore, MD, November 9, 2021. 30 participants, technical.

Aaron Watson gave a remote seminar presentation for the University of Texas Marine Science Institute on our NMR metabolomics work on November 19, 20 participants, technical.

Cameron Doll. Opportunities for incorporating flow cytometry into research projects. EFR meeting; 20 participants, technical.

Daniel Sasson, Michael Kendrick, Jeff Brunson, Jeanette Huber, Trap Puckette & Peter Kingsley-Smith. The use of saltmarsh as spawning habitat for the horseshoe crab, *Limulus polyphemus*. MRD Conference, December 8, 2021, approximately 150 participants (primarily virtual).

Meagan Roy & Michael Kendrick. Habitats of South Carolina crayfishes. MRD Conference, December 8, 2021, approximately 150 participants (primarily virtual).

Graham Wagner, Greg Rothman, Gary Sundin, Andrew Tweel, Denise Sanger & Peter Kingsley-Smith. Creating habitat and protecting shorelines: an overview of living shorelines research in coastal South Carolina. MRD Conference, December 8, 2021, approximately 150 participants (primarily virtual).

Catharine Parker. Overview of Benthos (Benthos, the fishmaker). MRD Conference, December 8, 2021 approximately 150 participants (primarily virtual).

Saundra Upchurch, Gary Sundin & Denise Sanger. Assessing the utility of drone-based imagery to enhance emergent vegetation biomonitoring. MRD Conference, December 8, 2021 approximately 150 participants (primarily virtual). Sharleen Johnson, Joseph Cowan & Andrew Tweel. Identifying optimal foraging habitat characteristics for overwintering piping plover. MRD Conference, December 8, 2021 approximately 150 participants (primarily virtual).

Andrew Tweel, Norm Shea, Kim Sitta & Denise Sanger. Connections between land use, stormwater runoff, and estuarine habitat quality. MRD Conference, December 8, 2021 approximately 150 participants (primarily virtual). Sharleen Johnson & Liz Vinyard. Gardening for wildlife. MRD Conference, December 8, 2021 approximately 150 participants (primarily virtual).

Tracey Smart, Wally Bubley, Dawn Glasgow & Marcel Reichert. Current and upcoming special research projects by the Reef Fish Survey. MRD Conference, December 8, 2021. approximately 150 participants (primarily virtual).

Robin Minch, Dan McGlinn, Bryan Frazier, Tracey Smart & Marcel Reichert. Do environmental conditions drive ray abundance and distribution? Comparing estimates from single and multispecies models. MRD Conference, December 8, 2021. approximately 150 participants (primarily virtual).

Jackie Allen, Matt Walker, Daniel Sasson, Greg Rothman, Michael Kendrick & Tanya Darden. Investigating white spot syndrome virus introduction pathways as a threat to native crustacean species. MRD Conference, December 8, 2021, approximately 150 participants (primarily virtual).

Cashour, J., J. Beers, G. Sancho, B. Frazier, and J. Ballenger. Physiological stress response and post-release mortality of the Bonnethead, *Sphyrna tiburo*. MRD Conference, December 8, 2021, approximately 150 participants (primarily virtual).

Cashour, J., J. Beers, G. Sancho, B. Frazier, and J. Ballenger. Physiological stress response and post-release mortality of the Bonnethead, *Sphyrna tiburo*. EFR Meeting on December 6; 20 participants; technical.

Jason Broach, Aaron Watson & Justin Yost gave an overview presentation of their recent trip to Texas hatcheries to learn about flounder aquaculture. EFR Meeting; 20 participants. EFR Meeting on December 13; 20 participants; technical.

Outreach

Peter Kingsley-Smith was interviewed online by Scholastic for an article in *Science World*, a classroom magazine intended for grades 6-10. The article will feature oyster restoration efforts by school kids in New York City; Peter provided some broader context to the importance of oyster reefs and considerations when conducting restoration work.

Peter Kingsley-Smith and Denise Sanger were interviewed by Chloe Johnson from the Post and Courier regarding the potential for living shorelines to be integrated as part of plans for the new sea wall proposed by the Army Corps of Engineers.

Erin Levesque provided an overview of the Waddell Center Renovations and New Flounder Stock Enhancement Research Plan for the Beaufort Fishing Club. General Audience. November 11, 2021.

Joe Evans gave a presentation and fish dissection for the James Island High School Marine science classes on November 30, 2021 to 47 students.

Gary Sundin co-led a group of volunteers to collect *Spartina alterniflora* seeds as part of the NOAA/NMFS restoration project. 6 attendees.

Keilin Gamboa-Salazar gave a short talk on Costa Rican holiday traditions for the Fort Johnson DISTEM Cultural Humility webinar on November 29.

Brock Renkas presented as part of the hands-on portion of the 2021 Fall MRD Conference. Fish cleaning: learn techniques to ensure that your catch is kept in its best condition from the time it leaves the water until it hits the dinner plate. December 19.

Brock Renkas participated in a lab tour of 15 volunteer fishing instructors coordinated by Olivia Bueno; the group was shown inshore sampling vessels, fish life history and fishery independent programs were detailed.

Jason Broach provided an overview of conservation and stock enhancement activities of the DNR and virtual tour of the Waddell Mariculture Center to a Green Sea Floyds Middle/High School group. General Audience. 30 people. November 19.

Staff participated in the FWF Partner with a Player tour of the MRD facilities and programs, December 16.

Tanya Darden provided a programmatic overview of MRD to the Charleston Rotary Club on December 10, general audience, 30 people.

Dawn Glasgow and Fabio Casu participated in the “Navigating Coastal Conservation Careers” planning meeting (PI: Julie Binz) on December 15. It is a two-year project funded by SC Sea Grant Consortium designed to mentor and engage young people in marine-related careers and provide job skills for younger students. Dawn and Fabio are serving as liaisons for the MRRI in the program.

Progress Report and Activities

Coastal Research Section

A change in PI for the MARMAP and SEAMAP grants was approved. Tracey Smart and Walter Bubley are the new lead PI for SEAMAP-SA and MARMAP respectively.

Walter Bubley participated in the South Atlantic Fishery Management Council (SAFMC), Citizens’ Science Joint Operations and Project Advisory Committee webinar on November 1. During the webinar the committee reviewed, discussed, and updated the SAFMC Citizen Science Research Priorities.

Several staff attended the SAFMC meeting December 6-10 via webinar.

Several staff attended the annual SECOORA meeting that was held as a combination of in-person and webinar meeting on December 15, 2021.

Reef Fish Survey (MARMAP and SEAMAP-SA): The SCDNR 2021 data are QA/QC’d and samples are being processed. We received the data from our federal partners (SEFIS), except for the CTD data. Preliminary analysis showed that during the 57.5 completed sea days (46.5 on the Palmetto and 11 on the R/V *Lady Lisa*), we made a record 1,368 gear deployments, including a record 848 Chevron traps, 144 short bottom longlines, and 141 CTDs. We collected information for 15,869 fish from 74 species. In addition, we collected age, reproductive and other information from 5,344 fish representing 34 species. We are preparing the annual cruise report and the Life History Data Report for submission with the MARMAP Progress Reports to NOAA in January. Data from the 2020 depletion experiment are being analyzed and preliminary results may be available next month.

The SERFS Planning Group met via conference call on December 3 to evaluate the 2021 sampling season and resulting analyses, and discussed the sampling strategy for the 2022 season.

Short Bottom Longline Survey (MARFIN): Data are QA/QC’d and analysis of the 2021 sampling efforts will begin shortly thereafter. Staff began the process of converting reconnaissance sampling to permanent stations and are reviewing deployment notes and video footage for habitat.

South Atlantic Deepwater Longline Survey (SADLS): Staff had a call with the federal partners on November 9 to discuss progress and plans for this winter. We will have a debriefing call with the collaborating fishers and talk with them about plans for next year. We are expecting to hear about the funding for 2022 soon.

Data Management: We are investigating the availability of data associated with the SERTC collection to the North Carolina Museum of Natural History. The data management team provided data to several colleagues, including Brendan Runde (NOAA), female reproduction data for more than a dozen species for spawning proportion analyses, SAFMC (via Nate Bacheler, NOAA), 2021 RFS trap sampling totals (deployments, number of fish measured, number of life history samples collected), Jennifer Potts (NOAA), fishery dependent metadata for historical cooperative research projects conducted by MARMAP with commercial fishermen; sampling effort and bias, catch bias, etc., Michael Kendrick and Daniel Sasson (SCDNR), data for samples donated by MARMAP to SERTC in anticipation of SERTC collection relocation, Scarlett Duncan (College of Charleston), associated data and images for BEAM trawls performed on provided MARMAP stations, and Shanae Allan (Florida Fish and Wildlife Commission), supplementary data and metadata appended to RFS’s SEDAR 79 mutton snapper life history data file.

The Reef Fish Survey (RFS) Data Management Team met with representatives from Kuma and SCDNR IT to review section data management security practices and classify data into security categories. The section is in good shape overall and will need only minor protocol updates to ensure data security. Section data security protocols will adhere to any agency protocols once established.

Coastal Trawl Survey (SEAMAP-SA): The Coastal Trawl Survey cast off late afternoon on November 1 and steamed to the Grand Strand area where they completed six stations on November 2. They returned on November 3 ahead of inclement weather and the remaining portion of the cruise season was canceled. Of a planned 102 stations, 74 were sampled between central Onslow Bay, NC and Ponce De Leon Inlet, FL in a total of 19 vessel days.

Preliminary review of 2021 sampling efforts yielded: 120 trawl tows executed with new trawl measurement gear deployed, 112 CTD cast executed, and almost 50k specimens processed in the field, including 1,563 fish sampled for life history (yielding 1,556 otolith pairs and 139 gonad samples). Staff are working on processing, and distributing, samples and data collected this fall and submission of sampling reports to permitting agencies. All gonad tissues collected have been embedded, sectioned, stained, and are ready to read; 76% of otoliths have been embedded; and 36% are sectioned, mounted, and ready to read. The survey's scientific collection permit for work off North Carolina in 2022 was applied for and received.

In-water sea turtle research: Analyses continued for a new manuscript focused on Kemp's ridley sea turtle population dynamics in the Gulf of Mexico, an extension of the Arendt *et al.* manuscript submitted to Endangered Species Research. The 2020 Annual Report was prepared and with co-authors and collaborators for final review prior to submission to NMFS at the end of December. Only one of three satellite transmitters attached to juvenile green sea turtles in October continues to transmit daily; data for all six green sea turtle tracks will be provided to NMFS next month for inclusion in a regional assessment of critical habitat for this species.

Characterization of shrimp fishing and ESA-species interactions: Site visits to meet with vendors in the southern part of the state were postponed several times in November-December for a variety of scheduling conflicts, but we hope to complete the first round of in-person meetings in early January 2022.

Diamondback terrapin research: One citizen-scientist report was received and involved the unfortunate incidental capture of roughly a dozen adult-sized terrapins in a tidal creek NE of the entrance to Port Royal Sound on November 4.

Coastal acoustic receivers (DJ): Annual fieldwork was concluded in October. The PI participated in a conference call and related planning discussions for sub-recipient participation in a regional SEACORRA-FACT proposal submission to actively tag fish species of interest near Spawning Special Management Zones (SSMZs) but that ultimately was not submitted.

Mitigation Reef Monitoring: The USACE reached out to let us know that bathymetry analysis of site profiles during 2021 should be completed by mid-December and thus available for inclusion in the 2021 Report that will be prepared in January 2022. Divers installed three 'beacon/sentinel' reception range monitoring transmitters on November 10, which concluded annual field operations.

Stock assessment Activities: SEDAR 78 Spanish Mackerel stock assessment: Tracey Smart (panelist) participated in an assessment webinar on November 17. The SEAMAP-SA CTS Age-0 Index was recommended for use in the assessment and the new growth models incorporating aged fish from the CTS 2011-2019 were adopted. SEDAR 79 Mutton Snapper stock assessment: Additional reproductive information was provided to the assessment team.

Ecosystem Research Section

SCECAP: The 2020 benthic samples have all been sorted and 53 out of 60 have been taxonomically identified. The 2021 benthic samples are also being processed, with 33 out of 60 samples sorted. The database is being prepared for a biennial report as well as an analysis of patterns and trends in the Port Royal Sound region, in collaboration with a stakeholder group. For the annual report, trends in weakfish, spot, and Atlantic croaker were statistically examined using two primary measures: occurrence (percent of stations where present) and abundance (density of individuals only at stations where present). Weakfish show evidence of similar levels of occurrence and abundance over the 1999-2020 survey period, spot continue to show decreasing trends in both occurrence and abundance, and Atlantic croaker show an increasing trend in occurrence paired with stable abundance where present over time.

Shorebird Habitat Projects: A potential new prey species, a ribbon worm *Cerebratulus lacteus*, was identified by Matt Walker (SCDNR Population Genetics). This could have implications for how habitat quality is assessed. This project aims to quantify shorebird (piping plover, red knot) foraging habitat requirements through the assessment of benthic prey resources, fecal DNA analysis of diet (in collaboration with the SCDNR Genetics group at the MRRI), and other geomorphic attributes. All of the benthic sample sorting and taxonomic identifications are complete for this project. Sediment sample processing is beginning. A complementary State Wildlife Grant-funded project began on October 1, 2021. This project will target benthic specimens for genetic sequencing and additions to a global database. These will benefit the former project by allowing a more complete diet analysis.

Kiawah Pond Project: With the colder conditions, sampling is being conducted monthly instead of bi-monthly. Staff completed the November 19, 2021 sampling event on schedule. Despite the turn to colder temperatures, one pond was still exhibiting low dissolved oxygen, and an accompanying fish kill was observed (menhaden). Staff completed the December 16, 2021 sampling event on schedule and no blooms were observed.

SECOORA: The Fort Johnson water quality site is actively transmitting data. The data can be viewed real-time here: <https://cdmo.baruch.sc.edu/dges/>. A series of 12 harbor-wide profiling events was completed, covering 21 stations. A

summary analysis was conducted to supplement the final report. Generally, the assessment will explore how the water quality site compares to different areas in the harbor for various parameters including salinity, temperature, and dissolved oxygen. A final report was submitted to SECOORA.

ACE Basin NERR: The unoccupied aerial vehicle (UAV)-collected imagery is being processed and staff are also working to compare the aerial imagery to the plot vegetation monitoring of the Sentinel Site at Edisto Beach State Park as part of the NERRS Science Collaborative Drone Catalyst project. The unoccupied aerial vehicle (UAV)-collected imagery of the Sentinel Site at Edisto Beach State Park as part of the NERRS Science Collaborative Drone Catalyst project has been processed: orthomosaic, Digital Surface Model (DSM), Digital Terrain Model (DTM), and NDVI rasters. The percent cover classifications using the UAV-derived orthomosaic and NDVI rasters are complete; and soon the assessment of using the NDVI raster to estimate percent cover and plant biomass will be complete.

The sondes at the sites in the ACE Basin were swapped on November 1 and December 1. The nutrient grab sampling was conducted on November 1 and 2 and again on December 1 and 2. The Fort Johnson water quality deployment tube was cleaned and sonde swapped on December 7. The 2013 water quality review and 2013 weather review is complete and the data have been authenticated by the Centralized Data Management Office (CDMO). The authenticated data can be accessed at <https://cdmo.baruch.sc.edu/dges/>.

Staff talked with another potential applicant for the Margaret A. Davidson Fellowship. Staff participated in a call with the NERR Science Collaborative team at the University of Michigan about our NERR. Staff participated in a HiTIDER project steering group call and is checking the maps created for the ACE Basin. Staff participated in the Edisto Watershed Advisory Committee meeting on December 15.

Miscellaneous: Several section staff participated in the Rock Your Presentation Training. Catharine Parker also participated in a research dive on November 10. Anna Turano was hired as a Biologist I and will work on both ERS and ACE NERR projects, starting December 17. Nicole King has left the agency to spend time with family– we are thankful for her various contributions over the five years she spent here. Paperwork to fill this Biologist I has been submitted. Staff participated in a Data Inventory and Classification interview. Staff met with Shellfish Research Section staff to discuss living shoreline manuscripts. Staff met with Brita Jessen from the SC Sea Grant Consortium to discuss potential future collaborations. Andrew Tweel participated in a steering committee meeting for the Atlantic Coastal Fish Habitat Partnership. The R/V *Muk* was loaded to the SCDNR Wildlife and Freshwater Fisheries Division to support their lottery waterfowl hunts in Santee Coastal Reserve. ERS staff met with staff from Kiawah to provide input on new water quality monitoring efforts being initiated by various Kiawah entities. Staff participated in the SC Regional Sediment Management workgroup meeting and presented a proposed research project. Staff participated in the James Island Water Quality Task Force quarterly meeting on December 16. Staff met with the Army Corps of Engineers Charleston District staff to discuss historical Tidal Creek Project data that was provided to the Corps in relation to the Charleston Wall. Joe Cowan met with CRO staff December 15 to help identify a variety of invertebrates on their habitat tiles in the boat slip.

Estuarine Finfish Research Section

Red Drum: Three ponds of juvenile red drum were harvested the week of December with ~12,000 being released in the May River. 6 and released into the Port Royal Sound. Staff have completed genetic analyses for genetic families for next year and broodstock are being moved around at MRRI to make unique genetic spawning families for 2022 production. Fish that have been utilized for 3 years are being released by sex in the boat slip.

Cobia: Staff spoke with Kevin Weng (College of William & Mary) about satellite tagging cobia in Virginia. Kevin is hoping to modify attachment methods to increase longevity of deployments which has been an issue for SCDNR and VIMS in the past. A master release table has been developed to keep track of releases to date of cobia. Juvenile fish in NWL were moved into new tank for grow out. These fish will be used for a dietary experiment examining brewery by-products as a protein substitute.

Southern Flounder: Mariculture and Inshore Fisheries teams have been working to collect flounder broodstock; a total of 74 broodstock are currently on site at MRRI and WMC – all are being transitioned to cut feed using live mud minnows. An additional 7 fish were collected with the assistance of Redfin Charters. Mason Collins, a graduate student with UNCW, purchased the charter in search of larger fish to put satellite tags on. Mariculture staff assisted with collection and the 7 undersized fish were brought back to the lab for broodstock. Inshore staff are collaborating with NCDMF project in an attempt to satellite tag mature female southern flounder prior to their fall out migration to better understand the overwintering and spawning grounds of Southern Flounder along the U.S. South Atlantic coast. NCDMF staff provided 15 satellite tags and other necessary equipment; staff were successfully able to satellite two southern flounder captured in mid-November in our electrofishing surveys. Both, based on size (>500 mm TL), were mature female flounder, who are expected to move offshore

over the winter months. Aaron Watson, Jason Broach and Justin Yost traveled to Texas the week of November 29 to tour saltwater hatcheries and learn about their southern flounder production program. They discussed a wide range of topics covering stock enhancement programs in both states and flounder production methods. Aaron Watson toured the University of Texas Marine Science Institute and met with professors to discuss red drum, flounder, RNA sequence projects and metabolomics. Flounder whole genome sequencing data have been received; data analysis to identify potential markers for screening is progressing.

Horseshoe Crab metabolomics: Fabio Casu accepted an invitation to serve on the graduate committee for K. Litzenberg (CofC GPMB) to provide guidance on the metabolomic components of the SCSG funded project (Daniel Sasson PI and student advisor).

SCSG Brewery By-product Evaluation: A large pick-up of spent grain material was picked up the week of 11/1 and has been dried, ground, and stored to use in the graded level feeding diets. All ingredients for the graded level tolerance trial have been ordered and received; feed manufacturing will begin soon. Digestibility sample collection is almost complete.

Cobia health screening tool: 24 control (uninfected) cobia in NWL5 were sampled (liver, kidney, whole body) to be compared with infected cobia previously sampled from NWL4 to look for potential differences in tissue metabolic profiles (liver, kidney, whole body) that can be used to develop a pre-screening tool prior to fish harvest and release.

SRAC Meeting: Jason Broach attended the annual SRAC meeting in Memphis on November 4-5 as one of the two South Carolina representatives.

Aquaculture 2022 meeting: Travel was approved for staff to attend the Aquaculture 2022 meeting in San Diego, CA on February 28 - March 4, 2022. Staff have begun making travel arrangements, renewing professional memberships and registering for the meeting.

"Omics in Fish Nutrition": Aaron Watson and Fabio Casu met with Dr. Vikas Kumar (University of Idaho) and Dr. Samuel Martin (University of Aberdeen, U.K.) on 12/6/2021 to discuss working on a book chapter (Elsevier) for an upcoming publication.

FACT Meeting: Justin Yost participated in the 2021 winter FACT virtual meeting.

Terrapins: 100 hatchling terrapins were released in the Charleston Harbor estuary after conclusion of a SWG project investigating initial survival and growth after incubation on 2 different nesting habitats.

Acoustic Receivers: Staff downloaded the North Edisto receiver array on 12/17. This should provide final acoustic detections for Bonnethead sharks tagged as part of the post-release mortality study as well as provide information on other acoustically tagged species inhabiting the North Edisto River.

Adult Red Drum and Shark Longline Survey: Periods 2 (120 total, 30 sets per strata, 4 strata; completed Nov. 1) and 3 (120 total, 30 sets per strata, 4 strata; completed Nov. 22) of the survey were completed with no missed sets to complete the 2021 longline season. For the season, 360 sets (all expected, 90 sets per strata, 4 strata) were made across 25 days of sampling, with 50 of those sets not containing a target species (red drum or sharks). Successful sets caught 2,036 fish, including 484 red drum (the lowest number caught since 2011) and 1,414 sharks consisting of 13 species (468 tagged). Of the 484 red drum caught, 402 were tagged and 53 were sacrificed for age and growth (in addition, samples were collected from 3 fish that were predated upon). Seventeen non-target species were caught, and some rarer species to be caught by the coastal longline survey included a dusky shark, a sand tiger shark, a spiny butterfly ray, a tarpon, a pigfish, and a red snapper.

Atlantic Menhaden: The update assessment process is starting, with the first meeting of the Technical Committee completed on 11/10 and stock assessment subcommittee on December 7. The update is shooting for a terminal year of 2021 with the assessment complete by mid-to-late summer 2022. As this is an update assessment, SCDNR will be updating the age-0 electrofishing survey and the age-1+ SEAMAP-SA Coastal Trawl Survey indices.

Black Drum: Staff continue to assist with data acquisition for the ASMFC Black Drum benchmark stock assessment. Initial data was submitted, with a follow-up request to submit aged indices by mid-January from our surveys. Staff are currently working to compile the indices.

Bonnethead Post-Release Mortality Study: Work continues on analyzing samples collected as part of the stress physiology work. The graduate student assigned to the project prepared a presentation on the research and presented at both an EFR science discussion and the MRD Conference. He will also be presenting his work at the SDAFS conference.

Dive Operations: Michelle Talericio was scheduled for 1 dive day so far, canceled due to weather

Dolphin Project: Two staff members participated in each survey day during November 10 and 18 and December 1. Inshore staff are working to cross-train personnel to participate in this collaborative project with the SC Aquarium to provide more flexibility for field days.

Eboard/FEED: We continue to work on and have compatibility issues with the Eboard. At this point, a newer computer with innate Bluetooth is most likely the solution to multiple roadblocks.

Electrofishing Survey: All five scheduled November sampling days (Winyah Bay/Waccamaw River (1st), Cooper River (2nd), Combahee River (15th), Edisto River (16th), and Ashley River (17th) were completed successfully. The December survey has commenced, with sampling in the Edisto (1st), Winyah Bay/Waccamaw River (16th), and Ashley River (17th) completed, with an additional stratum (Cooper River) scheduled for later in the month.

Estuarine Trawl Survey: The trawl survey from the Upper Ashley River to Charleston Harbor and out to Morris Island was completed on November 12 and December 16, with finfish data collected from all sampled stations. The December south trip survey, which includes sampling in St. Helena and Port Royal Sound, was completed on December 13-15.

Hammerhead Complex Stock Assessment: Over 1000 hammerhead vertebrae have been aged by 2 staff, consensus reads were completed, and staff have submitted a working paper for age and growth of Scalloped and Carolina Hammerheads for review during the assessment. Further, staff are co-authors on working papers on Great Hammerhead age and growth and maturity analyses for Scalloped and Great Hammerheads compiled for the assessment. The data workshop, with our staff leading the life history working group, scheduled and completed the week of December 13.

Largemouth Bass/Bowfin Collaboration: The Inshore Section hosted visiting scientists from Yale University and assisted with the collection of Largemouth Bass and Bowfin for taxonomic studies. On November 9, 16 Largemouth and 3 bowfin were successfully collected from the Ashley River. On November 10, 14 Largemouth Bass and 20 Bowfin were captured in the Combahee River, of which 13 Bass and 17 Bowfin were retained for their studies.

Microplastic Studies: Staff compiled the interim report for the ACE Basin finfish microplastic study and submitted on 12/10. First year efforts focused on the collection of specimens, with over 140 individuals retained for the study to date. Field collections will continue through 2022, with commencement of laboratory analysis expected during the winter of 2022.

Red Drum Stock Assessment: Final recommendations on the models appropriate for management advice were put forward by the stock assessment subcommittee. The committee recommended pursuing the stock synthesis and traffic light analysis approach for the northern population during the benchmark. For the benchmark, the committee recommended pursuing all three approaches (traffic light, stock synthesis, and custom statistical catch-at-age models) for the southern population as there was no clear winner in terms of performance. Staff are working with other members of the SAS to compile a draft assessment report, with expected distribution to the Red Drum Technical Committee in mid-January.

Reproductive Studies: New staff continue to be trained in processing techniques for histologically prepared reproductive tissues. Maeghen has been trained to embed and hand stain slides, making her fully trained in the whole histology processing procedure. Staff embedded 305 samples and all of 2020 samples have been cut. Staff have started processing 2021 samples and continue to stain 2020 samples.

Trammel Net Survey: Due to weather, only four (Ace Basin, Wando River, Winyah Bay, and Charleston Harbor) of five scheduled strata were completed for November. The remaining strata (Port Royal Sound) was added to the December schedule so that a second sampling during the quarter can be completed. December trammel net efforts have begun, with sampling completed in the ACE Basin (December 6) and Romain Harbor (December 7) strata. Remaining strata for December sampling (Port Royal Sound, Wando River, and Ashley River) are scheduled to be completed by December 22.

Crayfish Genetics: Genotyping of field samples with the new microsatellite marker panel is nearing completion. Preparations for our annual report are underway.

SCSG Cobia Sex Identification Tool: A no cost extension was prepared, submitted and approved for the project. Bioinformatic analyses are underway to identify potential markers.

SCSG Spotted Seatrout Modeling: A no cost extension was prepared, submitted and approved for the project.

Sandhills Chub: Staff met with a project collaborator in December to discuss sampling design for May and received an initial set of samples.

Carolina Heelsplitters: Staff virtually met with project collaborators in December and began testing DNA extraction and PCR of glochidia (larval samples).

Robust Redhorse: Staff are continuing to test the new eDNA markers for robust redhorse and are collaborating with UGA partners on further testing to confirm species specificity. Staff completed the genotype and data analyses of the spring's field collection of fin clips from all systems; reports have been completed and shared with collaborators. Staff worked with GADNR partners to design an eDNA study for the Ogeechee system and are assisting in preparing a proposal for GADOT to support the project. Our annual project report for the eDNA work was submitted and the range-wide genetics report is in progress.

Shortnose Sturgeon Genetic Tool Development: Staff have ordered new primers and are continuing the marker screening using a more diverse set of samples. DNA was sent off for whole genome sequencing and is in QC. A no cost extension is being prepared for the project.

Snakehead eDNA Tool Development: Staff are working on the development of an eDNA tool for detecting the presence of multiple invasive snakehead species; testing is nearly complete with optimization to follow shortly.

Striped Bass: Genotyping of the SC winter gillnet and SC broodstock samples is completed; data analyses and reports have also been completed and shared with collaborators. NCWRC samples have been archived and genotyping has begun.

Bartram's Bass: Staff are genotyping a new batch of fin clip field samples from Clemson and FWF collaborators. Staff met with project collaborators in December.

Piping Plover: The first batch was submitted for metagenomic sequencing; results have been received and preliminary data analyses verified successful sequencing. Further bioinformatic analyses are underway to identify diet items, as well as processing of the remaining samples for amplicon sequencing.

White Seabass Genetics: Staff are continuing to isolate DNA from otoliths and genotyping field samples.

Black Banded Sunfish eDNA: Staff are assisting VIMS researchers in troubleshooting their implementation of our eDNA tool in their lab; samples are being processed in our lab.

Genetics Tissue Archive: Staff are continuing to curate and accession genetics sample sets; efforts to return completed sample sets back into the HML collection room is ongoing. Staff provided grouper samples to a graduate student at Texas A&M- Corpus Christi.

SWAP Priority Species: In preparation for potential RAWA funding, staff have reviewed and provided changes recommendations for the current SWAP priority species list.

Laboratory Safety: Eyewashes, shower, and AED have been checked for the month. M. Taliencio taught two DAN CPR and First Aid classes for Inshore Fisheries staff to get them current on their certifications; 10 Inshore staff are now current with CPR and First Aid. Staff participated in an MRRI Lab Safety Meeting on November 30.

MRRI Facilities: Justin Yost has been in contact with Safe Water Inc. on purchasing two water treatment packages to replace the current chlorination process for incoming water into the lab. This will provide on-demand, cleaner water than what is currently possible.

WMC Facilities: Design of the repairs to the pumphouse are being initiated by CDDC LLC. We are currently waiting to be scheduled for an elevation survey in January with T-Square Surveying.

Data classification interviews: Staff from all sections participated in the data classification interviews.

Presentation training: Multiple staff attended the “Rock your presentation MRD style” virtual training provided by CRO.

HML: NOAA remains in Phase I occupancy (25% capacity). Fabio Casu continues to assist NIST with cryogen fills for the NMR due to NIST staff shortages.

HML Science Board: Aaron Watson and Tanya Darden attended the bi-weekly meetings.

HML Safety Meeting: Fabio Casu and Jackie Allen attended the Safety Committee meeting and reviewed the HML Chemical Hygiene Plan. HML Monthly Safety Reports were prepared and submitted for the month of November.

HML Research Committee: Aaron Watson and Daniel Farrae attended the monthly meetings; primary objectives are developing a survey to canvass HML research activities and interests in order to promote increased inter-agency and interdisciplinary collaborations. Efforts are also underway to develop an automated RFP search and broadcast tool that can benefit all HML partners.

HML F-wing Neighborhood Meeting: Aaron Watson and Matt Walker attended the first F-wing neighborhood meeting following the NOAA consolidation into HML.

MRD Conference: Staff attended both the virtual presentations and on-site activity portions of the 2021 MRD Conference.

US Aquaculture Society: Aaron Watson (USAS Vice President) attended the virtual quarterly meeting of the USAS Board on December 7.

2021 Accountability Report: Staff prepared section metrics for our annual accountability report.

SDAFS 2022 Annual Meeting: Numerous staff continue to be involved in the planning and organization of the 2022 Annual Meeting of the Southern Division of the American Fisheries Society. Early registration and abstract submission deadlines have passed, with staff efforts now focused on finalizing the budget, determining food & beverage menu options for the event, and preparing for the arrival of registrants.

College of Charleston GPMB Faculty Meeting: Multiple staff attended the Graduate Faculty Meeting on October 29.

Personnel: Interviews were completed for the Maintenance Technician II and Bio I positions at WMC. A selection was made for the WMC Biologist I position and we are waiting on approval. The General Maintenance Technician II position will have to be reposted as a qualified interested candidate has not been identified. Dr. Katherine Silliman joined the Population Genetics Team on December 2. The second Genetics Assistant Marine Scientist position closed; the applicant pool was reviewed and first round interviews have been completed. An in-person interview will be offered to the top candidate soon. Matt Young notified section staff that he is moving with his wife to Orlando the week of Thanksgiving; his last day with DNR was November 19.

Shellfish Research Section

Gulf and South Atlantic Regional Panel on Invasive Species: In collaboration with the Population Genetics team, the SC state report on aquatic invasive species was submitted to James Ballard (GSMFC) in preparation for the fall 2021 meeting of the Gulf and South Atlantic Regional Panel on Invasive Species, for which Peter Kingsley-Smith serves as Panel Chair and Michael Kendrick holds a Research Member, which was held virtually on December 1-2, 2021. Peter was re-elected as Panel Chair for a second two-year term. This month Peter also participated in a meeting of the Regional Panel Chairs (November 8,

2021, on Microsoft Teams) and attended the virtual Aquatic Nuisance Species Task Force Meeting as GSARP Chair on November 17-18, 2021.

Aquaculture 2022 meeting: Travel was approved for staff to attend the Aquaculture 2022 meeting in San Diego, CA on February 28 - March 4, 2022. Staff (Peter Kingsley-Smith and Graham Wagner) have begun making travel arrangements, renewing professional memberships and registering for the meeting. The special session on shellfish restoration to be chaired by Peter Kingsley-Smith is up to 14 presenters.

South Carolina Oyster Demographic Assessment (SCODA) survey: Staff began this annual coast-wide demographic survey, collecting triplicate samples from 15 of the 36 statewide sites and processing all the samples in the laboratory. Processed data have been entered in the project database. New Wildlife Biologist I Lauren Faulk has begun learning how to enter data in this database and has begun exploring these datasets using R programming language. Staff began reading the prepared MSX (*Haplosporidium nelsoni*) histology slides, completing over 200 of the 400 total slides.

Dingell-Johnson (WSFR) / SRFAC funding: Staff re-designed a draft permit map for a potential mariculture operation and created 2 additional shellfish permit maps. Staff provided input to SCDNR GIS Manager Tanner Arrington to help the Agency simplify and update the process for providing oyster-related map products to the public. Staff submitted their progress report on oyster mortality, mapping, restoration, and disease assessment efforts supported by their 2020-2021 funding that is under a 6-month no cost extension. Staff participated in a site visit from USFWS staff associated with DJ/WSFR funding to present some highlights on their living shoreline work supported by DJ funding on December 16, 2021.

309 monitoring of living shorelines: Staff met twice with Ecosystem Research Section (ERS) staff to discuss progress, data management, final reporting, and manuscript generation for this project. Attendees decided on an approach to finalizing the project report as well as a tentative plan to work on several peer-reviewed manuscripts using final project data. Staff prepared initial outlines for these manuscripts. Staff also discussed plans for completing the final analyses and reports for the final year of monitoring, completed in September, and have begun developing and completing some of these analyses. Staff have completed processing oyster quadrat data for the project and have begun digitizing shorelines for analyses. Staff compiled and cleaned 309 spatial datasets in preparation for geodatabase entry and analysis. Staff provided photos of living shoreline installations to Bridget Lussier (NOAA contractor) for inclusion in NOAA's Habitat Blueprint Living Shoreline Story Map.

NMFS Community-Based Restoration project: Staff provided input on a presentation for a community meeting for this project, and attended the presentation provided by Amanda Namsinh, SC Sea Grant Consortium Coastal Outreach Intern.

Unoccupied Aerial Vehicle (UAV) research: Staff completed the in-house processing of products for the NERRS Science Collaborative Grant led by the ERS, creating final orthomosaics, digital surface models, digital terrain models, and normalized difference vegetation index (NDVI) raster products; these products were shared with the overall project team. Staff completed secondary processing to explore the quality of the products. Staff met twice with members of the NSC project technical team to discuss the final product results. Staff attended a quarterly meeting of the SC Interagency Drone Users Consortium (SCiDUC).

Crab Bank monitoring project: The first round of post-placement monitoring data was collected on December 1 by staff from ERS and SRS, assisted by DNR shorebird biologists and Audubon staff. The entire newly created footprint was mapped with the UAV, 5 elevation transects were completed across the new area, and 45 sediment samples were collected for future processing. The UAV data were processed and the products were added to the MRD GIS server. The new area includes over 32 acres of ground above the mean high water line and matches the proposed project footprint well. Staff shared orthomosaic and digital surface model products from the April 2021 pre-nourishment flight and the first post-nourishment flight with Audubon, as per the project scope of work.

NOAA Marine Debris project: Environmental compliance for this project has been completed and fieldwork will now proceed. Staff met with Sarah Latshaw, NOAA's local project representative, for a routine project update meeting. Staff successfully installed the new side-scan sonar unit on the R/V Stratasfear and were able to field test this unit in the Ashley River. Opportunistically, staff were able to use the new unit to identify several snags and hazards in one of the areas routinely sampled as part of the Estuarine Trawl Survey. Staff have procured all of the necessary items for collecting and recording data for derelict crab traps in the field and have collected several traps to test the proposed methodology. Staff have begun designing a simple web survey application to assist with collected data from public citizens on the location of derelict crab traps.

Estuarine trawl survey: The Estuarine Trawl Survey (ETS), sampling 6 locations from the Upper Ashley River to Morris Island aboard the R/V Silver Crescent, was completed on November 12. The catch of white shrimp (abundance) was above average, but shrimp were smaller than average. Black gill prevalence was below average. Blue crab catch was slightly above average. ETS sampling for December was conducted in the Charleston area on December 16 and at 19 stations from the North Edisto River to Calibogue Sound (South trip) on December 13-15. Backup trawl doors, repaired 20-ft net, and spare gear were all purchased. Staff are currently investigating ways to retrieve trawl gear that has been lost in the Ashley River over the past year.

Creek trawl survey: The creek trawl survey, sampling tidal creeks in the Ashley and Wando River watersheds, was conducted on November 16 and 17 respectively, and December 15 and 16th, respectively. While long-term data has not been collected during the months of November and December, the catch of brown shrimp compared to past sampling was above average, white shrimp was slightly below average and blue crab abundances were slightly below average for November. Staff continue to QA/QC this database in preparation for the data's use in multiple funded projects. Additionally, staff are in process of procuring a new fully rigged 10-ft creek trawl net.

Statewide fall blue crab survey: Fall (October-November) sampling for blue crabs was completed on November 23. Sampling for this survey was conducted in six South Carolina estuaries: Winyah Bay, Bulls Bay, Ashley River, Dawhoo River, Ashepoo River and Whale Branch. Blue crab landings during October and November were below average, but began to increase toward the end of the sampling time frame. To best assess the dynamics of blue crab life history, the same stations were sampled during the month of December. Sampling of these estuaries was completed on December 10 and data is currently being summarized.

Salinity potting survey: In order to redirect resources towards programs that can provide better indices of blue crab abundance patterns (e.g., increased temporal coverage of tidal creek habitats), staff have discontinued this pot-based sampling of blue crabs along a salinity gradient in the Ashley River. Staff are currently analyzing the data collected during this 5-year project.

Horseshoe crab bleeding effects: Daniel Sasson met with College of Charleston co-PI Jody Beers and the graduate student that will be working on the project (Kerryanne Litzenberg) to discuss a timeline for the start of this recently-funded SC Sea Grant Consortium project scheduled to start on February 1, 2022.

Horseshoe crab spawning habitats: Daniel Sasson attended the symposium on 50 years of horseshoe crab research at the CERF virtual conference, where he presented work from this past summer. Work continues on a manuscript and analyses for the research that encompasses data collected in SC and by C-SWG collaborators in CT and NH. Staff conducted a search for eggs/embryos on Daws Island in an effort to document fall spawning by horseshoe crabs, but no eggs were found. The 2021 State Wildlife Grant award progress report on the use of salt marsh habitat by horseshoe crabs was completed and submitted. Staff met with Felicia Sanders and Janet Thibault to discuss potential collaboration in the spring on a study to relate migratory shorebird presence with horseshoe crab spawning activity.

A report on the horseshoe crab tagging efforts in 2021 was completed and submitted to the USFWS. Staff also submitted an application to continue tagging in 2022. Overall, staff tagged 429 horseshoe crabs this year.

Shrimp reproductive phenology: A project kick-off meeting was held on December 6 to discuss details of implementing the new SC Sea Grant Consortium-funded project entitled "Refining assessments of reproductive activity in white shrimp (*Penaeus setiferus*) to improve management decisions". GPMB student Lexi Mitchell (Michael Kendrick, major advisor) will be working on the project and has already participated in the October and November Estuarine Trawl Survey sampling efforts, as well as the middle day of the December "south trip". She will continue to participate in CRMS sampling as preparations are made for the beginning of the Sea Grant project in February 2022.

Shrimp climate project: Staff continue to prepare datasets and analyze time-series trends for the NERRS Science Collaborative-funded project entitled "Incorporating environmental variability into ecosystem-based management for penaeid shrimp in the southeast US". A data synthesis meeting associated with this project was held on December 1.

Blue Crab habitat (DJ funding): This project seeks to better understand juvenile blue crab habitat use and its relationship to red drum habitat use in Bulls Bay and Charleston Harbor. Sampling is scheduled to begin in January 2022. Staff continue to analyze blue crab size data from the creek trawl survey to assess the potential for tracking growth patterns.

Ecology of *Distocambarus* (burrowing crayfish): This project seeks to understand the effects of human disturbance on the ecology and conservation status of *Distocambarus* crayfishes. Staff met virtually with collaborators (USDA and West Liberty University) on December 10 to discuss contractual/subrecipient agreements and are working to schedule subsequent meetings with project collaborators to discuss additional logistical details.

Roadside habitats and *Distocambarus*: Staff are developing sampling plans for this SCDOT-funded project investigating the importance of roadside ditches to *Distocambarus* crayfishes. Sampling is expected to begin after the New Year.

Invasive crayfish: Staff have mostly completed sampling efforts in the Pee Dee basin comparing the capture success rate of electrofishing and dip netting for native and co-occurring invasive crayfish, sampling across 6 days and 27 sites so far. A project meeting with project co-PIs was held on December 7 to discuss the remaining project obligations. Staff submitted a progress report on this State Wildlife Grant-funded project. Staff have a final sampling trip scheduled for December 20.

Crayfishes of Savannah basin: Staff continue working with crayfish samples collected from the Savannah River basin to compare crayfish assemblages across physiographic provinces of SC. Staff submitted a progress report on this State Wildlife Grant-funded project.

Cloudy periwinkles: Jeff Brunson and Jeff Good surveyed the middle portion of the beach on North Island in the Winyah Bay region for the presence of cloudy periwinkles (*Littoraria nebulosa*) on November 3 to help determine the

current northern range of the species. A single specimen was collected, representing the northernmost collection to date. This specimen has been preserved and cataloged for future genetic sampling.

Juvenile portunids: Staff continue to collect juvenile portunid specimens from the Estuarine Trawl Survey to assess abundance patterns of both native and non-native species. To date, nearly 100 specimens and genetic tissue samples have been collected from the Callinectes, Arenaeus, and Achelous genera. Samples from the December south trip have been collected and will be processed for genetic tissue.

White Spot Syndrome Virus (WSSV): Staff continued setting up room F-126 in the HML building in preparation for the WSSV experimental trials.

Monarch butterflies: Staff are QA/QC'ing the +25 year monarch tagging dataset set in preparation for analyses related to the documentation of life history traits associated with South Carolina's coastal monarch butterflies. Staff continue to capture and tag monarch butterflies during their fall migration through coastal South Carolina. Staff are also continuing to document locations of aquatic milkweed (*Asclepias perennis*), an important larval host plant and adult nectar plant for monarchs and have compiled and mapped the coordinates for the aquatic milkweed sites. Staff participated in a monarch tagging workshop at Botany Bay on Dec 1 to train volunteers participating in a volunteer winter tagging project run by Olivia Bueno.

Biodiversity assessment of trawl data: Staff continue to work independently and with EFR graduate student Elizabeth Bullard to assess spatial and temporal patterns of biodiversity from the Estuarine Trawl Survey in Port Royal and St. Helena Sounds.

Southeastern Regional Taxonomic Center: Staff completed packing up the SERTC taxonomic collection in MRRI Labs 15 and 17. The collection was donated to the North Carolina Museum of Natural Sciences. Staff provided the SERTC contribution to the Joint Annual Report (JAR) for SEAMAP.

Personnel: The initial search for new Wildlife Biologist II position that will focus on horseshoe crab research was halted to revise the job description; the position has been re-posted and will close on January 7, 2022.

Peter Kingsley-Smith, Michael Kendrick, Daniel Sasson and Jeff Brunson attended the Grice Program in Marine Biology Fall faculty meeting on October 29. Staff assisted Captain Bo Von Harten in replacing the damaged winch cable on the R/V *Silver Crescent*.

Eleven members of the section registered for the 2022 Meeting of the American Fisheries Society Southern Division to be held on January 20-23 in Charleston, SC, both to present new research and to participate in continuing education training workshops (e.g., Acoustic telemetry, R statistics, and ArcGIS).

Gary Sundin met with Ben Aland, Masters student from the University of South Carolina, and has agreed to serve on his graduate advisory committee for his project involving the use of UAVs to map and classify oyster habitat.

Peter Kingsley-Smith and Michael Kendrick worked on resolving multiple co-author edits on the manuscript led by former graduate student Sarah Zuidema (Michael Kendrick, major advisor) that describes relationships between parasite communities, black gill, spatial and ontogenetic factors. The target journal for this paper will be the Journal of Shellfish Research.

Peter Kingsley-Smith completed the review of four research proposals submitted to the Northeastern Regional Aquaculture Center and participated in a panel review call on December 10, 2021.

Daniel Sasson attended the online ASMFC workshop on the Adaptive Resource Management model for horseshoe crabs. He also reviewed a paper for Aquatic Conservation: Marine and Freshwater Ecosystems. Daniel also helped to moderate the DISTEM forum on Cultural Humility that occurred on November 29 and had close to 40 participants from the Ft. Johnson community. Multiple section staff took the Driver Safety course.

Office of Fisheries Management (OFM):

Commercial Shellfish Management: Culture & Mariculture Permits and State Grounds

10 permit holders requested verification of legally required shellfish culture permit plantings for 15 permits during Nov & Dec. Through calendar year 2021, 99 permits have completing planting quotas for 2021. A total of 187,714 U.S. bushels (92,364 U.S. bushels towards quota & 95,350 in overages) of shellfish seed, green oyster shell, clam cover or approved cultch, cultivation, or equivalent has been planted (27,494 BU on state or public grounds). The assessed planting quota for the state's 103 culture permits is 93,976 U.S. bushels after taking into consideration permit cancellations, acreage reductions or increases, boundary modifications and approved variances. Shellfish seed may be planted throughout the calendar year; however, by S.C. law (§ 50-5-940), cultch must be placed between 01 May and 31 August to receive planting credit.

SPC met with two permittees affected by 5 yr reviews. One permit was renewed and one will not be automatically renewed and will be advertised for competitive application, of which the current permit holder will be included in applicant pool.

One application was received for an available area in Beaufort C-082 on Battery Creek, which had previously been restricted due to water quality. The SPC voted to recommend conditional approval to the applicant. The applicant has completed the public notice period and final permit paperwork is being drafted for permittee signature.

Mariculture/Importation

1 seed inspection was completed of approximately 50k oyster seed from UGA-Skidaway Hatchery and found the seed to pass inspection.

Site inspection and compliance check of permit M-277 was conducted on November 19th and found that some gear had been cleaned up from the last site visit but some derelict gear was still present. Permit holder was notified that day at the boat ramp of gear in water that needed to be removed. Written notice of compliance to permit conditions is next steps if gear not removed.

Henry Davega and Ben Dyar met with Bill Cox at Toogoodoo Farms to discuss upcoming importation plans for 2022.

Application information packet was sent to 2 potential applicants.

2 mariculture applications were received. One for bottom clams and another for floating cages. Staff is currently processing applications.

SCORE – South Carolina Oyster Recycling and Enhancement

Shell recycling and planting; Recreational management

Shell Recycling

In the November / December recycling period, 6,893 bushels were recycled. The public drop off locations at Fort Johnson, Sol Legare Boat Landing, Murrells Inlet, Georgetown, Carrigg's Seafood, Clothing World, City Roots, Gilligan's Seafood – Summerville, Gilligan's Seafood – Goose Creek, Gilligan's Seafood – Moncks Corner, Gilligan's Seafood – Johns Island, and McClellanville Town Hall were emptied totaling 2,103.25 bushels. The restaurant route contributed 2,709.75 bushels across 48 partner restaurants. 36 roast events were serviced in this recycling period totaling 1,066 bushels. Seven caterers contributed 1,104 bushels.

Two partners have returned to the recycling efforts. The Mainland Container Company and The Darling Oyster Bar were both partners before the COVID-19 pandemic. They were given new cans, new partner stickers and have been added to the restaurant route. Three seasonal partners returned to the recycling route in the month of November: Windjammer, Bohemian Bull, and The Washout. Two new restaurant was added to the Charleston restaurant route, Herd Provisions and Three Sirens. Herd Provisions was given new cans, partner stickers, and are expected to contribute 2-5 bushels a week. Three Sirens will have three cans with stickers by mid-January, and they expect to contribute up to ten bushels per week. Approximately 6,500 bushels of shell that has been picked through for trash by volunteers since September was moved from Zulu 2 at the Port of Charleston Veteran's Terminal to Zulu 1.

Equipment Maintenance continued this recycling period. The recycling can lift track had rust removed to make the arm movement smoother. Replacement parts for the recycling arm were ordered. Equalizer brackets were replaced on the can lift side of the new route trailer. The Tommy Gate Trailer had some electrical work done. A remote was hardwired into the trailer for ease of use. The old Tommy Gate, which worked on an outdated pulley system, was removed and the trailer is being prepared for welding work to be performed on it. A plywood bed was installed in the small 50-bushel trailer. The Deckover-150 bushel was taken to Williamson Welding to have new cross members welded on the trailer bed. The F-250 had a duplex plug installed for future use on the Restaurant Route. The F-350 went into the shop for brake line issues. The Bobcat S250 was taken to Bobcat of Charleston for overheating, and electrical issues.

"Recycle Your Shells" posters were hung at 66 retailers in Charleston, Colleton, Berkeley, Dorchester, Beaufort, Georgetown, and Jasper counties. These included seafood retailers, hardware stores, bait and tackle shops and nature outfitters. "Recycle Your Shell" tags were delivered to Lowcountry Oyster Company and will be stapled to bushel bags that are sold to their customers. A QR code was printed on the flyer that, when scanned, takes the consumer to the oyster recycling drop-off location map.

Volunteer Oyster Shell Recycling Program (Beaufort, Charleston, Greenville, Columbia)

Greenville volunteers donated 17.75 hours recycling 197.25 bushels of oysters. Beaufort volunteers donated 184.75 hours recycling 391.5 bushels of oysters. Charleston volunteers donated 63 hours recycling 416.25 bushels of oysters. A programmatic refocusing of volunteer efforts in the North Area (Northern Georgetown and Horry Counties) is in the planning stages, led by SCORE biologist Michael Hodges. Hodges, Ben Dyar and Stephen Czwartacki met with Abi Prochaska (MRD-CRO) and Maeve Snyder from the North Inlet – Winyah Bay National Estuarine Research Reserve (NERR) to discuss the planning of a workshop hosted by the NERR and SCORE targeted towards regional and municipal government, universities and non-profits in the area. The workshop is planned for late March/early April, with a second

workshop planned for later in the spring targeting restaurants and volunteers. 40 to 60 restaurants in the area are estimated to serve oysters, most of which do not already recycle with SCDNR.

Bryan Luce, a SCORE recycling volunteer, was recognized for his 2021 service to the SCDNR SCORE program. Bryan recycled a total of 475 bushels of shell during over 70 trips to Charleston area restaurants. The shell Bryan collected and his time donated is valued over \$3,000. Bryan received a letter of recognition from Acting Deputy Director for Marine Resources Blaik Keppler and an annual family fun pass to the South Carolina Aquarium donated by MRD-CRO.

Shell Planting for State Managed Grounds

Pre-planning for summer planting season has begun. Purchase requisitions will go out in January to contract planting by barge as well as purchase and transport shell.

Grant and Contract-funded Projects

Community Based Restoration

During this reporting period, SCORE hosted 16 volunteer events, who donated 206 volunteers 483 volunteer hours. Additionally, three educational events were held this reporting period, The Native Plant Symposium (30 people), See Your Salt Marsh presentation at Palmetto Scholars Academy (15 students), and a bag dissection with James Island Charter High School students (30 students).

Over 120 Manufactured Wire Reefs were constructed with the help of 8 volunteer groups including: Casual Crabbing with Tia, Charleston Waterkeeper, Freely, BoomTown, Johnson and Johnson, Bank of South Carolina, Charleston County Detention Center, and the United States Navy. Monthly manufactured wire reef fabrication events are being held with Casual Crabbing.

A total of 226.5 lbs of trash was picked from recycled oyster shell at shell picking events with Charleston Waterkeeper and SCORE listserv volunteers. One trash picking event was cancelled due to inclement weather.

A total of 923 bags were made at separate events by The Citadel, Johnson and Johnson, University School of the Lowcountry, Bank of South Carolina, Charleston County Detention Center, United States Navy, Freely, and the Association of State Democratic Chairs.

Approximately three million seeds were collected in preparation of 2022 marsh restoration projects. SCORE staff collected seeds with over 100 students from Moultrie Middle school and with 15 students from Palmetto Scholars Academy. Seeds were pulled for germination at the end of December and weekly seed planting events will be held with Charleston Waterkeeper and SCORE listserv volunteers.

Miscellaneous

Lee Taylor resigned from DNR and left his position as commercial shellfish coordinator after 11 years in the position and approximately 15 years with DNR. The rehire process has been completed and the new hire will be in the position starting January 18.

Henry Davega assisted commercial licensing with Road Shows on the November 17th.

Henry Davega and Michael Hodges assisted with interviews for new culture shellfish coordinator position.

Henry Davega assisted with monitoring end of the year plantings for 7 culture permit holders.

A proposal for funding was completed for funding opportunity through the Readiness and Environmental Protection Integration (REPI) Challenge. The proposal was developed in partnership with the SC Coastal Conservation League, PEW Charitable Trusts, TNC and SCDNR. Unfortunately we were not invited for a full proposal as they believed our project was a better fit for other funding. The reviewers greatly encouraged the team to send a proposal through the NFWF funding opportunity next year which REPI will be reviewing.

Michael Hodges, Kevin Swain, Christian Sergeant, and Holly K. Sommers attended the “Rock Your Presentation DNR Style” webinar.

Kevin Swain presented the MRD Conference. His presentation was titled “Engaging recreational angling groups in the direct creation of fish habitat”. His presentation was well received by attendees.

Michael Hodges was interviewed multiple times during this reporting period. Interviews were aired on Carolina Perspectives (Z93 Jamz, The Wolf 96.9, 95SX, Magic 107.3, 1250 WTMA), Woods and Water (94.5 WGTK The Answer, 100.7 WQXL The Point) and WMBF News in Myrtle Beach. All interviews covered the importance of oysters and recycling oyster shells.

Ben Dyar and Michael Hodges interviewed with Post and Courier on shellfish management and SCORE, respectively.

Ben Dyar submitted a “letter of support” for grant funding proposal through national NERR for regional collaboration on metrics for drone use in shellfish mapping and monitoring.

Meetings

Ben Dyar attended advisory committee meeting of Sea Grant Water Chats.

Henry Davega attended Internship Development meeting with CRO to discuss upcoming Summer internship program.

Ben Dyar attended advisory workshop for Edist Watershed Plan

Ben Dyar and Michael Hodges met with Parris Island staff to scout potential restoration sites on-base at the Parris Island Marine Recruit Depot. 4 potential sites were visited that were identified as sites of concern by Parris Island. SCDNR will be submitting a plan for each site to Parris Island.

Michael Hodges met virtually with partners involved in the NFWF Project titled “Maryville Coastal Wetland Restoration and Community Resiliency”. The project is coming to an end in February 2022. Plans are being put into place for submitting a proposal of implementation of a restoration plan for the next round of funding through the NFWF National Coastal Resilience Fund.

Ben Dyar attended a 3 day leadership skills training in Columbia.

Finfish:

STOCK AND HABITAT ENHANCEMENT PROGRAM

ARTIFICIAL REEF MANAGEMENT AND DEVELOPMENT

Artificial reef construction projects during this reporting period consisted of a 60-foot steel-hulled trawler and a load of concrete culvert, both placed on the Ten Mile Reef off Murrells Inlet. Preparation and deployment of the trawler was partially funded by CCA-SC as part of their ongoing initiative to increase artificial reef construction off the SC coast. The concrete material was placed as a memorial and was funded in part by Perry’s Bait & Tackle in Murrells Inlet. A concrete reef module containing a plaque with the inscription “In Memory of Those Lost at Sea” is on display outside the tackle shop.

Statistics:

Fisheries Statistics Section:

- Delinquent letters for late submission of October 2021 mandatory logbooks were mailed on November 17, 2021 (264 letters) to license holders for Wholesale Seafood Dealers and For-Hire Charter Vessels for October 2021 reports not yet received by the November 10th, 2021, deadline.
- Delinquent letters for late submission of November 2021 mandatory logbooks were mailed on December 17, 2021 (255 letters) to license holders for Wholesale Seafood Dealers and For-Hire Charter Vessels for November 2021 reports not yet received by the December 10th, 2021, deadline.
- The affidavit list and action list for November was provided to Law Enforcement on January 10, 2022.
- Several data requests were completed during these months for commercial data including the following: overall landing by commercial fisherman, species grouping, and specifically annual species summaries on Bluefish, Blue Crab, Spanish Mackerel, and Coastal Sharks. SCDNR charter database also had data requests including specific species of Spanish Mackerel and Bluefish for catch and effort, and a data review for landed HMS species.
- Eligibility letters for the second allocation for the CARES Act funds are still being received and the deadline was extended to ensure all those eligible can complete the required paperwork. The CARES Act funds will be distributed to the state’s commercial fishermen, wholesale seafood dealers and for-hire fishermen if they qualified for hardship during the COVID-19 pandemic. OFM staff developed an allocation plan which was approved, and fishery dependent data analysis was completed by OFM staff to those eligible to receive CARES funds.
- Staff continue to work diligently to increase electronic data collections and efficiency for both recreational for-hire and commercial data. This will improve data quality and timeliness.

Commercial Trip Interview Program

- During the month of November, OFM Port Agents intercepted 16 commercial trips and collected 306 length frequencies along with obtaining 281 associated age structures from primarily snapper grouper species. Fishing activity increased, as weather has been more favorable.
- During the month of December, OFM Port Agents intercepted 11 commercial trips and collected 229 length frequencies along with obtaining 210 associated age structures from primarily snapper grouper species. Fishing activity increased, as weather has been more favorable.

Recreational Statistics Section Summary

- In the months of November and December 2021, OFM staff completed 106 APAIS assignments resulting in 659 interviews with recreational anglers.
- Staff participated in an ACCSP Recreational Technical Committee call on November 16th.
- OFM staff sampled commercial shrimp landings to collect data and make observations on species, size, black gill occurrence and abundance.
- Additional activities during the reporting period included: working closely with commercial seafood dealers to ensure compliance with reporting, assisting the SCDNR oyster shell recycling, distributing rules & regulations books and fish rulers to coastal businesses as requested.

Coastal Reserves & Outreach (CRO):

Public Outreach

Outreach to Coastal Residents and Visitors

- The Coastal Exploration Series is a series of public programs to inspire appreciation of our state's coastal wildlife and landscapes. In November and December, 135 viewers watched the three webinars and 41 participants attended three in person events, two South Fenwick Island tours and an ACE Basin Nature walk.
- The Diversity Outreach Section focuses on the inclusion of underrepresented populations through translating and interpreting existing material, event planning and promotion to build relationships with these communities. In November and December, diversity staff participated in Marine Resources Division (MRD) Conference and assisted Stewardship staff with a tour of South Fenwick Island, part of the SCDNR Coastal Exploration Series. In coordination with other CRO staff, staff began planning the Coastal Conservation Careers grant funded by SC SeaGrant Consortium.
- Two Saltwater Family Fishing Clinics (FFC) were hosted in November. In total, 10 attendees participated and 6 certified SCDNR Family Fishing Instructors volunteered 34 hours. The Morgan Park FFC was canceled due to king tides. The other two clinics took place at the North-Inlet Winyah Bay National Estuarine Research Reserve (NERR) and at MRD.
- Two certified SCDNR Family Fishing Instructors volunteered a total of 16 hours for the "Walk the Dock" Program at Jason's Lake in Botany Bay Wildlife Management Area. A total of 14 people were helped with fish and fishing-related questions.
- Staff participated with 2 certified SCDNR Fishing Instructors for the live "Teach Me How to Surf Fish" with Grand Strand News and "Good Morning Carolinas".
- Staff presented information on volunteer programs, our certified fishing instructor class, and volunteer opportunities to the Grand Strand Saltwater Anglers Club.
- Staff met with Joint Base Charleston natural resource manager to discuss potential fishing clinics and working together as partners. Joint Base Charleston opened Pier Bravo on the Cooper River, below the saltwater line.
- Staff presented information about SCDNR's marine tagging programs virtually at the American Fisheries Society annual meeting.
- Staff discussed and demonstrated fish tagging techniques during a "Partner with the Payer" event with USFWS and fishing industry partners.
- Through the Marine Game Fish Tagging Program, 39 active participants tagged and released 443 fish, primarily red drum, flounder, black drum, and sheepshead. Additionally, 94 anglers reported 95 recaptures. Of these recaptures, 89% were re-released. Staff processed the tagging and recapture data, and rewards were mailed to anglers who reported recapture(s).

Media and Communications

- Staff spent three staff days in the field with the SCDNR archeology team at Botany Bay Heritage Preserve (HP)/Wildlife Management Area (WMA) to exchange information about the property's proposed interpretive signage.
- Staff worked with executive leadership and OMO to develop a Powerpoint and one-pager outlining the agency's FY2023 budget request for various legislative audiences.
- Staff published one news release: "SCDNR mourns loss of Deputy Director Phil Maier"
- Staff provided design, multimedia, and writing/editing services for 10 projects, including additional revisions of Sea Science publications.
- In November, staff responded to 9 media inquiries; in December, staff responded to 15 media inquiries.

- In November, 95 clips in print and digital media referenced SCDNR Marine Division programs or staff. In December, 165 clips referenced MRD programs or staff on topics ranging from oyster shell recycling to Morgan Island.

Students and Teachers

- The Carolina Coastal Discovery Programs focus on conservation of the state's coastal natural resources, as well as relevant science standards. Aboard the Educational Vessel (E/V) *Discovery*, and on land, staff provide science investigations using field sampling techniques and equipment that echo current research methods. In November and December, 676 children participated in field studies.
- The education coordinator is participating on the Diversity and Inclusion in Science, Technology, Engineering, and Math (DISTEM) board which is a collaboration between the organizations at Fort Johnson to create a welcoming space for all staff and visitors on campus.
- November and December was Spartina marsh grass seed collection time for the From Seeds to Shoreline Project. Eleven teachers came to a training session and collected seeds to start the program with their students. Groups of students will grow marsh grass in school throughout the winter and spring to plant in eroded areas to promote marsh health.

Support for Coastal Communities and Partners

- The Boating Infrastructure Grant (BIG) Program is a US Fish and Wildlife Service program providing competitive funding for marina infrastructure to serve large transient recreational boats and provides access to recreational, historic and natural resources. Projects are considered public/private partnerships between the SCDNR, the US Fish and Wildlife Service, and the marina. USFWS recently fully obligated projects at Dolphin Cove Marina on the Ashley River and Seabreeze Marina on the Charleston Peninsula. SCDNR is completing the Subrecipient Agreement process with the subrecipients which will allow the projects to commence construction.
- The Clean Vessel Act (CVA) provides USFWS funding to install and operate marine sanitary pumpout programs as outlined in the US Clean Water Act to divert overboard discharges and protect water quality. For this fiscal year, the Clean Marina Program is working with 24 marinas and partners to provide pumpout opportunities to boaters, which continues the trend in recent years of increased participation in the program. CVA staff traveled to inland marinas, conducting outreach to promote awareness about CVA programmatic goals and available funding opportunities. During this time, a total of 13 inland marinas were visited across four freshwater bodies: Lake Keowee, Lake Hartwell, Lake Marion, and Lake Thurmond.
- Stewardship staff continues to provide support and consultation on Motus Wildlife Tracking Systems for various federal, state and private partners. In October, SCDNR assisted the Nemours Foundation, Harbor Island, Fort Moultrie, and Port Royal Sound Maritime Center, Spring Island Trust, Edisto Beach State Park, Audubon, Daufuskie Island, and Fripp Island with the construction, maintenance and data collection of Motus towers.
- The Coastal Training Program (CTP) connects coastal decision makers with scientific information about water quality, habitat conservation, community resilience and public access. In November and December, the CTP attended field trips to connect with community members and select groundwater monitoring well locations for a NOAA Adaptation Science grant looking at decision pathways of stakeholders in Beaufort county in regard to sea level rise, partnering with SC SeaGrant, CofC, and USC.
- CTP hosted two process skills workshops in November; Rock Your Presentation MRD Style for MRD staff to improve presentation creation and design skills (co-instructed with the Stewardship Coordinator), and Economic Guidance for Coastal Management Professionals (a NOAA training co-hosted with North Inlet - Winyah Bay NERR) for SC professionals to gain basic understanding of economic valuation for their coastal projects.
- CTP provided Coastal Lifestyle for Clean Water, a continuing education course for real estate agents who are members of the Charleston Trident Association of Realtors.
- CTP continued working with Clemson University on the Edisto Watershed Based Plan, planning and hosting a stakeholder workshop to gain feedback on best management practices suggested to improve bacteria and sediment impairments on Edisto Island and Edisto Beach.

Coastal Reserves

- Stewardship staff assisted the NOAA Margaret A. Davidson Fellow's project to characterize visitor use in the ACE Basin to better understand impacts on natural resources.
- ACE Basin NERR staff continue to maintain South Fenwick Island to provide habitat management and public access opportunities. Trails and fields were mowed, sprayed and cleared of invasive species.
- Staff continue to monitor Chinese Tallow within the St. Helena Sound WMA and South Fenwick Island WMA. NERR staff had a workday of hack-and-squirting Chinese Tallow in one of the marked ephemeral wetlands.

- In November, Capers Island saw 407 campers on 46 permits. In December there were 138 campers on 30 permits. The pre-bid site visit for the docks on capers occurred on Dec 14th and bids are due in January. High tides have cut access to the dyke trail.
- The McCaskill trail bridge on Capers Island was rebuilt in Nov/Dec, see the before, during, and after pictures below.







- In November, 3,805 people visited Botany Bay Plantation HP/WMA. In December there were 5,054 visitors. From January to December the total number of visitors was 105,263, which is a record. Volunteers provided 480 hours of service in November and 426 hours in December. During this time they provided public outreach and performed maintenance activities at the office building and property. The property was closed to general access for dove and deer hunts on several days (numbers are reported in the Wildlife and Freshwater Fisheries section).

Protected Species

- Five sea turtle stranding events were reported; three green and two loggerheads. No incidents reported associated with hopper dredging in Charleston Shipping channel.
- Coordinator worked with Law Enforcement on a sea turtle nest case which resulted in the issuance of fines and community service for three individuals.
- Staff members continue to provide 24 hour on-call coverage of sea turtle hotline during the week, weekends and on holidays, as well as, picking up live turtles and carcasses.
- Biologists and hourly employees flew with Law Enforcement on an aerial survey.
- Biologists tagged two sea turtles in preparation for release.
- Conducted in person meeting with Nesting Team Leaders for needs assessment and review of 2021 season ~20 attendance.
- Prepared and hosted virtual end of season meeting for interested volunteers ~130 attendees.
- Coordinator continues to work on a long term QA/QC and data entry project -paper historical nesting data entry into the database as time allows. Staff presented end of season volunteer awards to team leaders in person.
- Coordinator attended the SC Beach Preservation Technical Advisory Committee meeting.
- Coordinator and Biologist attended webinar and tested the new Federal US Southeast STSSN database to provide feedback. Staff conducted end of season quality control and assurance of 2021 season survey data - over 11,000 lines of data to review. In addition to over 3,500 survey log reports.
- Staff attended trainings: MRD Conference online and associated in-person workshops, NOAA Leatherback Webinar, NOAA Sea Turtles and Fish in a Warming Climate, LEAP seminar, Excel: Visualize your data webinar, Storytelling with Data webinar, NOAA Economic Guidance for Coastal Management Professionals, SCDNR Rock Your Presentation training, NOAA STSSN Gear Characterization Meeting.
- Staff assisted Clearwater Aquarium and USFWS with manatee response in the Charleston area.
- Co-authored publication: *One beach amongst many: how weak fidelity to a focal nesting site can bias demographic rates in marine turtles.* 2022. JB Pfaller, SM Weaver, KL Williams, MG Dodd, MH Godfrey, DB Griffin, SM Pate, CG Glen, CJ Nairn, BM Shamblin. *Marine Biology* 169:8.
- State Eagle Biologist responded to general calls regarding building around nests during active nesting season and conducted two site visits to a James Island nest for disturbance. Worked with USFWS Law Enforcement and wrote a letter of declaration for SC US Attorney's Office for harassment case on James Island resulting in positive outcome for eagles as construction halted.

WILDLIFE AND FRESHWATER FISHERIES

ASSISTANT DEPUTY DIRECTOR'S OFFICE

November

Completed administrative and budgetary tasks. Prepared response to request to use DNR property in Berkeley County. Prepared letter of intent for one potential property purchase in Lancaster County and another in Sumer/Lee Counties. Obtained legislative delegation approval to dedicate property donation in Georgetown County and received title work from associate counsel. Prepared summaries of two real estate matters for consideration by DNR Board. Spoke to surveyor regarding completion of boundary marking at Savannah River Bluffs HP. Obtained plat of two tracts in Oconee County for land exchange. Received Phase I environmental assessment of property donation in Lancaster County. Contacted review appraiser concerning revisions to yellow book appraisal concerning property purchase in Greenville County. Received appraisal of property for sale in Horry County. Examined two tracts for sale in Greenville County. Spoke to landowner about tract for sale in Aiken County. Provided information to Lowcountry Land Trust about recent property purchases by DNR. Continued work on 11 other real estate projects. Engaged in conversations with Naturaland Trust, Lowcountry Land Trust, Open Space Institute, The Conservation Fund, and The Nature Conservancy about potential/ongoing property acquisitions. Consulted and worked with staff on matters concerning Forest Legacy. Sent out notice regarding annual conservation easement monitoring reports. Meetings and events attended: Heritage Trust Advisory Board meeting, DNR Board meeting, Wildlife Regions 1 and 3 meeting, Adaptive Management Training, Habitat Protection Committee meeting, meeting on development of internal property database, meeting on commercial use permits, and meeting on construction of new DNR building.

December

Completed administrative and budgetary tasks. Reviewed request for potential trade of conservation easement properties in Charleston County. Reviewed closing documents for property donation at Yawkey Center and completed transaction. Prepared and submitted documentation to Department of Administration to establish property acquisition in Georgetown County. Prepared letter of amicable agreement with seller concerning property purchase in Greenville County. Obtained revised appraisal and appraisal review of Greenville property and forwarded to USFS for second review. Requested changes to plat showing two tracts in Oconee County for land exchange. Contracted for asbestos containing materials investigation of house at Belfast WMA. Spoke to property owner in Horry County and made verbal agreement to purchase tract. Continued work on 13 other real estate projects. Engaged in conversations with Naturaland Trust, Lowcountry Land Trust, Open Space Institute, The Conservation Fund, and The Nature Conservancy about potential/ongoing property acquisitions. Consulted and worked with staff on matters concerning Forest Legacy. Began receiving annual conservation easement monitoring reports from staff. Meetings and events attended: Joint Bond Review Committee meeting, State Fiscal Accountability Authority meeting, SC Conservation Bank meeting, conference call on access issue at Great Pee Dee HP, meeting with Forestry Commission, SCPRT and conservation groups regarding potential projects, and presentation on property acquisitions to MRD.

SWG/FOREST LEGACY COORDINATOR

State Wildlife Action Plan (SWAP) Implementation & State Wildlife Grants (SWG) Coordination [Anna Smith]

November

A Golden Eagle and a hawk mount were procured from the Greenville Zoo via Tegeler and USFWS permits finalized with the Service and SCDNR Law Enforcement. A Heritage Trust database tutorial video was previewed and comments sent to Lemeris. A C-SWG interim report was read and submitted to the USFWS ahead of schedule. Corrections to the match on the Coordinator's SWG grant were made and submitted to the USFWS. An extension was filed for a current SWG grant with MRD. SCDNR is part of 3 successful FY21 C-SWG applications. Smith completed the acceptance packets for these grants. The Steering Committee for the VTECH Wildlife Viewing Study met virtually on 11/5/21 to discuss progress of the project for which SCDNR contributed grant funds. Smith investigated the Farm Bill's Healthy Forest Reserve Program for private landowners with T&E species. There may be a way to integrate this program with our stalled CCAA for Longleaf Pine Communities. Smith participated in a conference call with staff from Riverbanks Botanical Gardens, USFWS, and SCDOT about the replanting of Schweinitz's sunflowers on the roadside now that work has been completed by SCDOT. Riverbanks was holding the plants for repatriation. A Recovery Lands Grant application for Slater was completed for a reverted funds RFP. We were told we would receive funding but then the offer was withdrawn by the USFWS. Follow-up discussions are

being had. Upcoming interim and final report reminders were sent to all SWG/C-SWG/WNS grant PIs. Updated templates and forms for the grants tab on the Intranet were sent to Addison in Grants and the Webmaster for uploading. A potential eBird data mining project is being discussed for funding. The new listing by the USFWS of the Atlantic Pigtoe (extirpated in SC?) was reviewed.

December

The FY22 C-SWG call for proposals was sent to SCDNR staff biologists and partners. A RAWA fact sheet was prepared for Sen. Graham's office ahead of the Senate hearing. Extension #2 was filed for the FY18 Green Salamander SWG grant. An extension was also filed for the FY20 C-SWG Shortnose Sturgeon grant. A total of 12 interim or final reports were read, edited, and submitted to the USFWS by deadline. In addition, all 3 C-SWG packages were submitted. Smith met with Dukes at the Columbia office on 12/14/21 about urban landscapes and the Taylor (Congaree Creek) tracts. A descriptive list of MRD shovel-ready RAWA projects was sent to AFWA as part of their request for aquatic wish list items. The NFWF 5-Star and Urban Waters Restoration Grant program, NFWF Longleaf Landscape Stewardship Fund, and NERR/CZM Funds were investigated.

Forest Legacy Program (FLP) Coordination [Anna Smith]

November

Smith was a member of the National Review Panel this year and as such, read and scored 45 projects. The National Meeting was held virtually from 11/17/21-11/18/21 (10am-6pm). A corrected FY19 Admin Grant interim report showing the newest SCEIS receipts was submitted to the USFS. Smith checked in with Mr. Mead on the status of his easement now that one of the owners has passed away from COVID-19. The Will is being reviewed and new management, subdivisions, etc. are being discussed. The estate is currently in limbo.

December

The FLP Acquisition Grant annual report for the Pacolet-Milliken Tract was completed and submitted to the USFS. Smith took the Program Manager's FLP survey on 12/15/21. A two-day trip to Jasper and Hampton Counties was conducted on 12/16/21-12/17/21. Places visited included the Webb Center Gopher Frog wetland restoration sites (3), Tillman HP, the new Slater tracts, and a site visit to Buckfield Plantation as a possible future FLP grant. A meeting was had with the Baxter family about a possible purchase of a portion of their Tarboro LLC property holdings. The Coordinator and Jack McGee had a final debriefing call on 12/20/21 before his retirement.

Field Activities / Habitat Protection Committee (HPC) / Other Grants / USFWS Liaison [Anna Smith]

November

All results of SCDNR staff tracking of time and projects on military bases was completed, compiled, and forwarded to the USFWS in fulfillment of Sikes Act requirements. The SCDNR OEP monthly report was read. A preliminary assessment of Camp Old Indian was conducted and TNC was contacted about the timeline and funding options. An evaluation for the BSA tracts was completed for the HPC. Smith conferenced with the SCCB about project ideas and upcoming funding requests. Smith and staff from OSI discussed appropriate protections for new NCWC properties through restrictive language required in deeds, SC laws/statutes, etc.

December

A meeting with OSI, SCCB, Mike McShane, and Charles Lane was had at OSI headquarters in Charleston, SC on 12/6/21 to discuss Buckfield Plantation. Smith received a request from VADWR for a template for NCWC interim reporting. Smith spoke with TCF staff about the Fort Lawn property.

Summary of meetings attended / conference calls / webinars watched / continuing ed programs or workshops:

- Steering Committee for the VTECH Wildlife Viewing Study (11/5/21)
- WDPM Bi-Monthly call with special presentation by Dr. Jennifer Sevin (Univ. of Richmond) on the collaborative to combat the illegal trade in turtles (11/10/21)
- TWS Talks: "The Challenges of Using Camera Trapping for Abundance Estimation of Invasive Herpetofauna" (11/11/21)
- Monthly SASMI Steering Committee meeting (11/16/21)
- HPC meeting (11/23/21)
- Watched RAWA Senate Hearing live (12/8/21)

Natural Heritage – GIS Manager/Analyst – December 2021 [Joe Lemeris]

Meetings:

November

- 11/1 – Lemeris and James met with Esri staff to discuss progress made on modelling report output. Continued work/refinements will continue.
- 11/1 – Lemeris presented an overview of the Natural Heritage Program/tools available to environmental professionals to HDR Inc. users.
- 11/2 – Lemeris met with Meagan Roy to discuss setting up on Heritage GIS portal, crayfish survey forms, etc.
- 11/2, 11/17 – Lemeris met with Esri technical support several times to discuss an issue which eventually was logged as a bug in their software. A workaround to the issue was discovered/implemented.
- 11/3 – Lemeris attended the monthly US Section Council (NatureServe) meeting, which discussed legislative updates, Explorer Pro updates, staffing updates, marketing/communications updates, etc.
- 11/4 – Lemeris/James attended the Heritage Trust Advisory Board Meeting at Parker Annex.
- 11/5 – Lemeris, Arrington, and Thachik met with Esri EAP staff for a bi-weekly call to discuss project status/updates, introduce new ideas/questions, technology, and planning.
- 11/8, 11/16 – Lemeris and Bradley attended partners check-in meetings hosted by the UGA NASA DEVELOP team, which developed a suitability model for Venus Flytrap in NC and SC. A final presentation/dataset will be provided to partners as a final product.
- 11/17 – Lemeris attended a network topic call hosted by NatureServe, focusing on the relationship between NatureServe and iNaturalist. The meeting focused on how the two organizations can mutually benefit from working together.
- 11/18 – Lemeris, Arrington, and Thachik met with Esri EAP staff for a bi-weekly call to discuss project status/updates, introduce new ideas/questions, technology, and planning.
- 11/23 – Lemeris presented an updated workflow for submitting and evaluating properties through the Habitat Protection Committee process to HPC members. This workflow is now available for use by HPC members/other SCDNR staff to submit.

December

- 12/1 – Lemeris attended NatureServe's US Section Council meeting (monthly), which discussed various updates to the BLD (network-wide database sharing initiatives), government relations, planning for BWB/CMT events, Explorer Pro improvements, network relations action planning, and updates to network communications strategies.
- 12/2 – Lemeris and Arrington met with archaeology staff to discuss needs for a potential fish collection survey dataset. Lemeris connected staff with other fisheries/MRD staff who may have additional input.
- 12/2 – Lemeris, James and Arrington met with the Esri AP team to walk through processes to complete integrating image server/modelling workflows.
- 12/3 – Lemeris, Arrington, James and Thachik met with the Esri AP team for a biweekly check-in meeting to discuss project status updates, new technology releases/opportunities, trainings, etc.
- 12/6 – Lemeris met with Kindel to discuss best practices for accessing Survey123 datasets for analysis.
- 12/7 – Lemeris attended NatureServe's quarterly Habitat Modeling in the Network webinar series and presented a 5-minute update on SC's progress on modeling initiatives using Esri infrastructure.
- 12/7 – Lemeris met with the Esri AP team to check in on modelling reporting updates to discuss additional changes to model report output format.
- 12/8 – Lemeris participated in a discussion with James, Arrington, and SCCB/SC Forestry Association staff about potential datasets for inclusion into the Conservation Bank's priority model.
- 12/9 – Lemeris and James attended a monthly SC NRCS/FWS/SCDNR training webinar focusing on sturgeon species in SC.
- 12/10 – Lemeris attended a NatureServe Southeastern Regional coordinator meeting to discuss how to get updated with G-ranking in the region, data sharing across programs, range mapping/habitat modeling, and field data collection methods.
- 12/13 – Lemeris, James and Arrington met with the Esri AP team to walk through final processes to complete integrating image server/modeling workflows.

Project Progress Updates:

November

- Esri Enterprise Advantage Program Update:
 - Arrington and team are complete in compiling primary GIS data from across WFF to incorporate into a managed lands database and have ported the data into a new Enterprise geodatabase for production use. Focus will shift to developing a land management application for internal use/tracking activities across SCDNR properties.
 - Distribution Modeling Workflows: In October, SCDNR's ArcGIS Image Server license was successfully installed. In November Lemeris and Arrington met with Esri staff to walk through configuration for specific workflows, with more follow-up meetings planned in December.
 - NatureServe has agreed to allow SC to create a local copy of their model review tool for implementation of SC model reviews, sharing with partners, etc. NatureServe has provided documentation, though a meeting isn't likely in the near future due to scheduling difficulties.
 - Esri has made progress in creating a tool to automatically generate a modeling validation/statistics report with any generated model output. Further configuration will be completed in December.
 - After a successful 60-day trial evaluation of ArcGIS Tracker, the Heritage Program purchased 5 term licenses for Tracker to be added to our annual maintenance contract. These licenses will be available for use by our Botany Program as well as other non-game projects.
- Lemeris continued to add/adjust GIS workflows for ease of data management on the Natural Heritage database.
- Lemeris configured a complete workflow for submitting, evaluating, and visiting properties with potential for acquisition through SCDNR's Habitat Protection Committee. Beta testing by the committee and chair will take place in November/December.
- **The Natural Heritage Hub Site has been viewed 660 times in November (15,650 all time since April 2020), and 9 new users (total of 358 since April 2020)** from state/federal/local agencies, land trusts, and private environmental consultants have requested/gained access to review species data and generate reports.
- **110 of 521** users accessed the Heritage Trust GIS Portal in November, compared with 106 in October.
- **Over 660** new records were added to the database in November, including a mix of herp, plant, mussel, and crayfish records.
- **78 species reviews were completed automatically** using the new species reviewer tool for environmental professionals in November, compared with 99 in October.
- Lemeris assisted various staff in the development of maps for projects, informational documentation, advisory board materials, etc.
- Turner (hourly intern) has been going through all scanned source EO documents and ensuring all are legible, rescanning if needed, as well as drafting Survey123 forms as requested.

December

- Esri Enterprise Advantage Program Update:
 - Arrington and team are complete in compiling primary GIS data from across WFF to incorporate into a managed lands database and have ported the data into a new Enterprise geodatabase for production use. Focus will shift to developing a land management application for internal use/tracking activities across SCDNR properties in the new year.
 - Distribution Modelling Workflows: In October, SCDNR's ArcGIS Image Server license was successfully installed. In December Lemeris and Arrington met with Esri staff to walk through configuration for specific workflows. In January Lemeris will continue to test these workflows and begin discussions on how to develop a model review tool for users to interact with model outputs.
 - NatureServe has agreed to allow SC to create a local copy of their model review tool for implementation of SC model reviews, sharing with partners, etc. NatureServe has provided documentation and have shared with the Esri AP team for support.
 - Esri has made progress in creating a tool to automatically generate a modeling validation/statistics report with any generated model output. Additional configuration/finalization will be completed in the coming months.

- **The Natural Heritage Hub Site has been viewed 450 times in December (16,100 all time since April 2020), and 3 new users (total of 361 since April 2020)** from state/federal/local agencies, land trusts, and private environmental consultants have requested/gained access to review species data and generate reports.
- **101 of 523** users accessed the Heritage Trust GIS Portal in December, compared with 110 in November.
- **117** new records were added to the database in December, including a mix of herp and plant records.
- **133 species reviews were completed automatically** using the new species reviewer tool for environmental professionals in December, compared with 78 in November.
- Lemeris assisted various staff in the development of maps for projects, informational documentation, advisory board materials, etc.
- Turner (hourly intern) has been going through all scanned source EO documents and ensuring all are legible with rescanning if needed, as well as drafting Survey123 forms and completing data entry as requested.

SCDNR/SCCB GIS Analyst [Megan James]

November

- Meetings:
 - 11/1: Met with the SC Conservation Bank to discuss their new application process
 - 11/1: Met with ESRI staff (Gregory Brunner and Eliza Gutierrez-Dewar) to discuss the output report created for species distribution models
 - 11/4: Attended the Heritage Trust Advisory Meeting
 - 11/12: Met with Melissa Strickland (with The Nature Conservancy) to talk about her protected lands dataset and how the Conservation Bank can use and enhance her data
 - 11/18: Attended the SECAS third Thursday webinar where they discussed updates to the Southeast Blueprint and SECAS Goal Report
 - 11/29: Met with the SC Conservation Bank to talk about the application she created (discussed below) and prepare for an upcoming board meeting Project Updates/Ongoing Tasks
- Trainings:
 - Attended NatureServe's Core Methodology Training on November 1, 3, 4, and 8 to learn about the standards, methods, and tools that are used by members of the NatureServe Network. The training provided background on network data, taxonomic concepts, and classifications, and ranking of element occurrences which are all things used and done by the Natural Heritage Program.
 - 11/9: Attended the SCDNR GIS training where Robby Morrow discussed using GIS in the field
- Project Updates/Ongoing Tasks:
 - SCDNR
 - Re-recorded the previously made educational video describing how to view and use Heritage data
 - Finished creating a report for the Habitat Protection Committee's property review workflow Joe Lemeris developed
 - Analyzed parcels in Spartanburg, Cherokee, Laurens, and Union to find contiguous parcels of 1,000 acres or more owned by the same person. Properties were then added to the dashboard Tanner Arrington created for the Habitat Protection Committee
 - Reformatted wading bird data to include in the Heritage database
 - Created a survey application for the Bat Biologist, Kindel, to use as her team surveys culverts in December and January
 - SCCB
 - Created an ArcGIS Dashboard that includes a map of Conservation Bank funded properties and charts/lists of associated information. It can be filtered by using dropdowns, selecting properties, or zooming in and out. This application makes it easier to view and analyze property data.
 - Scored previously funded properties using the 2019 priority model to compare the difference between past and new scoring procedures

December

Meetings:

- 12/1: Attended the SCCB Board meeting in Camden where she was introduced for the first time
 - 12/6: Presented at the Digital Mapping Techniques workshop (to 250 people) on the work she completed while at the Geological Survey regarding the FGDC stylx file
 - 12/7: Met with Charles Lane and Conservation Bank staff to discuss updates to the priority model
 - 12/7: Met with representatives from The Nature Conservancy to discuss how the Conservation Bank can exchange and use each other's data
 - 12/8: Met with Cam Crawford, John Quinn, and Guy Sabin to discuss the work done on discovering important lands to conserve for working forests in South Carolina, and how this data will be implemented into the SCCB priority model
 - 12/13: Met with the SCCB to discuss upcoming board meetings, land trust network meetings, and the Technical Advisory Committee meeting
- Trainings:
 - 12/9: Attended a threatened and endangered species talk on sturgeon in the Carolinas
- Project Updates/Ongoing Tasks:
 - SCDNR
 - Started to create distribution models for Gopher Tortoises
 - Began to assign conservation ranks to unranked species that we track in the Heritage Program's Database
 - Reformatted Bird Banding Laboratory data to include in the Heritage database
 - Updated the threatened and endangered species layer for use in the Conservation Bank's priority model
 - Ran reports to find species of concern in the Charleston area for the Geographical Response Strategy (GRS Booming Strategy) Workgroup
 - SCCB
 - Acquired most of the data needed to start updating the priority model
 - Located locations of all funded properties to include in the dashboard mentioned above, and sent to TNC for their protected lands database

FRESHWATER FISHERIES

Highlights

November

Helicopter stocking was conducted in cooperation with the USFS for trout in backcountry and delayed harvest sections of Chattooga and Chauga Rivers.

Trap nets were set for four nights in Lake Wateree to sample crappie population dynamics. Otoliths were removed for an age/growth study.

Standardized boat electrofishing was conducted at 8 sites in the Lower Saluda River to assess the trout population.

Staff coordinated with personnel from Cheraw hatchery to collect brood LMB from Cooper River.

Staff continued data management for the C-SWG Bartram's Redeye Bass conservation study, focusing on distribution, genetic evaluation, and occupancy modeling for this species.

Staff assisted Cheraw Hatchery with the harvest and distribution of Redear Sunfish, which were stocked at Lake Oak Grove.

Diadromous Fish Project efforts this month included: downloading acoustic receivers and manual tracking in Charleston Harbor, Lake Marion, the Rediversion and Diversion Canals, and the Congaree, Wateree, Cooper, Santee, Edisto, Waccamaw, Great Pee Dee, and Savannah Rivers; gillnetting for Atlantic and shortnose sturgeon in the Great Pee Dee, Waccamaw, Black, Sampit, Edisto, and Savannah Rivers; monitoring elver ingress at Goose Creek Reservoir and St. Stephen Dam

Staff met with Joe Lemeris and Tanner Arrington to discuss buffer analysis for a proposed Carolina Heel Splitter Safe Harbor Agreement.

Staff adjusted water level at Lake Johnson and installed new access trail signs around Lake Ashwood. Tree removal was also performed on the Lake Long, Mountain Lakes 1 and 2, Lake Oliphant, and the Jonesville Reservoir dams.

Staff met with NC Wildlife Commission to discuss Aquatic Education Certified Fishing Instructor Program.

December

Staff conferenced with GADNR biologists discussing Striped Bass and Hybrid Striped Bass stocking in Lake Hartwell.

Trap net sampling for crappie was conducted for two nights on Lake Wateree. Otoliths were pulled for future age/growth analysis.

Region 3 staff with assistance from Region 1 and Walhalla Hatchery staff 15,000 catchable rainbow trout were fin-clipped at the Walhalla Hatchery on December 8th. The adipose fin clips will allow us to differentiate catchable stocked rainbow trout in the Lower Saluda River from those that are stocked as fingerlings.

Staff met virtually with the Santee Cooper FERC relicensing RMT to discuss various task plans related to projects to be completed upon issuance of a new license. Tasks include projects related to water quality/flow changes in Santee River, Sturgeon spawning/migration, American Eel surveys, and Shad/Herring surveys.

Staff met with collaborators from Clemson University and the SCDNR Population Genetics Lab to discuss progress and next steps for the C-SWG Bartram's Redeye Bass conservation study, focusing on distribution, genetic evaluation, and occupancy modeling for this species.

Two (2) Dennis Wildlife Center channel catfish ponds were harvested: 756 fish were stocked in three different ponds at Draper WMA, 300 fish were stocked at Lake City Lake, and the remaining 4,850 fish were delivered to Cohen Campbell Hatchery to be used for next year's production.

Diadromous Fish Project efforts this month included: downloading acoustic receivers and manual tracking in Charleston Harbor, Lake Marion, the Rediversion and Diversion Canals, and the Congaree, Wateree, Cooper, Santee, Edisto, Waccamaw, Great Pee Dee, and Savannah Rivers; gillnetting for Atlantic and shortnose sturgeon in the Great Pee Dee, Waccamaw, Black, Sampit, Edisto, and Savannah Rivers; monitoring elver ingress at Goose Creek Reservoir and St. Stephen Dam

Staff met with USFWS Morgan Wolf to confirm Carolina Heelsplitter surveys for the 2022 field season.

Staff participated in a planning meeting with BASS for the upcoming Bassmaster Classic.

Coordination (Chief's Office)

November

Staff participated in the Leadership Development Conference

Staff participated in the annual Santee Accord Board Meeting.

Staff met with the Freshwater Mussel Program to discuss the Flat Creek Study

Staff participated in a virtual meeting with the USFWS Regional Federal Aid staff and southeastern state federal aid coordinators.

Staff participated in a meeting of the Santee Accord Technical Committee

Staff participated in interviews for the Spring Stevens Hatchery Manager position

December

Staff participate in a planning and coordination meeting with BASS staff in preparation for the upcoming Bassmaster Classic in Greenville and Anderson Counties.

Staff participated in a meeting with GADNR staff to review the status of on going striped bass studies in Lake Hartwell.

Staff met virtually with the staff from the USFWS and Kingdom Filmworks/Shine United to finalize plans for a Partner with a Payer event in South Carolina.

Met virtually with our Adaptive Management Focus Group to review activities.

Staff conducted a monthly meeting by phone of the Section Coordinators to discuss project activities and provide administrative updates.

Staff hosted, in collaboration with MRD staff, the USFWS, leadership of the American Sportfishing Association, Z-Man Fishing Products, Marolina Outdoor and Shimano Fishing for a two day Partner with a Payer event in Charleston. Activities included a tour of Z-Man Fishing Products, an evening social, tour of Clean Vessel Act and Boating Infrastructure Grant funded facilities at the Charleston Marina, tour and review of Sport Fish Restoration

(SFR) funded projects at MRD and a visit to a SFR funded boating access facility on James Island. These event are intended to facilitate communications between State and Federal agencies and the fishing and boating industry and to demonstrate to the industry home excise taxes that they pay are used to support recreational fishing and boating activities.

Region 1

November

Helicopter stocking was conducted in cooperation with the USFS for trout in backcountry and delayed harvest sections of Chattooga and Chauga Rivers.

Staff conducted trap net surveys for BLC on Lake Greenwood.

Staff conducted overnight gill net sampling for STB/SWH on Lakes Thurmond and Hartwell.

Conducted overnight gill net sampling for Brown Trout on Lake Jocassee.

Collected fin clips from black bass in Lake Hartwell and Lake Jocassee for species genetic analysis.

Staff presented Lake Thurmond striped bass information to the Clark Hill Striper Club.

Prepared presentations for Keowee Anglers group meeting and Duke Energy Memorandum of Understanding (MOU) meetings to be held in early December.

Staff gave an interview to News 7 about Christmas Trees being used for fish habitat.

Staff provided stocking request for 2022 to hatchery manager.

Staff assisted the public with four pond management questions.

Staff continued to work on the Annual Report.

Staff removed the temporary fish tank from pickup truck and returned truck to Greenwood office.

Staff continued creel survey on Lake Greenwood. Staff prepared a draft report of the 2020-21 Saluda River Creel.

The SWG Pigpen Creek project continued with staff marking and clearing miles of trail using chainsaws.

Staff continued work on the Hartwell Fish Habitat Project.

Staff completed the Survey 123 gas card survey.

December

Staff presented Lake Keowee Creel and standardized sampling results to Lake Keowee Anglers group.

Staff conferenced with GADNR biologists discussing Striped Bass and Hybrid Striped Bass stocking in Lake Hartwell.

Staff presented in annual Memorandum of Understanding meeting with Duke Energy concerning Lake Keowee and Lake Jocassee.

Staff assisted Region 3 with clipping Rainbow Trout adipose fins for stocking in the Lower Saluda River.

Staff assisted with weigh in at Palmetto Boat Center bass tournament at Green Pond Landing on Lake Hartwell.

Staff stocked Rainbow Trout and Brown Trout in Lake Jocassee.

Staff sampled Lakes Hartwell and Thurmond with overnight gill net sets for Striped Bass and Hybrid Striped Bass to determine survival and recruitment of stocked fishes.

Staff collected blood samples from diploid and triploid Brown Trout before being stocked in Lake Jocassee and delivered samples to Cohen Campbell for analysis.

Staff completed AAA Driver Safety Training.

Staff verified location of fish attractor mislabeled on Lake Keowee map.

Staff worked with IT department to have all Clemson office computers updated according to IT standards.

Staff continued creel survey on Lake Greenwood. Creel biologist finalized the 2020-21 Saluda River Creel.

The SWG Pigpen Creek project continued with staff clearing trail using chainsaws and made tags for marking. Trail maintenance at lower end of Pigpen. Prepared presentation for technicians and TU meeting.

Habitat crew pushed the barge to a new location and marked trees.

Staff mounted a removable fish hauling tank in a truck bed for stocking Lake Jocassee.

Staff delivered a truck to shop for diagnosis and repairs.

Staff worked on completing the 2020-2021 annual report.

Region 2

November

Staff prepared and submitted the October 2021 activity report, mileage & purchasing card logs to HQ as required.

Staff reviewed one Scientific Collection Permit Application.

Staff submitted the required 123 Survey for vehicle and auxiliary gas cards to Columbia HQ.

Staff assisted state lakes crew personnel with removal of trees from the Lake Oliphant Dam for an upcoming SCDHEC inspection there.

Trap nets were set for four nights in Lake Wateree to sample crappie population dynamics. Otoliths were removed for an age/growth study.

Staff participated in the SDAFS Small Impoundment Committee virtual meeting to discuss an aquatic plant identification & control workshop for the 2023 SDAFS meeting in Virginia.

Staff initiated annual temperature logger downloads at historical stream monitoring stations within Freshwater Fisheries Region 2.

Staff travelled to Columbia for a Dargan's Pond Project meeting which had unknowingly been cancelled.

Staff participated in an online Clemson University "Current Topics in Pond Management 2021" virtual course.

Staff submitted the 2022 Region 2 Stocking Request via the hatchery system's online Dashboard.

Staff rewired the Florence electrofishing boat and provided maintenance on other project watercraft.

Staff deployed 45 trees as fish habitat structure in Lake Wallace.

Staff conducted an interview with Carolina Sportsman's Magazine discussing yellow perch.

Staff initiated work on the FY21 Annual Progress Report.

Staff continued work on the July 2020 Lynches River fish kill report.

There were no weed identifications nor water quality tests conducted in Rock Hill or Florence during the month.

No telephone pond consults were conducted at the Rock Hill Workstation, but 2 fisheries information requests were received from the public. Twelve calls regarding fisheries information were received at the Florence Office with 2 of those calls being pond related (1 for general pond management, & 1 other). Constituents seeking fisheries information were served by Ginger Ridgill, Jason Marsik, or Gatlin Edge in Florence and by Robert Stroud or Preston Chrisman at the Rock Hill Workstation. Recommendations and pertinent pond management literature was disseminated as necessary via telephone, in-person, through the US Postal Service, or by email to pond owners.

Contact with NGOs: Two.

December

Staff prepared and submitted the November 2021 activity report, daily work reports, mileage & purchasing card logs to HQ as required.

Trap net sampling for crappie was conducted for two nights on Lake Wateree. Otoliths were pulled for future age/growth analysis.

Biologist Chrisman attended Duke Energy's Molly Creek Access Area dedication on Lake Wateree.

Staff participated in interviews for summer 2022 intern positions.

Pye-Barker Fire & Safety inspected Rock Hill Office fire extinguishers.

Staff conducted gill net sampling at Lake Wateree for 3 nights, pulling otoliths from striped bass, white bass, black crappie, and blue catfish for age/growth studies.

Staff participated in a coordinator's call and provided minutes for regional personnel.

Staff provided topics for OMO outreach videos to Chief Self.

Staff conducted a planning session for January 2022 activities.

Staff provided review of 4 Scientific Collection Permit applications.

The FY21 Region 2 Annual Progress Report was submitted.

Staff met with IT personnel for desktop/laptop updates in Rock Hill.

Staff initiated renewal of the Rock Hill Office lease via Columbia HQ.

Staff continued to download temperature loggers from historical stream sites.

There were no weed identifications nor water quality tests performed in Rock Hill or Florence during the month.

There was one telephone pond consult conducted at the Rock Hill Office regarding weeds/water quality and 15 calls regarding fisheries information received at the Florence Office with 1 of those calls being pond related (1 pond stocking). Constituents seeking fisheries information were served by Ginger Ridgill, Jason Marsik, or Gatlin Edge in Florence and by Robert Stroud, Preston Chrisman, or Alex Michaeli at the Rock Hill Workstation.

Recommendations and pertinent pond management literature was disseminated as necessary via telephone, in-person, through the US Postal Service, or by email to pond owners.

Contact with NGOs: One.

Region 3

November

Annual sampling of the Lake Murray Crappie population continued during November. Fifteen randomly selected sites and 15 standard fixed sites were sampled with trapnets during the month. Since sampling began in October 473 Black Crappie and no White Crappie were collected. Average catch rates were 5 fish per trapnet night. Mean total length of Black Crappie was 194 mm (Range; 69 – 361 mm). Three hundred and twelve otoliths were collected to estimate age of which 202 were aged during November. Preliminary results suggest that catch rates are higher at fixed sites; however, the randomly selected sites captured larger individuals.

Annual sampling of the Lake Murray Striped Bass population was initiated during November. A 300' experimental gillnet was fished overnight on November 15th at the forks of the Saluda and Little Saluda River. Eighty-four Striped Bass, 12 Black Crappie and two Largemouth Bass were captured. Striped Bass mean total length was 468 mm (Range; 367 – 627) and mean weight was 1.247 kg (Range; 0.605 – 2.697 kg). Nineteen percent of the catch was \geq the minimum 21-inch size limit. The proportion of fish \geq 21-inches was one of the lowest (18th percentile) observed in the last decade.

Standardized boat electrofishing was conducted at 8 sites in the Lower Saluda River to assess the trout population. Five Rainbow Trout and no Brown Trout were captured with 2.7 hours of electrofishing effort. The Rainbow Trout, all stocked as “catchables” during fall of 2020 and winter of 2021, averaged 415 mm TL (16-inches) and ranged from 400 to 422 mm TL exhibiting excellent growth. Similar to most recent years very few Brown Trout are surviving over summer.

Staff responded to citizen concerns about an abnormally high sediment load in the South Fork Edisto River. High levels of sediment were found in the area between Highway 321 and Highway 301 in Bamberg County; however, the source of sediment has not been determined.

Region 3 stocking requests were entered into the hatchery stocking request database.

Water quality monitoring in Lake Brown continued to assess the presence and likelihood of a summer-time blue green algae (cyanobacteria) bloom. Surface water temperatures in Lake Brown were 15 - 16 °C during November, no problematic blue-green blooms were detected during 2021 or are expected for the remainder of the year.

Staff provided pond management assistance to three pond owners involving queries on vegetation control and stocking. Staff responded to 18 calls or emails seeking information on boat titling, regulations, fishing licenses and Region 3 fisheries.

Staff worked toward completing annual reports.

December

Annual sampling of the Lake Murray Crappie population was completed during December. The final 15 standard fixed sites were sampled with trapnets on December 14th. Since sampling began in October 679 black crappie and no white crappie were collected. Average catch rates were 5.5 black crappie per trapnet night. Three hundred and thirty-four otoliths were collected from black crappie (69 to 361 mm TL) to estimate age of which 216 have been aged by one reader.

Annual sampling of the Lake Murray striped bass population continued during December. A 300' experimental gillnet was fished overnight on December 14th at the forks of the Saluda and Little Saluda River. One-hundred and thirteen striped bass and 9 black crappie were captured. Striped bass mean total length was 483 mm (Range; 366 – 696) and mean weight was 1.38 kg (Range; 0.61 – 3.72 kg). Twenty percent of the catch was \geq the minimum 21-inch size limit. The proportion of fish \geq 21-inches was one of the lowest (25th percentile) observed in the last decade. The low proportion of legal-sized fish may be related to a striped bass fish kill that occurred during summer 2021.

As part of a pilot study to determine relative abundance of pelagic species, including striped bass, three 110' x 6' gillnets were fished overnight at three randomly selected sites in upper Lake Murray on December 21st. Standard sampling for striped bass at Lake Murray uses a single net which does not provide sufficient sample sizes to compare relative abundance among years. Among the species collected relative abundance was highest for striped bass (26%), white perch (21%), gizzard shad (21%) and black crappie (19%). Capture rates for striped bass were low (3.7 fish/ net night); however, they were fairly consistent among samples indicating the use of multiple nets may be useful for comparing relative abundance among years.

With assistance from Region 1 and Walhalla Hatchery staff 15,000 catchable rainbow trout were fin-clipped at the Walhalla Hatchery on December 8th. The adipose fin clips will allow us to differentiate catchable stocked

rainbow trout in the Lower Saluda River from those that are stocked as fingerlings. The anesthetic AQUI-S was used to sedate fish before clipping. While we have used AQUI-S to sedate fish in the field this was our first use of the anesthetic for a mass marking event. The anesthetic performed well with rapid sedation and recovery times (about a minute) and very little mortality (7 of 15,000).

Staff began collecting discarded Christmas trees and supplies for the refurbishment of fish attractors at Lake Murray and Brown.

On December 23rd approximately 2,000 catchable-sized rainbow trout were stocked at three locations in the Lower Saluda River, including a new location at the top of the river walk just below I26 to provide fish in the Catch and Release section of the river.

Staff provided pond management assistance to two pond owners involving queries on vegetation control and stocking. Staff responded to 21 calls or emails seeking information on boat titling, regulations, fishing licenses and Region 3 fisheries among other things. On December 4th staff investigated a diesel spill in downtown Columbia.

Region 4

November

Technical/Meetings

Pond Management Webinar

All region IV staff participated in a webinar hosted by Clemson Extension on Current Topics in Pond Management. The topics discussed in the webinar were relevant to management issues experienced in the region, particularly with providing guidance to private pond owners. Participation in the webinar provided staff with continuing education credits towards retaining respective pesticide applicator's licenses.

Annual Report

Staff spent most of November finishing analysis of data and report write up for projects completed in FY21. A copy of the annual report has been submitted to the division's executive office for review.

Outreach

Northwoods Academy Field Day

Region IV staff, along with personnel from Bayless Hatchery and the Region IV wildlife section, hosted a field day at the Dennis Wildlife Center for fourth grade students of Northwoods Academy. Students were informed on the various projects that regional section staff engage in and were able to observe various sampling gears in-use. This was the fourth year for this event with overwhelmingly positive feedback from students and teachers alike.

Field Work

Brood LMB Collection

Staff coordinated with personnel from Cheraw hatchery to collect brood LMB from Cooper River. A total of ~160 adult LMB were collected and transported to Cheraw for 2022 LMB production.

Other

Goose Creek Therapeutic Fishing Day

Staff coordinated CCF stocking and equipment loaning for a fishing day at the Goose Creek municipal pond organized for disabled anglers. Participation at this event has grown to ~40 people and has built a positive relationship between the agency and the town of Goose Creek.

Gillnet Season Prep

Staff completed routine boat/trailer/gillnet maintenance in preparation for the annual season set to start in December.

December

Technical/Meetings

Santee Cooper FERC Meeting

Staff met virtually with the Santee Cooper FERC relicensing RMT to discuss various task plans related to projects to be completed upon issuance of a new license. Tasks include projects related to water quality/flow changes in Santee River, Sturgeon spawning/migration, American Eel surveys, and Shad/Herring surveys.

Meeting with Santee Cooper Country

Staff met with Jane Powell of Santee Cooper Country and representatives from Waterfront Solutions to discuss the financial and technical logistics of continuing a project to add concrete materials to fish attractors on the Santee Cooper Lakes. This project occurred from 2014-18, but is permitted through June 2023. With 12 attractors not previously receiving concrete materials the goal is to make additional concrete drops to as many as is financially possible.

Plant Management Council

Staff met with a portion of the SC Plant Management Council since the full December meeting needed to be postponed until January 2022. The main topic of discussion was the amount of various nuisance species treated on the lakes in 2021, results of a hyperspectral imagery survey, as well as a presentation by region IV staff on the status of Grass Carp population condition on the lakes.

Summer Internship Interviews

Staff participated in a portion of the interviews for the summer internship program.

Robust Redhorse cSWG Meeting

Staff met virtually with representatives from GADNR and NCWRC to discuss a resubmission of the 2021 cSWG regarding Robust Redhorse work. The 2021 application was denied due to funding limitations, but feedback was provided on where the application could have been improved. These comments were discussed, and a revised application will be submitted in 2022.

Field Work

Gillnetting

The winter gillnet survey on lakes Marion and Moultrie began in December with all eight sites being sampled. One hundred fourteen Striped Bass were collected during the December gillnet sets, which is nearly identical to the monthly average for STB collections in 2020-21. Fin clips and otoliths were taken from all specimens for further analyses. Gillnetting will continue in January and February.

Statewide Research

November

We completed field data collection for the study developing a Stream Quantification Tool (SQT) for South Carolina. Fish sampling was completed at four sites in November 2021, marking attainment of the grand total statewide target of 100 sites. Data analysis has been initiated and aims to identify potential fish assemblage attributes (e.g. species, taxonomic and/or functional groups) most sensitive to stream quality and geomorphology. These biological indicators will be used to evaluate the effectiveness of stream restoration and mitigation activities in South Carolina.

We continued data management for the C-SWG Bartram's Redeye Bass conservation study, focusing on distribution, genetic evaluation, and occupancy modeling for this species.

Staff attended the 151st Annual Meeting of the American Fisheries Society in Baltimore as co-author of the platform paper titled 'Say Goodbye to Black Bass Fisheries As You Knew Them: The Impacts of Introduced Alabama Bass in Southeastern Reservoirs' in the symposium *Back to the Future of Reservoir Science and Management: What have we learned in 50 years?*

Staff was interviewed by television media outlet WRDW in the Augusta area on the status of Redeye Bass in the Savannah River.

Staff volunteered lecture topics to be delivered to fisheries conservation and management classes at Clemson University in the coming spring semester.

We submitted orders for two replacement vehicles for the Statewide Research Project.

Staff assisted Aquatic Education staff with the instruction of a trout fishing class on Eastatoee Creek for participants in the Clemson University Osier Lifelong Learning Institute.

December

We continued data analysis for the development of a Stream Quantification Tool (SQT) for South Carolina in collaboration with the Office of Environmental Programs. Analyses aim to identify potential fish assemblage attributes (e.g. species, taxonomic and/or functional groups) most sensitive to stream quality and geomorphology for use in a biotic integrity framework. These biological indicators will be used to evaluate stream conditions and the effectiveness of stream restoration and mitigation activities in South Carolina.

We met with collaborators from Clemson University and the SCDNR Population Genetics Lab to discuss progress and next steps for the C-SWG Bartram's Redeye Bass conservation study, focusing on distribution, genetic evaluation, and occupancy modeling for this species.

Staff met virtually with collaborators from Coastal Carolina University and the SCDNR Population Genetics Lab to discuss design and methods for the C-SWG project on Sandhills Chub starting in 2022.

Staff submitted revisions to the sections on the Santee and Edisto Rivers for the Atlantic Rivers of the Southeastern US chapter in the forthcoming book *The Rivers of North America II*.

We finalized the annual report summarizing all project activities over the past year.

Staff sat on an interview panel for potential WFF summer interns.
We completed required driver training provided virtually by State Fleet Management.

Hatcheries and State Lakes Activities

November

Coordination

No grass carp sterility tests were scheduled for November.

Dennis Wildlife Center (DWC) and Bayless Hatchery

The 2021 Annual Report for the Dennis Wildlife Center and Bayless Hatchery has been completed and submitted and Bayless Hatchery was winterized.

DWC staff taught a fisheries class to three (3) groups of 4th graders from Northwood Academy.

Staff assisted Cheraw Hatchery with the harvest and distribution of Redear Sunfish, which were stocked at Lake Oak Grove.

Supplies were acquired for gopher frog production in Spring of 2022.

A hiring packet was submitted to fill the vacant Wildlife Biologist II position.

Four (4) Channel catfish ponds were harvested at DWC – 10,929 fish were delivered to Cohen Campbell Hatchery to be used for next year's production.

Two (2) Bluegill ponds were harvested at DWC; more than 136,000 fish of various sizes were stocked at numerous State Lakes, County Parks and USFS ponds.

The redeye bass brood pond and Tilapia ponds at DWC were harvested; fish were relocated to the fish house over winter.

Three (3) Phase II Striped Bass ponds were harvested; 3,966 fish were stocked in the Great Pee Dee River at Samworth WMA Landing and Dewitt's Bluff Landing.

A DWC well pump was pulled and repaired, as it would not shut down.

All Hatchery Vehicle information, including gas and auxiliary cards were submitted via the Survey123 app.

Staff completed and submitted daily staff reporting logs, monthly reports, weekly itineraries, mileage sheets, fuel logs, procurement statements, quarterly assurances, and purchase requisitions.

Staff performed routine water quality monitoring and fish feeding, as well as maintenance of grounds, buildings, and equipment. Several ponds were also treated with herbicide to control aquatic vegetation.

Walhalla State Fish Hatchery

A total of 32,111 trout were stocked during November. A significant number of fish were stocked in response to delayed harvest waters going into effect during the month.

The 260,000 Rainbow trout eggs obtained from Erwin National Fish Hatchery in September were continued to be monitored as their growth continued to accelerate.

Staff continued daily operations of Walhalla State Fish Hatchery and specifically focused on egg incubation and fry rearing. Public visitation continued at a normal rate.

Cohen Campbell Fisheries Center/Barnwell Substation

Five (5) channel catfish ponds were harvested at Cohen Campbell resulting in a total of 19,257 fish (2,615.5 kg). Stocking locations included Andrew Jackson State Park, Chester State Park, King's Mountain State Park, Lake Ashwood, Lake Cherokee, Lake Thicketty, Lancaster Reservoir, Lee State Park Lake, Macedonia Lake (USFS), Oconee State Park, Parsons Mountain Lake (USFS), Poinsett State Park, Richard B Russell Sub-Impoundment, Saluda River, Sedalia Lake (USFS) and Wildcat Lake (USFS).

Cohen Campbell received 10,929 (1,253 kg) channel catfish from the Dennis Center for holding and 2022 quarterly stockings. Staff also assisted with Cheraw Hatchery harvest and distribution of 3,407 Redear Sunfish (209.93 kg). Distribution locations included John's Creek Lake, Macedonia Lake (USFS), Pittman Lake, Sedalia Lake (USFS) and Wildcat Lake (USFS).

Staff completed refurbishment and upfit of outdated four (4) compartment distribution unit, making it available to use for distribution needs. A riser intake system was also designed and installed for the Hatchery Coordination fish pump, making the system better suited for all ponds and species at Cohen Campbell.

Staff completed installation of phase 1 main water supply at Barnwell Hatchery, which included: 1,620' of 8" C-900 piping, 36 mechanical joints, and a 6' x 2' retaining wall for pond 1.

Herbicide was applied to the bottom vegetation of Barnwell Hatchery ponds 1 and 2, along with bush hogging of ponds 1 thru 5, in preparation for burning. Herbicide treatments were also completed at the Turkey Creek impoundment and Wellington Road. Impoundment was for late season control on aquatic nuisance vegetation to

protect hatchery water intake structure from plugging with aquatic vegetation. Wellington Road treatment focused on broad leaf terrestrial vegetation to maintain the aesthetic value of Lake Edgar Brown.

Office renovations, which included new roofing and siding repairs, doors, windows, and external lighting, was awarded to R. Bettis Construction for \$30,182.69. A request for proposal (RFP) was utilized for the contract award process. R. Bettis Construction completed the office renovations on 11/18/2021, ahead of schedule.

Staff assisted with interviews for Tech III at Spring Stevens Hatchery.

Performed general maintenance and upkeep at both Cohen Campbell and Barnwell substation.

Cheraw State Fish Hatchery

The last four (4) Phase II Redear sunfish ponds have been harvested, averaging between 3 and 7 fish per pound. This completed all Redear sunfish stocking requests.

Largemouth Bass brood fish were collected from the Cooper River system and will be maintained through next spawning season.

Approval was given to offer the top applicant the vacant Tech III position at Cheraw Fish Hatchery. Staff also participated in the interview process for the vacant Tech III position at Spring Stevens Fish Hatchery.

An electric fence was installed around three (3) 1/10 ac ponds, which are used to hold brood fish through the winter, to deter otters.

Staff completed and submitted daily staff reporting logs, monthly reports, mileage sheets, fuel logs, procurement statements, and purchase requisitions.

Staff continued daily standard fish husbandry tasks (i.e., daily water chemistry, aeration maintenance, feeder maintenance, tank maintenance, etc.) as well as general hatchery ground maintenance, equipment maintenance, and building maintenance.

Spring Stevens State Fish Hatchery

Several meetings with DNR engineers occurred throughout the month regarding the spillway issues.

Working with Fluid Flow (Amiad) to get parts for filter and all ponds were weeded.

Began working with Law Enforcement about a night hunting problem in the area.

Repairs and maintenance on equipment are being conducted to restore to working condition, however, obtaining supplies is still an ongoing issue.

Additional landscaping around the hatchery residence was also completed for beautification and practical purposes.

Routine care and maintenance of the facility as well as all paperwork associated with hatchery protocols was conducted by Fresh Eyes Coordinator.

State Lakes

The State Lakes Natural Resource Technician II Position is now open as of this month and new candidates have already been interviewed.

Staff adjusted water level at Lake Johnson and installed new access trail signs around Lake Ashwood. Tree removal was also performed on the Lake Long, Mountain Lakes 1 and 2, Lake Oliphant, and the Jonesville Reservoir dams.

Met with engineering staff and contractors to create plan for Lake Ashwood boat ramp. Also met with DHEC for dam inspections at Lake Oliphant and Mountain Lakes 1 and 2.

Assisted with fall harvest and fish distribution for Cheraw (Redear).

Performed routine maintenance at all 18 State Lakes (i.e., grass cutting, litter control, and trail maintenance). Performed additional fisherman trail maintenance at Lake Starfort and Lake Oliphant.

“Fresh Eyes” Program

Followed all Covid protocols as directed. Conducted routine care and additional maintenance at Spring Stevens facility.

All monthly paperwork assigned completed.

Outreach and Training

Staff entered data for all vehicle gas cards and auxiliary cards in the Survey123 app.

Administration

Cohen Campbell Hatchery, Dennis Wildlife Center, Cheraw Hatchery, Walhalla, and Spring Stephens Hatchery executed all COVID-19 safety protocols.

Weekly trout stocking reports continue to be updated on the SCDNR website.

December

Coordination

This month 2,600 grass carp were processed for sterility testing at Cohen Campbell Fisheries Center.

Three (3) vendor permits were issued for grass carp distribution statewide.

Dennis Wildlife Center (DWC) and Bayless Hatchery

Ten (10) Phase II striped bass were surgically implanted with dummy transmitters and placed in a round tank with control fish to see if we encounter any mortalities due to tagging. These fish will be observed for 4 weeks.

Five (5) Phase II striped bass ponds were harvested: 6,165 fish were stocked in the Great Pee Dee River at Samworth WMA Landing and Dewitt's Bluff Landing.

Two (2) DWC channel catfish ponds were harvested: 756 fish were stocked in three different ponds at Draper WMA, 300 fish were stocked at Lake City Lake, and the remaining 4,850 fish were delivered to Cohen Campbell Hatchery to be used for next year's production.

DWC staff assisted the Spring Stevens Hatchery with the harvest of redbreast sunfish.

Staff attended the American shad telemetry meeting via zoom and the AAA Driver Training Course in Charleston.

The DWC's administrative building had two HVAC units that stopped working. One was repaired and the other needs replacement. Three quotes were acquired, and a requisition was submitted.

Staff picked up a new 4-wheeler from the Styx Receiving Compound that was procured earlier this year.

Staff repaired and painted a PTO-driven paddle wheel.

Staff completed and submitted monthly reports, weekly itineraries, mileage sheets, fuel logs, procurement statements, quarterly assurances, and purchase requisitions.

Staff performed routine water quality monitoring and fish feeding, as well as maintenance of grounds, buildings, and equipment.

Walhalla State Fish Hatchery

A total of 30,978 trout were stocked during December. A significant number of fish were stocked as part of the annual Lake Jocassee stocking.

Staff attended the South Carolina Aquatic Plant Management Society (SCAPMS) board meeting.

Brook trout and Brown trout were spawned on station in October, hatched, and were placed in tanks to maximize the space available in the hatchery building.

Staff continued daily operations of Walhalla State Fish Hatchery and specifically focused on egg incubation and fry rearing. Public visitation continued at a normal rate.

Cohen Campbell Fisheries Center/Barnwell Substation

Cohen Campbell harvested two (2) channel catfish ponds – 10,785 fish (1,659.58 kg); these catfish were stocked at Lake Cherokee, King's Mountain State Park, Mountain Lakes I, Lake Thicketty, and Barnwell State Fish Hatchery. Campbell also received 4,848 (473.14 kg) of catfish from the Dennis Center, which have been placed into holding for 2022 quarterly stocking.

Staff assisted with the harvest and distribution of Redear Sunfish, as well as with interviews for the Tech III, at Spring Stevens Hatchery.

Staff certified three (3) grass carp tests, totaling 2,600 fish; certifications were performed for Southeast Pond Stockers, Owen and Williams Fish Farm, and Estate Management Services.

Performed general routine maintenance and upkeep for grounds, buildings, and equipment at both Cohen Campbell and Barnwell substation.

Cheraw State Fish Hatchery

Maintenance of brood stock held on site continues throughout the winter months. Facilities and equipment were winterized.

Assistance was given harvesting redbreast sunfish at the Spring Stevens Fish Hatchery. Harvested fish were delivered and stocked in the Little Pee Dee River system.

The top candidate accepted the Cheraw Tech III position and started mid-December; all previously vacant positions at facility have now been filled.

A motorist traveling south on Hwy 1 lost control of her vehicle and demolished the Cheraw Fish Hatchery entrance sign, but thankfully no one was hurt.

Staff completed and submitted daily staff reporting logs, monthly reports, mileage sheets, fuel logs, procurement statements, and purchase requisitions.

Staff continued daily standard fish husbandry tasks (i.e., daily water chemistry, aeration maintenance, feeder maintenance, tank maintenance, etc.) as well as general hatchery ground maintenance, equipment maintenance, and building maintenance.

Spring Stevens State Fish Hatchery

The positions of Assistant Hatchery Manager and Hourly Technician were filled, as the top candidates began work in mid-December.

Ponds 5 & 7 were worked in and prepped for harvesting on December 14th.
Obtained mower parts and repaired 8ft grooming mower.
Fresh Eyes Coordinator assisted Law Enforcement with night hunting case on hatchery property.
An engineer reviewed spillway structure on the property and recommended courses of action for repair.
Routine care and maintenance of the facility as well as all paperwork associated with hatchery protocols was conducted by Fresh Eyes Coordinator and new staff.

State Lakes

Staff met with engineers at Lake Johnson to take them out to dam to take soil samples on dam and with a lawyer at Lake Long about the motorcycle accident on entrance road.

Assisted with fish distribution for the Dennis Center (Bluegill).

Staff put up the walking trail signs for Lake Ashwood.

Performed routine maintenance at all 18 State Lakes (i.e., grass cutting, litter control, and trail maintenance).

Additional water level monitoring and adjusting was conducted at Lakes Johnson and Sunrise.

“Fresh Eyes” Program

Followed all Covid protocols as directed.

Conducted routine care and additional maintenance at Spring Stevens facility.

All monthly paperwork assigned completed.

Outreach and Training

Staff entered data for all vehicle gas cards and auxiliary cards in the Survey123 app.

Administration

Cohen Campbell Hatchery, Dennis Wildlife Center, Cheraw Hatchery, Walhalla, and Spring Stephens Hatchery executed all COVID-19 safety protocols.

Weekly trout stocking reports continue to be updated on the SCDNR website.

Diadromous

November

Activities—Summary

Efforts this month included: downloading acoustic receivers and manual tracking in Charleston Harbor, Lake Marion, the Rediversion and Diversion Canals, and the Congaree, Wateree, Cooper, Santee, Edisto, Waccamaw, Great Pee Dee, and Savannah Rivers; gillnetting for Atlantic and shortnose sturgeon in the Great Pee Dee, Waccamaw, Black, Sampit, Edisto, and Savannah Rivers; monitoring elver ingress at Goose Creek Reservoir and St. Stephen Dam; fulfilling telemetry data requests; maintaining the comprehensive telemetry database and cleaning up false detections and duplicate station names; submitting telemetry data to the FACT network; submitting monthly, quarterly, and annual reports to fulfill obligations such as the annual SHEP report to USACE.

Breakdown of Project Activities

Great Pee River Sturgeon Project

November’s efforts were focused on the annual report and servicing the acoustic receiver array. Five trips were made to download receivers in the Winyah Bay System.

Winyah Bay Juvenile Sturgeon Project

Six sampling trips were conducted in the Winyah Bay System this month for a total of 26.12 100-yard net hours. Twenty-four total sturgeon were captured: three recaptures and 21 virgin captures. Twelve sturgeon were of target size: one recapture and 11 virgin captures. All first capture fish received a PIT tag and the standard work up. Fin rays were subsampled from sturgeon under 750 mm fork length. Sampling nets were patched and maintained. Data were analyzed and compiled for the diadromous section 2021 annual report.

Savannah River Sturgeon Egg Project

The Savannah River Egg Project downloaded the Cooper River and Charleston Harbor acoustic receiver arrays. Maintenance was performed on the Sailfish boat and the Savannah River Egg Project annual report was completed.

Savannah Harbor Expansion Project (SHEP)

Savannah Harbor Expansion Project focused on downloading and maintaining the remaining acoustic receivers that were not previously downloaded due to high flows and obstructions. SHEP also completed the USACE annual report and SCDNR diadromous report.

Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA)

This month, project ACFCMA completed annual report sections for shad, sturgeon, and eel sampling in 2021. Shad scale samples from the St. Stephens fish lift were read by two members of the project group. Additionally, reading shad scale samples from the 2021 shad sampling season began. The Edisto River sturgeon net was broken down and rebuilding has begun for the following sampling season. Equipment maintenance and preparations have

been made for the upcoming shad sampling season in 2022. The eel ramp at the Goose Creek Reservoir was monitored at least once a week, every week. Minor repairs were made; pumps were replaced as well as wiring and locks on eel traps.

Santee Accord Juvenile American Shad Study

All field work ended in October. November was spent processing genetic fin clip samples for juvenile AMS and completing annual reports. Project staff started annual maintenance and general repairs on equipment.

Rediversion Project

American eel passage at the St. Stephen dam continued without pause this month, totaling 70 eels measured and passed upstream. All eels were stocked directly into Lake Moultrie, as low daily passage numbers inhibited transport to the Wateree River. To date, 305 eels have been stocked into the Wateree System, and 630 eels have been stocked into Lake Moultrie (n = 935). St. Stephen Dam demonstrated short periods of peak discharge (generally less than 1 hour) intermittently through the month, but no-flow conditions have remained consistent due to scheduled outages at the St. Stephen powerhouse. Downstream water levels have dropped to ~6.5 feet, and mean dissolved oxygen concentrations have remained above 8 mg/L, with declining water temperatures from ~20°C to 13°C. Project staff continued discussions with USACE to plan fish lift modifications to exclude wading birds, and dates were set for the upcoming fish lift walkthrough and bi-monthly senior leadership meeting. Annual report sections were submitted for review, and further discussion and planning focused on scale-ageing and otolith-ageing methods for collaboration with Clemson University.

Meetings and Outreach

Staff participated in multiple meetings and conference calls regarding:

- Santee Accord annual meeting,
- River Herring Collaborative Forum meeting,
- Savannah River Below Augusta Ecosystem Restoration Study meeting,
- A presentation at the SCDNR “Outside In” Webinar series,
- Monthly St. Stephen Fish Lift maintenance meeting with USACE Charleston District staff, Santee Accord Technical Committee meeting,
- Discussions regarding plans for NSBLD and the Savannah River.

December

Activities—Summary

Efforts this month included: downloading acoustic receivers and manual tracking in Charleston Harbor, Lake Marion, the Rediversion and Diversion Canals, and the Congaree, Wateree, Cooper, Santee, Edisto, Waccamaw, Great Pee Dee, and Savannah Rivers; gillnetting for Atlantic and shortnose sturgeon in the Great Pee Dee, Waccamaw, Black, Sampit, Edisto, and Savannah Rivers; monitoring elver ingress at Goose Creek Reservoir and St. Stephen Dam; fulfilling telemetry data requests; maintaining the comprehensive telemetry database and cleaning up false detections and duplicate station names; submitting telemetry data to the FACT network; submitting monthly, quarterly, and annual reports to fulfill obligations.

Breakdown of Project Activities

Great Pee River Sturgeon Project

December’s efforts were focused on maintaining the receiver array and gear preparation. Three trips were made to download receivers. Nets were mended and built for Atlantic sturgeon sampling for this upcoming spring and an abstract was submitted to present at Southern Division American Fisheries Society.

Winyah Bay Juvenile Sturgeon Project

Three sampling trips were conducted in the Winyah Bay System this month for a total of 10.90 100-yard set net hours. Ten total sturgeon were captured: one recapture and nine virgin captures. Seven sturgeon were of target size and were all virgin captures. All first capture fish received a PIT tag and the standard work up. Fin rays were subsampled from sturgeon under 750 mm fork length. Sampling nets were patched and maintained, the truck received an oil change, and registration stickers were replaced on the boat. Old nets were broken down to begin the net building process for the next season.

Savannah River Sturgeon Egg Project

The Savannah River Egg Project downloaded sections of the lower Santee River receiver array. Maintenance was performed on the project boat and trailer. Personnel assisted the Savannah Harbor Expansion Project (SHEP) three field days.

Savannah Harbor Expansion Project (SHEP)

Savannah Harbor Expansion Project fished for 16.06 net hours with a 3 and 5 inch stretch mesh mono-filament net in the Savannah Estuary. Five Atlantic and one shortnose sturgeon were captured with two juvenile Atlantic Sturgeon receiving acoustic transmitters. Manual tracking detected one SHEP shortnose sturgeon within the study area. Receiver maintenance was performed on receivers near New Savannah Bluff Lock and Dam and on the Edisto River receiver array.

Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA)

This month, project ACFCMA made preparations for the upcoming shad sampling season beginning in January. Nets were prepared and field equipment was checked for readiness. Shad scales from commercial harvests in 2021 were read using a microfiche reader. Current and new staff were trained on scale aging methods as second readers. Additionally, scale readers from the Bonneau office and fish lift met to discuss scale aging techniques. The eel ramp at Goose Creek Reservoir was monitored at least once a week, every week this month. A few glass eels have been observed in the collection tank at the wall ramp, all data were recorded, and eels were released. Pigmentation analysis will begin in January of 2022. Additionally, new staff and current staff have been trained on monitoring protocols at the eel ramp, safety procedures have been covered as well as proper collection methods and record keeping. The gill net for the Edisto sturgeon sampling project was constructed halfway to completion and will be finished in the new year.

Santee Accord Juvenile American Shad Study

December was spent collecting fin clips on juvenile American Shad and performing routine maintenance on equipment. Tests were performed on the electrofishing box.

Rediversion Project

American eel passage at the St. Stephen dam continued without pause this month, totaling 57 eels measured and passed upstream. All eels were stocked directly into Lake Moultrie, as low daily passage numbers inhibited transport to the Wateree River. To date, 305 eels have been stocked into the Wateree System, and 687 eels have been stocked into Lake Moultrie (n = 992). St. Stephen Dam demonstrated short periods of peak discharge (generally less than four hours) intermittently through the end of the month, but no-flow conditions have persisted otherwise. Specifically, minimal flow conditions were observed consistently until December 10, when peaking cycles began, and eel presence was observed December 14 onward. Downstream water levels have fluctuated from ~6.5 feet to ~19 feet, and mean dissolved oxygen concentrations have remained above 8 mg/L, with water temperatures ranging from ~12°C to ~14°C. Project staff continued discussions with USACE, and the fish lift walkthrough occurred on December 7 with attendance from NMFS staff. Additionally, staff assisted with sturgeon gill netting in Winyah Bay, and met with the shad scale readers at the MRD office to discuss the precise methods used between groups. Focus shifted toward the blind reading of an expert aged collection of American shad otoliths from Massachusetts, to ensure the (developing) SC otolith collection follows the same ageing protocol. Preparations for the upcoming fish passage season were ongoing, and remain the primary focus for the new year.

Administrative

Staff participated in interviews for the 2022 SCDNR internship program. Paperwork was submitted to hire an hourly employee in the MRD office.

Meetings and Outreach

Staff participated in multiple meetings and conference calls regarding:

- Winter FACT telemetry meeting,
- Internal meeting for the upcoming American eel season,
- Yadkin-Pee Dee annual RMT meeting,
- Site visit to Pinopolis Lock with USACE, NMFS, and Santee-Cooper,
- Santee-Cooper RMT meeting,
- Annual pre-season walk through at the St. Stephen Fishlift with USACE, NMFS, and Santee-Cooper,
- Two project planning and update meetings with Clemson University partners.

Mussels

November

General

Staff met with OEP, USFWS and Three Oaks Engineering to discuss Flat Creek Study.

Staff continued work on potential safe harbor agreement.

Staff met with Joe Lemeris and Tanner Arrington to discuss buffer analysis for CHS SHA.

Staff continued work on landowner contact database.

Staff verified shell collection at the NC State Museum.

Staff communicated with USFWS about Carolina Heelsplitter surveys for the 2022 season.

Mussel Culture

Staff continued stage 3 pond culture of *Alasmodonta varicosa* cohort O2103AvA, *Villosa delumbis* cohort C2106VdA and *Utterbackia imbecillis* cohort 2106UiA.

Staff continued pond culture of *V. delumbis* and *U. imbecillis* cohort and C2019UiA and long-term residents of mussel rack.

December

General

Staff continued work on potential safe harbor agreement hosting internal meetings.

Staff met with Joe Lemeris and Tanner Arrington to discuss buffer analysis for CHS SHA.

Staff attended a Clemson University Study Update.

Staff participated in intern interviews.

Staff continued work on landowner contact database.

Staff met with USFWS Morgan Wolf to confirm Carolina Heelsplitter surveys for the 2022 field season.

Staff discussed providing animals for Resilient Water Supply Intake study for USC Student.

Mussel Culture

Staff continued stage 3 pond culture of *Alasmodonta varicosa* cohort O2103AvA, *Villosa delumbis* cohort C2106VdA and *Utterbackia imbecillis* cohort 2106UiA.

Staff continued pond culture of *V. delumbis* and *U. imbecillis* cohort and C2019UiA and long-term residents of mussel rack.

Field

Staff visited Weyerhaeuser property with staff ecologist Daniel Hanks and USFWS Morgan Wolf.

Aquatic Education

November

Family Fishing Clinics & Certified DNR Fishing Instructors

Continued communicating schedule changes to volunteers and the public.

Held 1 clinic open to the public: James Island County Park.

Fishing Rodeos

On-going participant survey data collection.

Initiating plans to resume rodeos in 2022.

Fishing Tackle Loaner Program

Site user logs collected for data collected for input.

Collecting follow up surveys from participants.

New equipment and materials sent to: Dreher Island, Kings Mountain, Paris Mountain, and Oconee State Parks.

Loaned gear Sesquicentennial State Park for outreach event.

Trout in the Classroom (TIC)

Receiving inquiries and applications for upcoming school year.

Received two applications, no spots were awarded.

Held webinar to review nitrogen cycle protocol.

Continuing to plan for October workshops.

Youth Bass Fishing Club

Continued to field questions and provide assistance to schools creating clubs for the first time.

Communicating with Regional LE and staff to begin logistic prep.

Developing accommodations package with Santee Cooper Country.

Black Bass Slam

Received 2 complete entries.

Provided new brochures to Orvis Charleston and regional offices.

Other

Staff member participated in Diversity and the Environment Leadership intensive training led by Center for Diversity in the Environment and Race Equity Institute.

Staff attended Southeastern meeting of Aquatic Resources Education Association and Board meeting.

Staff attended 4-hour driver's training.

Met with NC Wildlife Commission to discuss Aquatic Education Certified Fishing Instructor Program.

Partnered with OLLI program to provide an introduction to trout fishing class.
Participated in cross-division discussion on volunteer management database development.
Outreach materials provided to: 3 members of the public and 5 phone interactions.

December

Family Fishing Clinics & Certified DNR Fishing Instructors

Continued communicating schedule changes to volunteers and the public.
Opened registration for instructor training.

Fishing Rodeos

On-going participant survey data collection.
Soliciting RFQ for give-away items.

Fishing Tackle Loaner Program

Site user logs collected for data collected for input.
Collecting follow up surveys from participants.
New equipment and materials sent to: Paris Mountain State Park.

Trout in the Classroom (TIC)

Receiving inquiries and applications for upcoming school year.
Rainbow Trout eggs were delivered to 16 schools throughout the state.

Youth Bass Fishing Club

Continued to field questions and provide assistance to schools creating clubs for the first time.
Site visit to John C Land boat ramp to begin layout logistics.
Discussion with Coast Guard about sponsorship opportunities.
Opened registration for 2022 tournament.
Updated website and communicated with coaches.

Black Bass Slam

Received 2 complete entries.
Finalized new designs for 2022 patch and stickers.

Other

Planning meeting with BASS for Bassmaster Classic.
Assisted with Freshwater Fisheries intern interviews.
Career counseling for USC student contemplating science based major.
Site visit to Wateree WMA to assist in planning for Diversity Outreach hikes.
Donated raffle items for SDAFS meeting.
Provided content for the Friday Flies series on Social Media platforms.
Outreach materials provided to: 2 members of the public and 6 phone interactions.

WILDLIFE SECTION STATEWIDE PROGRAMS

November

Coordination and Administration

Participated in numerous meetings with Deputy Director Cope, Chief Dukes and Assistant Chiefs Simmons and Chappellear on various topics including, coordinating staff work schedules, activities, field operations, implementation of regulations, and budgets. Supervision of Statewide Programs staff continued. Participated in numerous meetings including: November Wildlife and Freshwater Fisheries Division monthly meeting, meeting with shorebird staff and MRD staff, Regional Federal Aid Coordinators Meeting, SCDNR Leadership Development for 3 days in Columbia, attended SCDNR Board Meeting, and met with SCDNR staff and NC State University to discuss a study of the Economic Impact of WMAs. Participated in Region 4 Heritage Preserve Coordinator interviews and reviewed applications for Alligator Biologist, Small Game Biologist, and Shorebird Steward positions.

Big Game Program

General Activities

Responded to 71 phone calls and 44 emails from the public related to new or proposed hunting regulations, deer/turkey tagging, sick or nuisance animals, urban deer, and other general deer, turkey, and black bear related topics.

Law Enforcement related activities involved answering questions from the public concerning legal issues related to deer, turkey, bears, hogs, weapons, and hunting (14 calls and 8 e-mails approximately 1.8 hours). Consulted directly with field officers (4) related to CWD carcass regulation, DNA testing, sick deer, and tame deer.

Coordinated with OMO on planning and drafting news releases, social media posts, mass emails, etc. related to Thanksgiving Turkey, Deer Urine Ban, SC Game Check and Prescribed Fire Benefits.

Mileage logs/receipts were scanned and forwarded to appropriate staff. PCard statements/receipts were scanned and forwarded to the PCard email address.

Participated in 3 interviews with the media.

Provided 1 public speaking engagement with approximately 45 in attendance.

Completed 2 surveys from other agencies/entities.

Deer Research and Management Project

The Deer Quota Program (DQP) required effort primarily related to amendments to permits for cooperators who requested additional tags. Approximately 1,394 cooperators are in the program this year.

Participated (virtually) in a webinar hosted by USDA related to COVID-19 testing in deer that will take place nationally in 2022.

Instruction was provided to 2 shifts of Communication Center employees related to chronic wasting disease (CWD) and other common diseases of deer.

At the request of the Hunter Education Program provided presentations on chronic wasting disease (CWD) and aging deer at a men's workshop held at NWTf headquarters in Edgefield.

Participated in a conference call with the Woodside Plantation Property Owners Association to discuss the ongoing deer management program at Woodside Plantation in Aiken County.

Preparations continued related to the 2021 Deer Hunter Survey which will be executed following the close of the season. This included working with OMO and The Sourcing Group to update and procure the survey form.

Work on the cooperative deer and coyote study with Clemson University Department of Forestry and Environmental Conservation was ongoing during the month. Field work on this 3-year project has ended and students are analyzing data and preparing manuscripts. Two abstracts were submitted for inclusion at the 45th annual meeting of the Southeast Deer Study Group which will take place in February.

Continued coordination and communication with the PhD student from University of Georgia on the cooperative research project entitled "Use of fecal genotyping and spatial capture-recapture modeling to investigate coyote abundance in South Carolina." Field work on this 3-year study has concluded. DNA extractions for species identification is ongoing. An abstract was submitted for inclusion at the 45th annual meeting of the Southeast Deer Study Group which will take place in February.

Deer Depredation Permits were entered as they were received. To date approximately 620 permits have been recorded.

Received 2 requests for Urban Deer Management Permits to remove overabundant deer in resort/residential communities. After reviewing the requests, the permits were issued.

Measured 2 sets of antlers in the office by appointment.

Wild Turkey Research and Management Project

The 2021 Summer Turkey Survey required ongoing effort related to receipt, editing, and data entry of completed surveys. Analysis and final report will follow in December.

Continued working with OMO, Licensing, and The Sourcing Group to procure supplies (tag forms, envelopes, inserts, etc.) and update printed material for turkey tag fulfillment for the spring 2022 season. The initial fulfillment for turkey tags will be in mid-February.

The wild turkey gobbling chronology study with Clemson University Department of Forestry and Environmental Conservation continued during the month. Data analysis from the 2019-2021 field seasons is ongoing. An amendment to the research agreement was developed to provide an additional 3 months to the end date of the agreement to allow the graduate student more time to complete her work.

Continued coordination and communication related to the study entitled "Reproductive Ecology of Wild Turkeys in an Unhunted Population." This is a cooperative study between SCDNR, USDA Forest Service-Southern Research Station, University of Georgia, Louisiana State University, and University of Missouri. The objectives focus on determining reproductive parameters in turkeys that are not hunted. Trapping will begin in December and trapping materials (nets, rocket, charges, etc.) were delivered to the student during the month. This project will continue until 2024 and findings will continue to be provided as they become available.

Black Bear Research and Management Project

At the request of a legislator, a report was developed summarizing the 2021 bear season.

The 2021 Bear Hunter Survey was executed to 3,233 bear tag recipients early in the month. Completed surveys are being received and sorted daily. Surveys will be forwarded to the data entry company in early January.

Upstate - Staff handled 22 bear complaint calls/sightings. Bear complaint calls are starting to drop some due to good acorn production in the woodlands, but we still have a couple bears in urban areas getting into outdoor

food sources. One bear trap was set in city limits of Westminster, but no bears were captured. There were 7 road kills this month. Staff gave 1 media interview on bear activity in the upstate. Staff presented an educational program on bears to a residential group in Seneca (30 people) this month. Staff entered bear season harvest information into spreadsheet this month and prepared bear teeth to be shipped off for aging. Staff discussed potential bear research project with Clemson graduate student and Appalachian Bear Rescue group in Tennessee.

Furbearer and Alligator Program

Furbearer Project

Responded to nine nuisance wildlife complaints. Seventy-nine other technical assistance contacts were also made during this time via phone and email.

Began preparations to implement the 6th year of the coyote tagging incentive program. To date, 80 coyotes have been tagged and released with 39 being reported killed. In addition, the tagging incentive web page was also updated.

Predator Management Permits expired this month and reports are due December 15th. To date 189 different properties participated in the Predator Management Permitting program this year consisting of 327,554 acres.

An additional draft of the wildlife possession and rehabilitation legislation was sent for comment to the Legal Section.

A site visit was made at the request of the City of Columbia to assess potential damage to a city managed pond and dam. A site visit was made earlier this year to the same property and there is no change in the dam's damage. Some erosion that had been documented during the first visit does not appear any worse this month, and there is no evidence of any active or additional burrowing.

Coordinated with arranging for the continuation of a pilot coyote trapping project for early next year in conjunction with USDA Wildlife Services.

No additional information has been received from Beaufort County regarding their proposal to implement an Oral Rabies Vaccine program. We continue to wait for a revised protocol proposal.

Participated in a virtual meeting to discuss potential weasel monitoring over a multi-state area with a variety of collaborators.

Alligator Project

Alligator harvest reports were due by November 1, and a few continue to trickle in, but most of the reports have already been filed. To date, 299 alligators have been reported, averaging 8.9 feet in length.

Biologist Hart Activity

General Activities and Accomplishments

- Monitored movement of GPS tagged alligators.
- Issued one transport permits
- Final troubleshooting for Access database and adding data for all non-public hunt alligator permits
- Troubleshooting final Access database for Captive alligator permits
- Coordinating regularly with Clemson researchers regarding alligator movements
- Ongoing permitting website and data management improvements
- Working on harvest summaries and reports for all types of harvest.
- Updating Alligator working group contact info for all states
- Ongoing organizing and funding investigation for "GatorWise" website
- Organizing and entering nuisance harvest data
- Finalized top applications for the Alligator Bio 2 position

Alligator Program Biologist Accomplishments

- Display/Transport Permits - 2
- Private Lands Permit Packages approved - 0
- Nuisance Calls - 12
- Nuisance Permits- 3
- Media Inquiries- 0
- Presentations- 0

Permitting and Lottery Hunt Program

Biologist Kears and administrative specialist Trista Bishop continued to review and process permits. These permits consisted of 38 field trial permits, 3 scientific collection permits, 4 predator management permits, 11 furbearer depredation permits, and 1 Tegu possession permit.

Coordinated with regional staff to send out wood duck box notifications for the successful applicants with instructions on where and when duck box pickups were being scheduled at the regional pickup locations for early December.

A corrective notification was sent out to successful waterfowl applicants. Also, all unsuccessful waterfowl applicants that opted-in were forwarded to Pintail Partners for the youth waterfowl applicants and the SC Wildlife Partnership for unsuccessful regular waterfowl applicants.

A site visit was made in Lee County to investigate a rehabilitator that had taken in an injured peregrine falcon after questions about having the proper USFWS permits arose. Apparently, the application has been at USFWS for three months without any action being taken. The rehabber has since been permitted but has surrendered the falcon to a permitted rehabilitator.

Assistance was provided by email or phone concerning lottery hunts, permits, and other general wildlife questions.

Other

Continued to meet with the new licensing vendor on multiple occasions to discuss lottery hunts, tag issuance, harvest reporting, and wildlife permitting. Testing continued with the new system and their new hunt manager module.

Herpetology Conservation Program

General Activities and Accomplishments

- Re-appointed as the SC State Representative for the Gopher Tortoise Council
- Appointed as a member of the Upland Snake Conservation Committee within the Gopher Tortoise Council
- Interview with Clemson student – My path to becoming Herpetologist for SC
- Assisted with SCETV filming Websters Salamanders at Stevens Creek HP – found 5 individuals
- Submitted South Carolina State Report to Gopher Tortoise Council Newsletter
- Site Visit to Deerfield Plantation Development Myrtle Beach to investigate concerns from citizens regarding ponds being filled in and the impacts to the turtles that live there –
- Picked up 9 box turtles from owner whose husband died and coordinated rehousing them

McCrady Herpetological Surveys

- McCrady surveys continuing
- Chamberlains Dwarf Salamander Survey/Visit with USFWS, McCrady Staff and SCDNR to look at habitat and gain information for future efforts with SSA-15Nov2021
- Site visit to Clarke's Hill Training Center and initial surveys for Websters/Tiger Salamanders

Catawba-Wateree Herp Surveys - Surveys underway at Liberty Hill, Wateree, Kings Mountain State Park and Carolina Sandhills NWR

Multi-State Sandhills Restoration Project – Tillman

- 6 lbs Wiregrass Seed dispersed in Tillman Restoration areas
- Submitted interim Report

Multi-State Wetland Restoration Project – Webb

- Restoration of Big Gopher Wetland completed
- Restoration of Peanut Wetland Completed
- Photos from Photo stations taken
- Annual C-SWG meeting with collaborators

Gopher Frog Population Augmentation and Headstarting

- Metamorphs reared at Riverbanks Zoo will remain until spring when they will be released at the Webb Center – Total Released 2021 = 288
- Monthly Gopher Frog meeting for collaborators in SC (USFWS, ARC, USFS, SREL-UGA, LLA)
- Collected vegetation from breeding wetlands and delivered vegetation and headstarting supplies to the Dennis Center in preparation of gopher frog breeding and headstarting efforts in 2022

Camera Fence Surveys

- Processed 9297 photos from camera trap fences from Lewis Ocean Bay and Groton Plantation
- Southern Hognose documented at Groton Plantation

Exotic Species

- Participated in National Horizon Scan Exotic/Invasive Species Final Meeting
- Black and White Tegu update: 15 confirmed, 10 removed

Gopher Tortoise Population Augmentation with Waifs – Aiken Gopher Tortoise HP

-Waif tortoise from Connecticut picked up/transported to SREL/released at Aiken after quarantine

-Snapchat video on Aiken Gopher Tortoise Preserve to highlight “Rewilding” project

State Wildlife Grant – Conservation of Coastal Reptiles and Amphibians

Green Salamander Population Assessment across Forest Disturbance Gradient (Clemson) - Genetics samples being processed and analyzed

Patchnose Salamander Environmental DNA (Clemson) - Field surveys being conducted by Clemson

Pine Snake Movements Lewis Ocean Bay (Coastal Carolina) - Currently tracking 5 adult snakes – 2 females/3 males

Box Turtle Movements (Savannah River Ecology Lab, University of Georgia) - Currently tracking 24 of the 2019 Chester Co Seized turtles, 10 wild turtles from the area and an additional 24 long term captives to compare habitat use, movements, and effects of hard vs. soft release

Statewide Bat Program

Hired Kaitlyn Vredevoogd for bat culvert technician, start date Nov 15. New bat tower installed at Hampton Plantation State Historic Site with SCPRT and SCARNG partners. Planned, organized, and ran annual SC Bat Working Group virtual Teams meeting. Worked with NABat project support staff to submit all 2020-21 hibernacula and roost emergence counts to NABat online. Completed 4 culvert surveys looking for hibernating bats in Charleston County. Clarified and confirmed agent of the state designation with FWS Karen Marlowe and edited erroneous Little Brown Bat SC FWS bat fact sheet document.

Statewide Bat Monitoring (Bat Biologist, Jennifer Kindel, WNS and SWG grants)

- Nov 3: Hampton Bat Tower installed at Hampton Plantation State Historic Site with SCPRT and SCARNG partners.
- Nov 4: WNS mtg.
- Nov 5: NABat project support mtg. SBDN fall EC mtg.
- Nov 8: Acoustic monitoring follow up mtg
- Nov 9: Bat Impact Minimization Webinar Part 2: Deterrence. Hampton Bat Project mtg.
- Nov 10: Call with Morgan Wolf, Karen Marlowe about federal permits and agent of the state designation.
- Nov 15: Kaitlyn Vredevoogd first day, paperwork completed and sent in. Monthly Susan Loeb mtg.
- Nov 16: SCBWG annual mtg via Teams
- Nov 18: WNS call
- Nov 25 – 26: Off
- Nov 29-30: Hampton plantation tower photo, bat culvert surveys. Also attended Using Kaleidoscope Pro for Bat Auto-ID (Intermediate) training.
- Offered bat tech position, let others know someone else was selected.
- Submitted McCrady Proposal
- Sikes Act Expenditure Reporting submitted
- Requested estimate and ordered new laptop
- Met with Tim Boycott of Conestee Nature Preserve about bat monitoring and acoustics.
- Planned, organized, and ran annual SCBWG meeting
- Fuel and Auxiliary Card Survey completed
- Agent of the state: confirmed ok for potential future NLEB grad student
- Created logo for virtual 2022 SBDN meeting
- Conestee Preserve grant/letter of support completed
- Responded to Anne Ballmann about Pd surveillance kits needed this season
- Prepped for culvert surveys end of Nov
- Edited and submitted Little Brown Bat FWS document
- Submitted Maria Term PTR paperwork
- Managed, edited, entered 2020-21 statewide culvert data and created maps.
- Completed 4 culvert surveys looking for hibernating bats in Charleston County
- Requested certificates for NABat volunteers, McCrady staff, and Sunrift staff for various partnerships.
- Worked with NABat project support staff to submit all 2020-21 hibernacula and roost emergence counts to NABat online.
- Prepped materials for social media post thanking Sunrift for bat count event.
- Managed account charges and paperwork on and between all projects. Heaviest focus on closing WNS grant with Terence Tomlin.

- Responded to bat nuisance and information calls.

WNS: Hourly technician, Maria Monarchino

- Attended WNS monthly calls
- Assisted in the Hampton Plantation Bat Tower installation
- Ran acoustic data, created summaries, and created maps for various acoustic surveys that were completed this year
- Summarized coastal Northern Long-eared bat and Tricolor bat capture data for USFWS
- Attended Wildlife Acoustics Kaleidoscope Pro classes
- Prepared datasheets for winter culvert surveys 2021/2022
- Assisted training new technician
- Completed 4 culvert surveys looking for hibernating bats in Charleston County

DOT: Hourly culvert technician, Kaitlyn Vredevoogd

- Created 48 NABat thank you letters
- Mapped over 400 possible culvert survey sites statewide
- Surveyed two culverts
- Attended 2-day driver's training course
- Completed SCEIS training module

SWG: NABat Project (Clemson MS student/Dr. Susan Loeb)

- Dr. Susan Loeb continues to manually vet bat calls and submit data to NABat online.

Small Game Program

General Small Game Program Activities and Accomplishments

Responded to a minimum of 11 phone calls and numerous emails requesting technical assistance.

Program Leader Hook participated in a virtual meeting of the Eastern Grouse Working Group.

Mileage logs/receipts were scanned and forwarded mileage log email address. PCard Statements were scanned and forwarded to the PCard email address.

Program Leader Hook and SCBI Biologist Carmichael attended the Region I and Region III meeting at Belfast WMA.

SCBI Biologist Carmichael completed Cyber Security Training on Phishing scams.

Program Leader Hook participated in a virtual meeting of the Eastern Woodcock Migration Project collaborators in order to plan for this year's trapping activities.

Small Game Biologist Small wrote a post for the SCDNR blog regarding squirrels and bot fly infestation.

Issued 9 shooting preserve licenses. All preserve harvest data entered into the database.

Issued 2 Bird Dog Training Licenses.

Two new shooting preserves completed the application process (safety inspection/legislative approval).

Posted 2 social media posts on SCDNR Facebook, Twitter and Instagram feeds: Small Game Hunter

Survey Request (11/2) and Small Game Hunter Survey Request (11/24).

Mourning Dove Project

Program Leader Hook updated mourning dove band recovery information from bi-weekly reports.

Program Leader Hook reviewed Master Bander Permit.

Small Game Biologist Small aged 1000 dove wings for the USFWS dove wing bee.

Bobwhite Quail Project

Program Leader Hook, Small Game Biologist Small, and SCBI biologist Carmichael participated the monthly Indian Creek Partnership Committee meeting.

Program Leader Hook, Small Game Biologist Small, and SCBI biologist Carmichael participated in the annual Delta South Fall Covey Count.

Program Leader Hook and Small Game Biologist Small participated in the Kings Mountain fall covey count.

Program Leader Hook participated in a virtual National Bobwhite Conservation Initiative Budget Discussion where he served as the Chair Elect of the National Bobwhite Technical Committee.

SCBI biologist Carmichael inspected the Mason WMA in McCormick County to view recent understory/midstory mastication work.

SCBI Biologist Carmichael inspected the Saluda River public dove field for suitability as a Public Bird Dog Training Area.

SCBI Biologist Carmichael prepared a draft Invitation to Bid document for mulching/mastication work on the Indian Creek Focal Area in Newberry County and forwarded to the US Forest Service, Enoree Ranger District staff for comment.

SCBI Biologist Carmichael began work on a grant agreement between SCDNR and QF to continue funding for the Indian Creek Coordinating Wildlife Biologist position utilizing Good Neighbor Authority funds.

SCBI Biologist Carmichael visited a Berkeley County landowner and provided quail habitat management recommendation for approximately 400 acres.

SCBI Biologist Carmichael prepared wording for quail hunt data cards for the Bordeaux Quail Focal Area and provided to Graphics Section for printing.

Program Leader Hook and SCBI Biologist Carmichael participated in interviews for the vacant Quail Forever WLFW position in Allendale/Hampton counties.

Program Leader Hook and SCBI Biologist Carmichael reviewed applications for the vacant Assistant Small Game Program Coordinator position.

Small Game Biologist Small spent 12 days rehabbing and reclaiming field borders at Oak Lea WMA.

Farm Bill/Ag Liaison Activities

Bill/Ag Liaison Activities

Farm Bill Biologist Dan Peeples assisted Calhoun, Clarendon, Richland, and Orangeburg county Natural Resources Conservation Service with Environmental Quality Incentive Program, Conservation Stewardship Program, and Conservation Reserve Program applications, contracts, certifications, and modifications for private landowners.

Farm Bill Biologist Peeples assisted the DNR Media team with filming management practices performed on the Oak Lea Wildlife Management Area.

Farm Bill Biologist Peeples supervised the mastication of quail borders completed by Biologist Small.

Farm Bill Biologist Peeples coordinated and submitted paperwork to have a booth at the South Eastern Wildlife Expo.

Farm Bill Biologist Peeples met with several landowners and helped them fill out applications for the Environmental Quality Incentives Program. Guidance was given on timber management, deer management, and quail management.

Farm Bill Biologist Krieg complete 4 site visits in Lee County and wrote 2 management plans for potential EQIP and CSP applicants.

Farm Bill Biologist Krieg participated in a fall covey count on the on Mcbee WMA in Chesterfield County and Marsh WMA's in Marion County.

Farm Bill Biologist Krieg participated in a fall covey count on the on the Francis Marion National Forest in Charleston County.

Farm Bill Biologist Krieg participated in 2 fall covey counts on the on Carolina Sandhills National Wildlife Refuge in Chesterfield County.

Farm Bill Biologist Krieg organized and participated in a fall covey count on the on Santee Coastal WMA in Charleston County.

Farm Bill Biologist Krieg certified that a CSP Enhancement had been completed in Sumter, Williamsburg, Lee, and Marion Counties.

Farm Bill Biologist Krieg certified that 2 EQIP practices had been completed in Lee County.

Farm Bill Biologist Krieg certified that 3 CRP mid-contract management activities had been completed correctly.

Nongame Bird Conservation Program

Migratory Landbird Project

Collaborated with Coastal Carolina University on project researching reproductive success and survivorship of loggerhead shrike in coastal SC as part of an international work group efforts to conserve the species.

Collaborated with Clemson University project researching high elevation early successional bird communities.

Organized and hosted virtual meetings to help determine Atlantic Flyway landbird priorities and compiled solar resources from Atlantic Flyway states as chair of the Landbird Committee.

Approved 2 permits to further bird research in South Carolina.

Completed Sikes report for Bird Conservation staff.

Collaborated with McCrady training center staff to update the bird project MOU.

Attended 4-day virtual Partners in Flight conference.

Attended virtual USFWS webinar providing an overview of the proposed changes to incidental take under the Migratory Bird Treaty Act.

Provided information to USFWS on the SCDNR bald eagle project.

Participated in site visit to Act Basin NWR to discuss potential impoundment modifications that could improve habitat for marsh birds.

Assisted law enforcement with 2 cases regarding bird species.

Initiated project to explore using eBird data to predict common ground dove occupancy.

Collaborated with Audubon to determine potential locations for motus towers near Columbia, SC.

Developed comments for USFWS regarding the Migratory Bird Treaty Act incidental take.

Provided technical assistance on 3 bald eagle nests.

Participated in virtual Crab Bank meetings to discuss logistics for celebration events and the coastal bird conservation fund, and provided edits to Crab Bank press releases.

Sent final falconry webpage edits to SCDNR web staff.

Monitored loggerhead shrike on 4 days to help determine conservation priorities for the species.

Participated in International Loggerhead Shrike Working Group calls.

Concluded fall bird banding at SC Army National Guard McCrady Training Center. Total netting results for 23 banding sessions were 57 species & 919 birds; 56 species & 569 birds banded, 28 species & 332 recaptures and 6 species & 18 birds unbanded. Seventy-nine species noted on site during banding sessions. Received the second band recovery from the fall banding efforts at SC Army National Guard McCrady Training Center. A Brown Thrasher banded on 1 October 2019, was recovered on 4 August 2021, near Lucinda, Pennsylvania. Bird was 2 years old when found dead.

Conducted raptor surveys for the SC Army National Guard McCrady Training Center.

Presented Baltimore Oriole Survey and Banding Efforts to the Charleston Natural History Society.

Continued developing a more efficient way to organize and maintain past and future landbird data sets.

Made changes to the relational database, began creating a spreadsheet to more easily import data from different databases, and submitted banding data to the Bird USGS Bird Banding Lab.

Conducted routine activities for the Atlantic Coast Joint Venture, Partners in Flight, Atlantic Flyway, and other committees.

Directed activities of landbird, wading bird, marshbird, shorebird, and seabird SCDNR

staff by providing guidance on projects, developing grant proposals, and managing budgets.

Answered over 243 calls and emails related to technical assistance and other bird conservation efforts.

Red-cockaded Woodpecker Project

Conducted annual site visits to 18 properties enrolled in the Safe Harbor Program in: Aiken, Allendale, Berkeley, Clarendon, Colleton, Georgetown, Hampton, Jasper, Orangeburg, and Williamsburg counties.

Conducted initial site visit to one Beaufort County property interested in Safe Harbor enrollment.

Edited and submitted drafts of one Safe Harbor Agreement transfer for landowner review.

Discussed with landowners/consultants the transfers of five properties enrolled in the Safe Harbor Program.

Developed a series of Safe Harbor termination forms to make future processing of terminations more efficient.

Painted, tagged and marked new RCW trees at Tillman Sand Ridge HP.

25 phone calls and 159 emails were received and responded to regarding Safe Harbor and wildlife assistance and information.

Waterbird Project

Prepared grant reports for grants funding waterbird monitoring, research, and conservation. These include a State Wildlife grant funding seabird, shorebird, Wood Stork/wading, and Black Rail research and conservation efforts (Grant Title: Conservation of seabirds, shorebirds, wading birds, and marsh birds in South Carolina) and Section 6 grant (Grant Title: Monitoring and conservation of the Eastern Black Rail in coastal South Carolina).

Gave oral presentation at the annual national The Wildlife Society Conference during the symposium titled "Ecology and Conservation of Eastern black rail: Road to Recovery through Management" (Presentation Title: Eastern Black Rail Ecology and Habitat Management in South Carolina).

Shared pre-recorded presentation about the SCDNR Black Rail Project's objectives and accomplishments for the Florida Black Rail Working Group meeting and participated in discussions. Over 60 people attended this virtual meeting.

Met with EJ Williams, American Bird Conservancy, to discuss upcoming conservation priorities and opportunities in South Carolina.

Met with Mark Purcell, ACE Basin NWR, to prepare for targeted management for Black Rails at the refuge during 2021. SCDNR is receiving State of the Birds grant funding to support this project and collaboration with USFWS and private landowners.

Planned for 2021 field season and advertised upcoming seasonal positions on the Wading Bird and Black Rail projects.

Monitored and maintained water level loggers on two SCDNR properties in wetlands occupied by Black Rails to facilitate prompt management actions when appropriate. Collected water level and rainfall data in wetlands where Black Rails have been consistently detected during recent surveys. Communicated with biologists and property managers when water levels in impoundments managed for Black Rails deviated from target ranges.

Maintained arrays of research equipment including ARUs (autonomous recording units) and camera traps for Black Rail monitoring on SCDNR property. Reviewed and updated IDs for camera trap photos. Conducted call-playback surveys for Black Rails within research equipment arrays. These data will be used to compare detection methods and ensure future Black Rail monitoring is as efficient and effective as possible.

Maintained water level loggers, ARUs, and cameras to collect pre-treatment data at the ACE Basin NWR. SCDNR has been awarded funding from the State of the Birds program to study and assist with fine-scale management for Black Rails on the refuge during 2022-2024. This funding will also support work with private landowners and a new stewardship project.

Manually reviewed audio files collected using ARUs to evaluate the effectiveness of automated recognizers. SCDNR's extensive ARU dataset from wetlands occupied by Black Rails is being used for testing the capabilities of two types of automated call recognizers (BirdNET/Cornell and MATLAB/Adam Smith, USFWS I&M). If the recognizers produce accurate results, they may be used to analyze past and future recordings to determine site occupancy and improve the accuracy and efficiency of Black Rail monitoring.

Assisted colleagues in other states who have initiated or are planning projects to monitor Black Rails. Advised colleagues about equipment SCDNR uses to study and monitor Black Rails.

Participated in monthly virtual meeting for the Firebird Project (Gulf Coast rails), Firebird Sampling Design meeting and annual Firebird Adaptive Management Workshop. Shared information about results from SCDNR's research and tools used by the SCDNR Black Rail Project.

Represented SCDNR in the Avian Knowledge Network Colonial Waterbird Data Management Team. This team is working to develop a plan to integrate waterbird data from the Atlantic Flyway into the national database.

Responded to data requests. Provided rookery and stork banding data to other natural resource professionals.

Accompanied the Army Corps of Engineers on a final walk through of Crab Bank to sign off on the final parts of construction of the island.

Posted winter signs indicating no dogs and no trespassing above the high tide mark at Crab Bank Seabird Sanctuary with partners from Coastal Conservation League, Audubon South Carolina and Coastal Expeditions. The island was recently completed as part of a beneficial use project from the dredging of Charleston Harbor.

Maintenance of signage at Bird Key Seabird Sanctuary. After storms and excessive tide events, seasonal sanctuary signs must be replaced or moved. These signs inform the public of regulations pertaining to the site.

Site visit to Tomkins Island to assess possible predator presence, seabird and shorebird nesting habitat, and signage. Tomkins is a Seabird Sanctuary Island and visits are necessary for proper management.

Continued rewriting management plans for Joiner Bank, Bay Point Shoal, North Santee Bar, and Tomkins Island. Management plans provide a basis for the stewardship of SCDNR properties.

Prepared state update for South Carolina for the annual American Oystercatcher Working Group meeting being held remotely this year.

Met with staff from the Marine Division of DNR to plan for spring surveys of shorebirds and horseshoe crab spawning areas to help answer questions about the connection between migratory shorebirds and crabs in South Carolina.

Conducted International Shorebird Surveys (ISS) at Bird Key, Capers, and Sand Island-Yawkey.

Data is collected on species and number present at each site and entered into a national database which is part of a larger study to better estimate shorebird populations during migration throughout their range.

Resighting of American Oystercatcher bands in the Cape Romain region on the ICW. Reporting of bands to a national database provides migratory information.

Site visit to Turtle Island WMA; shorebird survey conducted at front beach area.

Attended "Beach Drops" on Bulls Island in Cape Romain NWR; prevented disturbance of migratory flocks of shorebirds and educated the public regarding species that over winter in the refuge and assisted with ID of birds via spotting scope. 92 participants total.

Scheduled online interviews with candidates for the Shorebird Steward Coordinator position.
Gave presentation to Edisto Island Preservation Alliance on the Whimbrel roost at Deveaux Bank.
Began purchase and organization of posting materials for 2022 seabird and shorebird nesting season.
Began annual checks and maintenance of Barn Owl nest boxes; completed assessments at Yawkey (8 boxes), Bear Island (12 boxes), and Santee Coastal Reserve uplands (5 boxes).
Assisted with Red-cockaded Woodpecker capture in Francis Marion National Forest and translocation to properties in need of population augmentation.

December

Coordination and Administration

Participated in numerous meetings with Deputy Director Cope, Chief Dukes and Assistant Chiefs Simmons and Chappellear on various topics including, coordinating staff work schedules, activities, field operations, implementation of regulations, and budgets. Supervision of Statewide Programs staff continued. Participated in numerous meetings including, Shorebird Steward interviews, Alligator Biologist interviews, meet with peer group for adaptive Leadership Training, attended site visit to Buckfield Plantation, and attended Scientific Collection Permit update meeting. Reviewed and provided questions for Small Game Assistant Project Leader interviews and reviewed applications. Final report for Section 6 Projects was submitted to the USFWS and Property Use Regulations were prepared and submitted for General Assembly review.

Big Game Program

General Activities

Responded to 63 phone calls and 19 emails from the public related to new or proposed hunting regulations, deer/turkey tagging, sick or nuisance animals, urban deer, and other general deer, turkey, and black bear related topics.

Law Enforcement related activities involved answering questions from the public concerning legal issues related to deer, turkey, bears, hogs, weapons, and hunting (13 calls and 10 e-mails approximately 2.0 hours). Consulted directly with field officers (3) related to tame deer, DNA testing, and sick deer.

Coordinated with OMO on planning and drafting news releases, social media posts, mass emails, etc. related to the wild turkey harvest report, summer turkey survey, youth deer hunt day, end of deer season tag requests.

Mileage logs/receipts were scanned and forwarded to appropriate staff. PCard statements/receipts were scanned and forwarded to the PCard email address.

Participated in 2 interviews with the media.

Provided public speaking engagement with approximately in attendance.

Completed 2 surveys from other agencies/entities.

Deer Research and Management Project

The Deer Quota Program (DQP) required effort primarily related to amendments to permits for cooperators who requested additional tags. Prepared material for the harvest report reminder that is sent to cooperators to solicit their harvest report for the season. Approximately 1,394 cooperators were in the program this year.

Attended a meeting requested by the Chairman of the House Agriculture, Natural Resources, and Environmental Affairs Committee to discuss the regulation which prohibits the use of commercial natural deer urine products which is in place to prevent the introduction of chronic wasting disease. Representatives from the urine industry were present.

Preparations continued related to the 2021 Deer Hunter Survey which will be executed following the close of the season. This included developing the mailing list database and coordinating with The Sourcing Group on details of the mailout.

Continued coordination and communication with the PhD student from University of Georgia on the cooperative research project entitled "Use of fecal genotyping and spatial capture-recapture modeling to investigate coyote abundance in South Carolina. Field work on this 3-year study has concluded. Current activities include metabarcoding of samples for diet analysis.

Deer Depredation Permits were entered as they were received. To date approximately 624 permits have been recorded.

Received 4 requests for Urban Deer Management Permits to remove overabundant deer in resort/residential communities. After reviewing the requests, the permits were issued.

Measured 2 sets of antlers in the office by appointment.

Wild Turkey Research and Management Project

The 2021 Summer Turkey Survey was completed. This year approximately 210 participants recorded 1,126 unique observations, seeing approximately 7,300 turkeys across the state in July and August. Results indicate that the total recruitment ratio was 2.0 which remains low but is the highest in a decade.

Attended the NWTWSC Board meeting and provided an update on deer and wild turkey issues.

Continued working with OMO, Licensing, and The Sourcing Group to procure supplies (tag forms, envelopes, inserts, etc.) and update printed material for turkey tag fulfillment for the spring 2022 season. The initial fulfillment for turkey tags will be in mid-February.

Continued coordination and communication related to the study entitled “Reproductive Ecology of Wild Turkeys in an Unhunted Population.” This is a cooperative study between SCDNR, USDA Forest Service-Southern Research Station, University of Georgia, Louisiana State University, and University of Missouri. The objectives focus on determining reproductive parameters in turkeys that are not hunted. Trap site selection and pre-baiting for the 2022 trapping season began during the month. This project will continue until 2024 and findings will continue to be provided as they become available.

Black Bear Research and Management Project

Upstate - Staff handled 12 bear complaint calls/sightings. Bear complaint calls were increased due to the unseasonably warm weather in December which had bears moving around more than normal. One nuisance bear was trapped in city limits of Westminster and removed. Staff conducted 4 site visits on nuisance complaints this month. There were 8 road kills this month which brings the roadkill numbers to 44 in the Upstate for the year. This was one of the highest numbers reported for road kills for the past 20 years. Staff entered harvest data and roadkill data for 2021 and shipped collected bear teeth off for aging. Staff discussed potential bear research project with Clemson graduate student and Appalachian Bear Rescue group in Tennessee.

Furbearer and Alligator Program

Biologist Hart Activity

General Activities and Accomplishments

- Monitored movement of GPS tagged alligators.
- Final troubleshooting for Access database and adding data for all non-public hunt alligator permits
- Troubleshooting final Access database for Captive alligator permits
- Coordinating regularly with Clemson researchers regarding alligator movements
- Ongoing permitting website and data management improvements
- Working on harvest summaries and reports for all types of harvest.
- Organizing and entering nuisance harvest data
- Interviewed 9 applicants for the Alligator Bio 2 position and chose top candidates

Alligator Program Biologist Accomplishments

- Display/Transport Permits - 3
- Private Lands Permit Packages approved - 0
- Nuisance Calls - 6
- Nuisance Permits- 0
- Media Inquiries- 0
- Presentations- 0

Permitting and Lottery Hunt Program

Herpetology Conservation Program

General Activities and Accomplishments

-Presentation to SC Partners and Amphibian and Reptile Conservancy Group

“SC State Herp Update 2021” – 12/8/2021

-Recon visit to Ft. Jackson to look at habitats with Biologists – 12/9/2021

-Presentation to the Forest Service Lunch and Learn Series

“Exotic Species in SC” – 12/14/2021

-Site visit Buckfield - 12/17/2021

McCrary/Clarke’s Hill Herpetological Surveys - Clarke’s Hill Training Center surveys for Websters/Tiger Salamanders

Catawba-Wateree Herp Surveys - Surveys underway at Liberty Hill, Wateree, Kings Mountain State Park and Carolina Sandhills NWR

Multi-State Sandhills Restoration Project – Tillman – No activity during the month

Multi-State Wetland Restoration Project – Webb – No activity during the month

Gopher Frog Population Augmentation and Headstarting - No activity during the month

Camera Fence Surveys

-Processed 350 photos from camera trap fences from Lewis Ocean Bay

-Moved 2 camera fences at Lewis Ocean Bay to identify new areas with pine snakes

Exotic Species – No activity during the month

Gopher Tortoise Population Augmentation with Waifs – Aiken Gopher Tortoise HP - 10 waif tortoises picked up from Lake City FL/transported to SREL – to be added to AGTHP – 12/7/2021

State Wildlife Grant – Conservation of Coastal Reptiles and Amphibians – No activity during the month

Green Salamander Population Assessment across Forest Disturbance Gradient (Clemson)

-Genetics samples being processed and analyzed

-No Cost Extension completed to extend through August 2022

Patchnose Salamander Environmental DNA (Clemson) - Field surveys being conducted by Clemson

Pine Snake Movements Lewis Ocean Bay (Coastal Carolina)

-Currently tracking 5 adult snakes – 2 females/3 males

-Data presented at the SC PARC meeting by Alan Jones-Coastal Carolina University student

Box Turtle Movements (Savannah River Ecology Lab, University of Georgia)

-Currently tracking 24 of the 2019 Chester Co Seized turtles, 10 wild turtles from the area and an additional 24 long term captives to compare habitat use, movements, and effects of hard vs. soft release

-Submitted disease testing swabs/waiting on results

Statewide Bat Program

Analyzed and summarized all bat data collected in 2021 for grants, wrote up and submitted final SWG and WNS reports. Maria Monarchino bat technician left for bat biologist position with Florida Fish and Wildlife Conservation Commission; we completed exit paperwork, managed all equipment, moved all organized files and data to appropriate locations. Discussed sharing bat data collected by DNR with Mary Lucas; Jen ok to approve bat data requests through NABat online database portal. Worked with Dr. Joe Hoyt to survey 1 Spartanburg and 1 Union Co mine for study looking at PESU survival from WNS rangewide. Standing up for Lowcountry Bats article in Garden & Gun published.

Statewide Bat Monitoring (Bat Biologist, Jennifer Kindel, WNS and SWG grants)

- Dec 2: WNS call
- Dec 6: Bat roost data mtg with Joe Lemeris
- Dec 8: Call with Mattea Lewis about Maria's bat tech position
- Dec 9: SBDN conf planning mtg
- Dec 10: Maria Monarchino's last day
- Dec 14: NABat community of practice mtg
- Dec 17: SBDN conf planning mtg #2
- Dec 20: Scientific Collection Permit Reporting teams meeting
- Dec 24-28: OFF
- Dec 29: NABat data request meeting and data sharing discussion with Mary Lucas regarding data sharing and NABat.
- Continued to work with SBDN exec team to plan virtual meeting in 2022. Took lead on editing and preparing announcement.
- Responded to Anne Ballmann NWHC survey asking what authority partners are sampling bats for Pd surveillance.
- After discussion with Mary Lucas, approved a USFWS/USGS request to share DNR bat hibernacula data with GPS coordinates obfuscated to the grid cell (10 x 10 Km) level.
- Completed exit paperwork with Maria, managed all equipment, moved all organized files and data to appropriate locations.
- Continued culvert surveys looking for hibernating bats and taking SARP data
- Worked with Peter Crawford to have faulty iPad repaired. Was faulty from the beginning when we purchased it a year ago. Repair not possible, so Apple sent new one after \$300+ repair fee.
- Sent hard copy certificates for NABat volunteers, McCrady staff, and Sunrift staff for various partnerships.
- Submitted social media post thanking Sunrift for bat count event to Jessie Egan.
- Analyzed and summarized data all bat data collected in 2021 for grants, wrote up and submitted final SWG

and WNS reports.

- Worked with Rachel and Jessica for coastal culvert survey travel requests.
- Began working with Stacy on bat signs for state park bat boxes
- Send CORA bat tower design and notes to Achi
- Worked with Dr. Joe Hoyt to survey 1 Spartanburg and 1 Union Co mine for study looking at PESU survival from WNS rangewide. Obtained permission from landowners. This is year one of a two year project.
- Standing up for Lowcountry Bats article in Garden & Gun published
- Managed account charges and paperwork on and between all statewide bat grants and projects. Heaviest focus on closing WNS grant with Terence Tomlin continues.
- Responded to bat nuisance and information calls.

WNS: Hourly technician, Maria Monarchino

- Surveyed 15 culverts
- Entered culvert survey data from 2019-2021 into spreadsheet
- Created brief summaries and maps for end of year reports
- Organized all data and computer files to be backed up upon leaving
- Last day Dec 10: Completed exit paperwork, returned all equipment

DOT: Hourly culvert technician, Kaitlyn Vredevoogd

- Surveyed 54 culverts
- Assisted in three mine surveys and swabbing for WNS study
- Checked Hampton County bat tower near Webb Center and downloaded temperature data
- Entered culvert survey data from 2019-2021 into spreadsheet
- Created brief summaries and maps from NABat Acoustic data and summer roost data for end of year report

SWG: NABat Project (Clemson MS student/Dr. Susan Loeb)

- Dr. Susan Loeb continues to manually vet bat calls and submit data to NABat online.

Small Game Program

General Small Game Program Activities and Accomplishments

Responded to a minimum of 19 phone calls and numerous emails requesting technical assistance.

Program Leader Hook participated in a virtual meeting of the Eastern Grouse Working Group.

Mileage logs/receipts were scanned and forwarded mileage log email address. PCard Statements were scanned and forwarded to the PCard email address.

Program Leader Hook participated in a virtual meeting of the Eastern Woodcock Migration Project collaborators in order to plan for this year's trapping activities.

Program Leader Hook and Small Game Biologist Small attended the virtual thesis presentation for Clemson student Mike Adams who conducted research on ruffed grouse and golden winged warblers in SC.

Issued 2 shooting preserve licenses. All preserve harvest data entered into the database.

Issued 1 Bird Dog Training Licenses.

Purged the shooting preserve files pulling inactive files and filing in another location.

Posted 2 social media posts on SCDNR Facebook, Twitter and Instagram feeds: Small Game Hunter Survey Request (12/16 & 12/29) and Small Game Hunter Survey Request (11/24). Conducted one traditional print media interview regarding the rabbit disease RHDV-2 that is currently expanding across the country.

Mourning Dove Project

Program Leader Hook updated mourning dove band recovery information from bi-weekly reports.

Program Leader Hook aged 100 dove wings for the USFWS dove wing bee

Small Game Biologist Small aged 1600 dove wings for the USFWS dove wing bee.

Bobwhite Quail Project

SCBI biologist Carmichael delivered quail hunt data cards to the Bordeaux Quail Focal Area in McCormick County and spent some time touring the area to view habitat conditions.

Program Leader Hook and SCBI biologist Carmichael continued with evaluation and screening of applicants for the Assistant Small Game Program Leader position.

SCBI biologist Carmichael coordinated a meeting of the SC Bobwhite Funding Partnership event planning subcommittee to begin planning for a spring 2022 fund-raiser.

SCBI Biologist Carmichael drafted a letter for DNR leadership signature to NRCS in support of a program for the restoration and conservation of Carolina Bays in the State.

Program Leader Hook and SCBI Biologist Carmichael participated in a conference call with Small Game Program Leader Hook and Attorney Geordie Zug to discuss the Federal Trademark Office response to our application to trademark the South Carolina Bobwhite Initiative logo and certain products utilizing the logo.

SCBI Biologist Carmichael visited a Greenwood County landowner and prepared a quail habitat management plan for approximately 143 acres.

Program Leader Hook and SCBI Biologist Carmichael visited Cowpens National Military Park with Park Service staff in Cherokee county to view NPS plans for habitat restoration on the park.

Program Leader Hook and SCBI Biologist Carmichael attended both the virtual NRCS State Technical Advisory Committee (STAC) and the STAC Forestry and Wildlife Subcommittee.

Small Game Biologist Small spent 14 days rehabbing and reclaiming field borders at Oak Lea WMA.

Farm Bill/Ag Liaison Activities

Bill/Ag Liaison Activities

Farm Bill Biologist Krieg complete 4 site visits in Florence and Williamsburg Counties and wrote 4 management plans for potential EQIP and CSP applicants.

Farm Bill Biologist Krieg participated in the NRCS Forestry and Wildlife Subcommittee meeting.

Farm Bill Biologist Krieg visited Botany Bay Heritage Preserve in Charleston County to make Pollinator Planting Recommendations.

Farm Bill Biologist Krieg explained the purpose and status of the South Carolina Bobwhite Initiative to participants of the South Carolina Epagneul Breton Field Trial at H. Cooper Black in Chesterfield County.

Farm Bill Biologist Krieg completed NRCS's Level 1 Conservation Planner Training.

Farm Bill Biologist Dan Peoples assisted Calhoun, Clarendon, Richland, and Orangeburg county Natural Resources Conservation Service with Environmental Quality Incentive Program, Conservation Stewardship Program, and Conservation Reserve Program applications, contracts, certifications, and modifications for private landowners.

Biologist Peoples attended the Forestry and Wildlife Natural Resources Conservation Service State Technical Subcommittee meeting to discuss NRCS practices and programs regarding forestry and wildlife practices. Peoples gave professional opinion and recommendations for alternative actions.

Biologist Peoples provided professional opinion regarding new ranking criteria for the Natural Resources Conservation Services Quail Initiative Funding.

Peoples presented information to the state Natural Resources Conservation Service regarding new changes to the Quail Initiative funding area, new ranking questions, and updated approved practices for the Quail Initiative Funding so that those with access to this special funding pool would understand and utilize it efficiently.

Peoples has also reviewed a proposed management plan template provided by the South Carolina Natural Resources Conservation Service Wildlife Biologist. This will create a basic form that staff will be able to utilize to provide consistency in appearance to the public. The template is currently still being discussed and edited.

Biologist Peoples attended a Native Warm Season Grasses Forage and Grazing presentation virtually to further understanding of and improve the ability to disseminate the information gained to the public.

Biologist Peoples continues to manage and implement quail practices on the Oak Lea Wildlife Management Area.

Nongame Bird Conservation Program

Migratory Landbird Project

Collaborated with Coastal Carolina University on project researching reproductive success and survivorship of loggerhead shrike in coastal SC as part of an international work group efforts to conserve the species.

Collaborated with Clemson University project researching high elevation early successional bird communities.

Organized and hosted virtual meetings to help determine Atlantic Flyway landbird priorities and compiled solar resources from Atlantic Flyway states as chair of the Landbird Committee.

Approved 3 permits to further bird research in South Carolina.

Attended meeting to discuss a potential competitive state wildlife grant project for motus in the southeast.

Participated in virtual meeting to discuss updates to the SCDNR scientific collection permit application.

Conducted site visit to Patriots Point and wrote and compiled information regarding the current conservation easement and a proposed easement for exchange.

Attended Clemson student M.S. thesis defense for a project studying Bachman's sparrows on Yawkey and Santee Coastal Reserve.

Collaborated with McCrady training center staff to update the bird project MOU.

Attended virtual NRCS STAC meeting.
 Assisted law enforcement with 1 case regarding bird species.
 Continued project to explore using eBird data to predict common ground dove occupancy.
 Collaborated with Audubon to determine potential locations for motus towers near Columbia, SC.
 Developed comments for USFWS regarding the Migratory Bird Treaty Act incidental take.
 Provided technical assistance on 3 bald eagle nests.
 Participated in virtual Crab Bank meetings to discuss logistics for celebration events and the coastal bird conservation fund and provided edits to Crab Bank press releases.
 Monitored loggerhead shrike on 9 days to help determine conservation priorities for the species.
 Reviewed 4 annual reports for USFWS grants.
 Participated in 4 Christmas Bird Counts and compiled the Winyah Bay CBC.
 Participated in International Loggerhead Shrike Working Group calls.
 Continued developing a more efficient way to organize and maintain past and future landbird data sets.
 Made changes to the relational database, began creating a spreadsheet to more easily import data from different databases, and submitted banding data to the Bird USGS Bird Banding Lab.
 Conducted routine activities for the Atlantic Coast Joint Venture, Partners in Flight, Atlantic Flyway, and other committees.
 Directed activities of landbird, wading bird, marshbird, shorebird, and seabird SCDNR staff by providing guidance on projects, developing grant proposals, and managing budgets.
 Answered over 200 calls and emails related to technical assistance and other bird conservation efforts.

Red-cockaded Woodpecker Project

Conducted annual site visits to 9 properties enrolled in the Safe Harbor Program in: Sumter, Colleton, Hampton, Allendale, Beaufort, and Marlboro counties.
 Conducted initial site visit to one Colleton County property interested in Safe Harbor enrollment.
 Conducted site surveys to two properties in Horry and Sumter counties in response to public RCW reports.
 Assisted in organizing, attended and presented 2021 SCDNR RCW data at Annual SC Public Lands RCW meeting (virtual).
 Assisted in the annual Christmas Bird Count at Yawkey Wildlife Center – surveyed Cat Island uplands.
 26 phone calls and 81 emails were received and responded to regarding Safe Harbor and wildlife assistance and information.

Waterbird Project

Planned for 2022 field season on the Wading Bird and Black Rail projects.
 Monitored and maintained water level loggers on two SCDNR properties in wetlands occupied by Black Rails to facilitate prompt management actions when appropriate. Collected water level and rainfall data in wetlands where Black Rails have been consistently detected during recent surveys. Communicated with biologists and property managers when water levels in impoundments managed for Black Rails deviated from target ranges.
 Maintained arrays of research equipment including ARUs (autonomous recording units) and camera traps for Black Rail monitoring on SCDNR property. Reviewed and updated IDs for camera trap photos. Conducted call-playback surveys for Black Rails within research equipment arrays. These data will be used to compare detection methods and ensure future Black Rail monitoring is as efficient and effective as possible.
 Manually reviewed audio files collected using ARUs to evaluate the effectiveness of automated recognizers. SCDNR's extensive ARU dataset from wetlands occupied by Black Rails is being used for testing the capabilities of two types of automated call recognizers (BirdNET/Cornell and MATLAB/Adam Smith, USFWS I&M). If the recognizers produce accurate results, they may be used to analyze past and future recordings to determine site occupancy and improve the accuracy and efficiency of Black Rail monitoring.
 Assisted colleagues in other states who have initiated or are planning projects to monitor Black Rails.
 Advised colleagues about equipment SCDNR uses to study and monitor Black Rails.
 Participated in monthly virtual meeting for the Firebird Project (Gulf Coast rails), Firebird Sampling Design meeting and annual Firebird Adaptive Management Workshop. Shared information about results from SCDNR's research and tools used by the SCDNR Black Rail Project.
 Represented SCDNR in the Avian Knowledge Network Colonial Waterbird Data Management Team. This team is working to develop a plan to integrate waterbird data from the Atlantic Flyway into the national database.
 Responded to data requests. Provided rookery and stork banding data to other natural resource professionals.

Completed grant reports for grants funding waterbird monitoring, research, and conservation. These include a State Wildlife grant funding seabird, shorebird, Wood Stork/wading, and Black Rail research and conservation efforts (Grant Title: Conservation of seabirds, shorebirds, wading birds, and marsh birds in South Carolina) and Section 6 grants (Grant Titles: Monitoring and conservation of the Eastern Black Rail in coastal South Carolina and Monitoring of the Red Knot (*Calidris canutus rufa*) in coastal South Carolina).

Conducted International Shorebird Surveys at Bird Key and at North end of Capers Island. Data is collected on species and number present at each site and entered into a national database. These shorebird surveys are part of a larger study to better estimate shorebird populations during migration.

Conducted 3 Piping Plover surveys at 4 sites. Surveys provide information about location of banded birds, abundance, and migratory patterns.

Co-organized and participated in a celebration of the completion of Crab Bank. Staff members of SCDNR and the Army Corps of Engineers boated to the island to view the finished Seabird Sanctuary and celebrate the end of a long process to get the island rebuilt.

Wrote a management plan for the SCDNR Seabird Sanctuaries and Heritage Preserves: Crab Bank, Deveaux Bank, Tomkins Island, Bird Key-Stono, North Santee Bar, Joiner Bank and Bay Point Shoal.

Maintained closure and educational signs at Bird Key Seabird Sanctuary. After storms and excessive tide events, seasonal sanctuary signs must be replaced or moved. These signs inform the public of regulations pertaining to the site.

Met with SCDNR Coastal Birds project team and Manomet staff to discuss and plan shorebird projects for Spring of 2022.

Participated in annual Winyah Bay and McClellanville Christmas Bird Counts (CBC) by leading groups to survey impoundments at Cat Island and Murphy Island. Compiled data and reported to leader. Long term CBC data provides information on avian population trends.

Resighted American Oystercatcher bands in the Cape Romain region. Reporting of bands to a national database provides information about wintering sites of oystercatchers.

Continued annual checks and maintenance of Barn Owl nest boxes; completed assessments at Santee Delta.

Attended the annual American Oystercatcher meeting that was held virtually over 3 days. The meeting partly focused on creating new habitats for nesting shorebirds and seabirds.

Attended Maina Handmaker's PhD graduate committee meeting. Maina is researching movement patterns of Whimbrel in South Carolina and is attending University of South Carolina.

Conducted first interviews with candidates for the SCDNR Shorebird Steward Coordinator position.

WILDLIFE SECTION

November

Regional Operations Activity Summary

Wildlife technical guidance was provided to 386 contacts along with 19 technical guidance site visits. Five (5) management plans were written. Other agencies were assisted on 45 occasions requiring 40 person-days. Two hundred forty-nine (261) nuisance wildlife complaints (including 35 bear and 34 alligator calls) were handled. Fourteen (14) nuisance site visits were made. Six (6) programs/presentations were given with 189 in attendance. Field studies required 50.5 person-days and data analysis required 73.6 person-days. Thirty-three (33) quail surveys, 49 bat surveys, 1 wading bird survey, 1 shorebird/seabird survey and 14 other surveys were conducted. Twenty-five (25) neotropical bird counts were conducted. Nineteen (19) antlers were scored. Eighty-five (85) woodduck boxes were checked. Four (4) news releases were submitted, 3 interviews were granted and 1 environmental review was conducted. There were a total of 168 water level management days.

Heritage Preserve (HP) Habitat Management Summary

Heritage Preserve staff conducted 343 site visits. Prescribed burning occurred on 339 forest acres. Exotic control occurred on one (1) heritage preserve. Forest herbicide occurred on 0.5 acre. Twenty-two (22) miles of trails were maintained, 12 miles of firelanes were disced, 8 miles of roads were mowed, 21 miles of roads were scraped and 22 miles of trails were maintained. Thirty-five (35) acres were mowed/bushhogged.

Wildlife Management Area Habitat Management Summary

Field agricultural activities on WMAs included 302 acres mowed/bushhogged and 539 field/agriculture acres were disced. Twenty-nine (29) miles of roads were mowed, 119.5 miles of roads were scraped and 4.5 miles of roads were graveled. Prescribed burning occurred on 32 forest acres, 53 agricultural acres and 25 marsh acres. Agricultural herbicide occurred on 41 acres and forest herbicide occurred on 80 acres. Twelve (12) miles of trails were mowed, 8 miles of dikes were mowed, 18 miles of dikes were retopped, and 7.5 of firelanes were disced. Two hundred eighty-one (281) acres of annuals were planted and 10 acres of perennials were planted. Three (3) water

control structures were installed. Eighty (80) WMA signs, 8 HP boundary signs and 72 other signs were posted. Ten (10) gates were refurbished or installed. Six hundred seventy-four (674) WMA phone calls were answered.

WMA Hunts and Visitation

Marsh WMA – 629 visitors, of which 622 were hunting or scouting. Hunters harvested 15 deer (9 bucks and 6 does), 1 coyote, 1 hog, 59 ducks, 5 squirrels, and 31 raccoons.

Woodbury WMA – 784 visitors, of which 763 were hunting or scouting. Hunters harvested 14 deer (6 buck, 8 does), 4 hogs, 29 ducks, 25 squirrels, and 94 raccoons.

Pee Dee Station Site – 391 visitors, of which all were hunting or scouting. Hunters harvested 15 deer (12 bucks and 3 does) and 2 raccoons.

Great Pee Dee HP – 173 visitors, of which 148 were hunting, 26 were scouting or sightseeing, and 2 were fishing. Hunters harvested 5 hogs, 15 raccoon, 8 ducks and 4 deer (4 bucks).

McBee WMA - 160 visitors, including 150 hunting and 10 scouting. Nine deer and 1 quail were harvested. Total deer harvest for the season was 12 deer: 5 bucks and 7 does.

Draper WMA - 130 total hunters - 111 deer hunters (5 harvested), 4 coyote hunters (1 harvested), 7 squirrel hunters (2 harvested), 15 dove hunters (3 harvested)

Worth Mtn. WMA - 169 total users – 121 deer hunters (4 does, 3 bucks harvested), 14 coon hunters (4 harvested), 15 squirrel hunters (6 harvested), 10 rabbit hunters (0 harvested), 9 scouting

Liberty Hill WMA - 434 visitors, including 397 hunting, 1 fishing, 15 scouting, 2 hiking, 14 sightseeing, and 5 biking. Nine deer, 1 coyote, 2 raccoons and 6 squirrels were harvested.

Landsford Canal FLA Bird Dog Training Area: 5 users (20 birds released, 10 birds recovered)

Angelus Bird Dog Training Area: 12 hunters released 55 quail and harvested 35 birds.

Belfast WMA - 37 hunters; harvested 9 bucks and 7 does

Wateree WMA - 24 hunters; harvested 4 bucks and 3 does

Belfast WMA - 3 hunters; harvested 0 deer

Love WMA Youth Deer Hunt - 3 hunters; harvested 1 buck and 1 doe

Belfast WMA - 25 hunters (Small Game)

Enoree Waterfowl Area - 1 youth day: 7 hunters, harvested 3 ducks; 2 adult days: 86 hunters harvested 54 ducks

Wateree River WMA - 2 lottery hunts: 7 hunters harvested 10 ducks

Crackerneck Wildlife Management Area - 477 hunters and fishermen. Harvest: 15 Whitetail deer, 5 feral hogs, 1 Eastern gray squirrel, 3 coyote, 1 raccoon, 20 Channel Catfish, and 6 Largemouth Bass.

Santee Cooper Wildlife Management Area - 221 hunters; harvested 7 bucks, 4 does, and 1 unspecified

Manchester Wildlife Management Area - 5 hunters; harvested 4 does

Santee Cooper Wildlife Management Area - 21 hunters; shot 469 times and harvested 71 doves

Santee Dam Wildlife Management Area - 36 hunters; shot 468 times and harvested 56 doves

Bland Field - 26 hunters; shot 29 times and harvested 0 doves

Toumey Field - 9 hunters; shot 36 times and harvested 6 doves

Santee Cooper Wildlife Management Area - 16 hunters; shot 154 times and harvested 24 ducks

Hickory Top Wildlife Management Area - 96 hunters; shot 703 times and harvested 105 ducks

Potato Creek Wildlife Management Area - 9 hunters; shot 52 times and harvested 19 ducks

Congaree Bluffs Heritage Preserve - 3 hunters harvested 0 deer

Canal WMA dove: One hunt day.

Bonneau Ferry Adult/youth deer - 26 Days, 126 hunter days, 15 deer harvested.

Bonneau Ferry lottery deer - 8.5 Days, 145 hunter days, 23 deer harvested.

Bonneau Ferry lottery youth waterfowl - 1 Day, 6 hunter days, 16 ducks harvested.

Tibwin Youth deer - 2 Days, 25 hunter days, 13 deer harvested.

Cross Generating Station youth deer - 3 Days, 8 hunter days, 4 deer harvested.

Sandy Beach youth deer - 3 Days, 28 hunter days, 15 deer harvested (including 4 firsts).

Bear Island WMA - CAT I Waterfowl Hunts: 40 Hunters, 129 ducks.

Botany Bay WMA - Archery Deer Hunts: 90 Hunters, 2 bucks, 2 does; Lottery Deer Hunts - 96 Hunters, 2 bucks, 14 does; Dove Hunts: 42 Hunters (21 Adults/21 Youth), 77 doves.

Donnelley WMA - Lottery Deer Hunts: 104 Hunters, 17 bucks, 28 does, 2 hogs; Dove Hunts: 28 Hunters (24 Adults/4 Youth), 26 doves; Small Game Hunts: 15 Hunters, 8 squirrels, 2 raccoons; CAT II Waterfowl Hunts: 23 Hunters, 25 ducks.

Edisto River WMA - Deer Hunts - 31 Days offered with no harvest results.

Webb WMA Lottery Deer Hunts - 4 Hunts, 8 days, 81 hunters, 16 bucks, 1 button buck, 13 does, and 2 hogs harvested.

Webb WMA Archery Hunt - 3 Days and 22 hunters, 2 bucks harvested
Palachucola WMA Lottery Deer Hunts - 1 Hunt, 3 days, 26 hunters, 7 bucks, 7 does, 2 button bucks, and 4 hogs harvested.
Hamilton Ridge WMA Lottery Deer Hunts - 2 Hunts, 6 days, 62 hunters. 11 bucks, 15 does, 3 button bucks, and 11 hogs harvested.
WMA Duck Hunts - 6 Days, 38 hunter days, 44 ducks harvested.
Small Game Hunts - 3 Days, 137 hunter days, 23 squirrels, 16 rabbits, and 18 raccoons harvested.
Webb WMA Dove Hunts - 1 Hunt, 3 hunters, 8 doves harvested.
Palachucola WMA Dove Hunt - 1 Hunt, 2 hunters, 15 doves harvested.

Wildlife Regional Operations – Chief

Meetings attended during the month included the quarterly Heritage Trust Advisory Committee meeting, the monthly WFF Senior Staff meeting, a Southeast Region Federal Aid Coordinators' meeting, a DNR Habitat Protection Committee meeting, a three-day Leadership Development Conference, an inter-regional Wildlife Section Dove Field Management Summit, a combined Regions 1 and 3 staff meeting, a meeting with NC State University faculty to discuss an economic impact study of WMAs, and numerous meetings with Deputy Director, Assistant Chiefs, and staff to discuss administrative, budget and personnel issues.

Drafted, proofed, verified and submitted Final Regulations for General Assembly approval for Wildlife Management Area regulations and Field Trial regulations. Drafted and submitted Emergency Regulations for Public Dove Fields.

Completed and submitted an interim performance report for the South Carolina Wildlife Partnership Voluntary Public Access grant.

Participated in two video conferences and 2 interviews for the vacant Assistant Unit Leader position with the SC Cooperative Fish and Wildlife Research Unit as part of the search committee for the position.

Conducted habitat evaluations and infrastructure inspections at the Pee Dee Station Public Dove Field and Samworth WMA.

Conducted 2 EPMS Planning Stage reviews.

Responded to a minimum of 2 miscellaneous technical guidance calls during the month.

Administrative duties related to the migratory bird program and maintaining agency bird banding permit included: Distribution of band recovery records to appropriate banding personnel and assisting the Bird Banding Lab with data requests.

Regions 1 & 3 Assistant Chief Activities

Assisted regional staff with purchase requisitions, receiving and inspection reports, and personnel transactions forms. Submitted purchase card summaries by email for Region 3 Staff on November 9 and 18. Issued 3 nuisance alligator permits to private landowners within the region. Attended the Senior Staff meeting in Columbia Office on November 1. Conducted a joint meeting with Regions 1&3 at Belfast Wildlife Management Area on November 10. Completed the random computer draws, hunt lists, and hunt letters for Belfast, Congaree Bluffs, Manchester, Poinsett, and Wateree River Youth Deer hunts. Met with Scott Spears about requesting an increase in budget authority for Beaverdam Waterfowl Area Project. Attended the three-day meeting for Adaptive Leadership on November 15-17. Completed a position description for the Region Coordinator position in Region 3. Attended the Heritage Trust Advisory Board Meeting on November 4. Attended a meeting with South Carolina Department of Transportation, Coordinator Cloninger, and Heritage Preserve Biologist Pickhardt. Reviewed the Crackerneck Wildlife Management plan. Worked on summer intern applications and email responses. Visited the following heritage preservers, waterfowl areas, and wildlife management areas in region 1&3; Bald Rock, Beaverdam, Belfast, Clemson, Congaree Bluffs, Fants Grove, Henderson, Love Farm, Peachtree Rock, Shealy's Pond, Santee Cooper, Santee Dam and Wateree River.

Regions 2 & 4 Assistant Chief Activities

Met with Chief Dukes, Deputy Director Cope and assistant Chiefs Simmons and Dillman on various topics. Attended WFF senior staff meeting in Columbia. Met with Scott Speares on status of two capital improvement projects. Met with Ken Prosser and Van Whitehead on multiple land issues. Met with Biologist Brantley and Regional Coordinator Farrell on various topics. Met on site with staff at Bear Island, Santee Coastal Reserve, Bonneau Ferry, and Broad River WMAs to ensure projects were prepared for the upcoming waterfowl lottery hunts. Van Whitehead, Lorianne Riffin and I met in Conway with members of Horry County and members of the mitigation team concerning the Horry County mitigation bank. Attended Leadership training in Columbia for three days. Attended a workshop on dove field management hosted by Region 2 staff at Pee Dee Station.

Participated conducting interviews for the Region 4 Heritage Preserve Biologist. Submitted paperwork for hiring on various vacant positions. Due to technician vacancies, assisted with diskings wildlife openings on Francis Marion Forest for three days. Submitted management plans of various properties to Columbia for approval. Van Whitehead, Lorianne Riffin and I inspected the culvert installations at Carter Stillely mitigation bank tract. Inspected Broad River waterfowl area with Biologist Kesler and Technicians Scales and Smith. Participated in a conference call concerning use and economic factors on WMAs. Inspected ongoing capital projects at Samworth (Upper and Lower Middleton) with Biologist Kneese and Chief Dukes. Scouted ducks for the youth lottery hunt on Bonneau Ferry WMA.

Wildlife Region 1

Summary

Attended wildlife Regions 1 and 3 meeting at Belfast WMA. Met Ken Prosser, DNR Heritage Trust staff, and TNC to evaluate a property in Greenville County for acquisition. Attended the first dove field summit with DNR technicians and biologists at Pee Dee Station. Met with representatives of the USFS and TNC at Jocassee Gorges to discuss partnership opportunities for prescribed fire. Met with USACE staff to discuss timber harvest plans for SCDNR-managed/USACE-owned WMA land in McCormick County. Assisted USFS and Quail Forever with the Delta annual quail survey. Met with loggers and two timber buyers to view a proposed timber sale at Jocassee. Met with Duke Energy at Bald Rock HP to discuss installing lights to illuminate the parking area. Spoke with Nate Carrie, a reporter for the Post and Courier, about the work being done at Bald Rock HP for an article that ran on November 29th. Completed WFF orientation and new hire paperwork for new HP technician, Kevin Conley. Biologist Miller attended the Pickens County Advisory Committee meeting on November 8th. Completed vehicle and auxiliary fuel card “surveys”.

Region 1 Coordinator

Completed administrative activities including budgeting, purchasing, personnel actions, correspondence, and mobility impaired vehicle permits. Investigated report of captive wolves in Greenville County. Assisted HP staff with one day of graffiti cleanup at Bald Rock HP. Met Ken Prosser, DNR Heritage Trust staff, and TNC to evaluate a property in Greenville County for acquisition. Met with representatives of the USFS and TNC at Jocassee Gorges to discuss partnership opportunities for prescribed fire. Attended wildlife section meeting at Belfast WMA. Updated Tall Pines WMA GIS data. Reviewed two research protocols for the Clemson University Animal Care and Use Committee. Checked WMAs including Beaverdam, Fant’s Grove, and Jocassee. Checked Ashmore HP.

Nuisance Wildlife Activities

Conducted 46 nuisance wildlife investigations, made six site visits, and issued three depredation permits. Checked and maintained hog trapping sites on WMAs. Assisted landowners with complaints on deer damage, raccoons, opossums, and squirrels.

Upstate Bear Report

Staff handled 27 bear complaint calls/sightings, made seven site visits, and removed 7 road kills. Gave one media interview on upstate bear activity and one educational presentation to a residential community in Seneca. Prepared bear teeth collected from harvests to be shipped to a lab for aging. Provided input to a Clemson graduate student and Appalachian Bear Rescue on the need for a potential research project in the upstate.

Unit 1A (Anderson, Greenville, Oconee & Pickens)

Worked to maintain proper water levels in the waterfowl areas and prepare blinds for upcoming draw hunts. Attended a dove field summit in Florence to discuss dove field management throughout the state. Monitored pig damage and worked two trap sites. Assisted Region 1 HP staff clear woody vegetation around endangered pitcher plants at Ashmore HP.

Property Management Activities:

Beaverdam Waterfowl Area – Worked on maintaining proper water levels and stabilizing dikes. Prepped and brushed in duck blinds to prepare for duck season.

Caesars Head WMA – Checked boundaries on WMA and reposted signs as needed. Worked with State Parks and DNR LE to resolve boundary issue on Gap Creek Road.

Clemson Waterfowl Area – Monitored water levels and removed beaver dams. Prepped blinds for duck season.

Fant’s Grove WMA – Planted wheat in several wildlife openings. Reposted a boundary in Oconee County at the request of LE.

Gravelly WMA – Replanted wildlife openings on Poe Creek and discussed prescribed fire opportunities with the SCFC.

Keowee WMA – Mowed and replanted several wildlife openings.

Long Creek Tracts WMA – Planted wheat in dove field. Mowed millet in dove field.

Pickens Rifle Range Dove Field – Mowed and planted wheat in dove field.

Ross Mountain Dove Field – Mowed and planted wheat in dove field. Mowed millet strips for second season.

Tall Pines WMA – Removed beaver dams from spillway several times. Worked with OMO to update kiosk panels.

Unit 1B (Abbeville, Edgefield, Greenwood & McCormick)

Met with USACE staff to discuss timber harvest plans for SCDNR-managed/USACE-owned WMA land. Attended Wildlife Regions 1 and 3 meeting at Belfast and a dove field summit at Pee Dee Station Public Dove Field. Completed vehicle and auxiliary fuel card “surveys”. Constructed and erected Bordeaux Bobwhite Focal Area signs. Maintained wood duck boxes. Assisted with TOMO men’s deer hunt at NWTf.

Property Management Activities:

Bordeaux Dove Field – Applied herbicide, mowed, disked, and planted wheat.

James L. Mason WMA – Monitored timber harvest and understory mastication contract work.

Parksville Dove Field – Planted wheat.

Plum Branch Dove Field – Planted wheat in dove field. Masticated wood line.

Russell Creek Waterfowl Area – Replaced two flashboard risers and monitored water levels.

USACE-owned “unnamed” WMA – Prescribe burned at “Torchia’s Store”. Erected Bobwhite Focal Area signs at “Noble’s Cemetery”. Applied herbicide, planted wheat, and monitored hog trap at “Green Oaks” and “Old Augusta”. Planted wheat at “Small Game Area”.

Unit 1C (Cherokee, Laurens, Spartanburg, Union)

Assisted USFS and Quail Forever with the Delta annual quail survey. Investigated one bear incident with a domestic dog in Landrum. Investigated nuisance deer call in the town of Monarch. Attended the Regions 1 and 3 meeting at Belfast and toured the new White Plains property. Worked with USFS to resolve issues with pumping water at Dunaway Waterfowl Area due to extremely low river levels. Attended the first dove field summit with DNR technicians and biologists at Pee Dee Station. Built new pad and drain system to resolve rainwater issues around shop door at the Union office. Collected waterfowl hunt data from all waterfowl areas for youth season and the following first season hunts.

Property Management Activities:

Cliff Pitts WMA – Disked and planted fire lines. Posted new safety zone signs around residences on Armstrong Rd. Planted wheat in dove field.

Cliff Pitts Bird Dog Training Area – Collected user data.

Sedalia Dove Field – Disked field and planted wheat for 2022 dove season.

Sumter NF - Dunaway WMA – Pumped water to fill impoundment. Collected hunt data.

Sumter NF - Duncan Creek WMA – Collected hunt data.

Sumter NF - Tyger WMA – Pumped water to fill impoundment. Repaired water control structure on the river side dike. Collected hunt data.

Thurmond Tract WMA – Collected GIS data.

Unit 1D (Jocassee Gorges – Oconee, Pickens)

Completed administrative activities including personnel, correspondence, special use permits, and purchasing. Responded to 68 email and telephone inquiries. Met with loggers and two timber buyers to view Jocassee timber sale site. Assisted SCWF with a youth squirrel hunt for Clemson students at Jocassee. Met with LE training staff in Columbia. Met with DNR IT staff in Columbia to resolve connectivity issues at Jocassee and provided that information to Deputy Director Cope. Assisted State Guard members with transportation for a rescue exercise. Met with representatives of the USFS and TNC at Jocassee Gorges to discuss partnership opportunities for prescribed fire. Procured supplies for Sassafras and the Jocassee work center. Conducted maintenance on vehicles and equipment.

Property Management Activities:

Jocassee WMA – Disked and planted wheat in the dove field. Inspected all roads and removed several fallen trees. Roads were scraped and regraded as needed. Graded, graveled, and seeded area beside shop for future expansion. Began marking timber on Canebreak Road timber sale. Scouted fire line locations for burning.

Sassafras Tower – Regular restroom cleaning, inspections and public assistance were carried out. Continued preparations to replace secondary overlook and to pave access trail.

Heritage Preserve Activities

Attended the quarterly HTAB meeting in Columbia. Completed a phishing training for cybersecurity. All HP staff attended a Region 1 and 2 meeting at Belfast WMA. Participated in the annual Blue Wall Stakeholder meeting, virtually. Met with Duke Energy at Bald Rock HP to discuss installing lights to illuminate the parking area. Worked with WFF business manager to set up a utility service account with Duke Energy. Coordinated with TNC and Region 1 Coordinator Cloninger to gain approvals to conduct the preliminary work to acquire a property in northern Greenville County adjacent to Poinsett Bridge HP. Conducted site visits to three potential property acquisitions. Met with the president of Friends of Bald Rock (FOBR) to discuss a beautification project, workday safety concerns, fundraising, and other miscellaneous topics. Spoke with Nate Carrie, a reporter for the Post and Courier, about the work being done at Bald Rock HP for an article that ran on November 29th. Met with Assistant Chief Simmons, Region 1 Coordinator Cloninger and SCDOT at Bald Rock HP to discuss the extension of guardrails along Hwy 276 to limit parking and access to the preserve. Participated in a virtual discussion with state botanist Bradley, assistant botanist Tessel, and Atlanta Botanical Garden about *Sarracenia jonesii* genetic work, seed storing, and propagation for population re-introduction on the sites in our preserves in Greenville County. Completed WFF orientation and new hire paperwork for new HP technician, Kevin Conley. Technicians Taylor and Harrison familiarized Conley with 8 preserves. Technician Conley worked on tree and plant ID in the field. Technicians Conley and Harrison assisted Region 1 by off-loading duck boxes for public distribution in December. Technician Taylor spent significant time mowing roads at Brasstown HP and the field at Blackwell HP.

Property Management Activities:

Ashmore HP – Cleared approximately 0.25 acres of woody vegetation from the mountain sweet pitcher plant site on Lake Watocoo. Inspected the trail and maintenance road.

Bald Rock HP – Picked up litter three times. Assisted with a pressure washing and litter pick up event hosted by Friends of Bald Rock.

Blackwell HP – Continued mulching and mowing to restore the field. Inspected the bunched arrowhead sites to identify the extent of the invasive aquatic plant, marsh dayflower.

Brasstown Creek HP – Inspected property and roads. Bush-hogged the roads on the upper section of the preserve.

Bunched Arrowhead HP – Checked the gates and main parking lot.

Buzzard Roost HP – Inspected trail for erosion issues.

Chandler HP – Checked preserve.

Chestnut Ridge HP – Cleared roads and trails. Removed a game camera. Located an old graveyard.

Eastatoee HP – Inspected trail. Cleared fallen trees and debris.

Stevens Creek HP – Met state herpetologist, social media manager, and SCETV videographer to locate and film websters salamander for a SCETV nature series.

Stumphouse HP – Checked trails and management roads. Met with adjacent landowner and surveyor to finalize plat for land trade.

Wildlife Region 2

Summary

Region 2A staff hosted a dove field summit at Pee Dee Station Site WMA to discuss field development, management, and common problems associated with SCDNR public dove fields. The dove field summit was attended by 32 SCDNR staff who are directly involved in managing or coordinating public dove fields across the state. Unit 2C staff assisted Carolina Sandhills National Wildlife Refuge, a SC quail focal area in Chesterfield County, with quail covey call counts on November 3rd and 9th.

Staff adhered to SCDNR C-19 emergency protocols in field work and office work, following social distancing and sanitation measures. The department has continued to provide personal protective equipment and sanitation supplies to staff to help us work safely and productively. Heritage preserve management staff worked on endangered species and ecosystem monitoring, restoration and management; on longleaf and shortleaf pine, piedmont savanna and prescribed fire management, outreach, policy and education; on management plans; on conservation planning, and on maintaining and improving access and other preserve attributes. Staff discussed complaints about WMA abuse with deer hunters in Lee County. **Heritage Preserve Manager Stowe was awarded Professional Wildlife Biologist of the Year by the South Carolina Chapter of The Wildlife Society.**

Regional Operations Activities

Unit 2A

Unit 2A staff professionally interacted with hunters and visitors of the WMAs throughout the month. On the three properties that require sign-in, 1804 visitors were recorded, with 1776 of those visitors either hunting or

scouting. Coordinator Stokes and biologist Oates diagnosed two sick deer in Florence County to have died due to a brain abscess. Biologist Oates and technician Fitts assisted Unit 2C with a covey count at McBee WMA. Biologist Oates marked 1/2 mile of boundary at Marsh WMA. Biologist Oates and technician Fitts unloaded 215 wood duck nest boxes for distribution at the Florence Office. Biologist Oates picked up predator guards for Florence and Samworth for distribution with the nest boxes. Coordinator Stokes, biologist Oates, technicians Fitts and Parsons organized and hosted the dove field summit at Pee Dee Station Site dove field where 32 SCDNR staff attended. Technician Parsons disked 45 acres for winter wheat plantings. Unit A staff planted 18 acres of winter wheat. Technician Parsons mowed 30 acres in and around the dove field at Pee Dee Station. Technician Alston cleared debris and widened road at Marsh WMA. Technician Parsons graded 34 miles of roads in Woodbury WMA. Technician Parsons graded 12 miles of roads in Marsh WMA. Technician Alston hauled 14 loads of rock in Woodbury and Marsh to fix roads. Region staff had 76 technical assistance contacts (mostly phone calls) pertaining to wildlife and regulations, 43 WMA lands calls, and 9 nuisance calls.

Unit 2B

Unit 2B staff continued maintenance of WMA public dove fields in York and Chester Counties.

Unit 2B staff spent considerable time on scheduled equipment maintenance. Technician Moses maintained wildlife openings at Draper, Ross, Kirsh, Landsford, and McConnells WMAs. Technician Moses attended the dove field summit at Pee Dee station. Technician Wyatt maintained wildlife openings at Worth Mountain WMA. Unit 2B staff planted wheat in dove fields at Landsford, Draper, Worth Mountain, and Worthy Bottoms. Technician Wyatt continued maintenance of Worth Mountain public dove field. Technician Scales continued maintenance of Worthy's Bottoms WMA public dove field.

Technician Moses continued maintenance of Draper and Landsford Canal public dove fields.

Unit 2B staff continued maintenance of crops at Broad River Waterfowl Management Area.

Unit 2B staff began flooding impoundments at Broad River Waterfowl Management Area.

Technician Smith monitored water levels, beaver activity in ditches, and water control structures at BRWMA. Unit 2B staff monitored mitigation project at Landsford Canal WMA.

Unit 2C

Biologist Cockman scored four sets of antlers at the Camden office. Biologist Cockman reviewed applications for the Unit B Biologist vacancy and set up interviews for early December. DLEO Cockman submitted paperwork for a CWP to Warden Salter November 22. Unit 2C staff, with assistance from Coordinator Stokes and Unit A staff, biologist Krieg, volunteer Mason, and Carolina Sandhills NWR staff, conducted a second quail covey count at McBee WMA on November 2, hearing a record number of 42 coveys. Staff prepared for and administered two quail hunts at McBee WMA. Biological data were collected from 1 harvested bird. Biologist Cockman compiled deer hunt data from McBee WMA and submitted to Biologist Ruth. Contractors sprayed a site prep herbicide mix on 80 acres of clearcuts at McBee WMA on November 2-3. Biologist Cockman gave a tour of Liberty Hill WMA to DNR herpetology staff on November 23. Technician staff began equipment prep for prescribed burning.

Technician Lowder attended the dove field training at Pee Dee Station WMA. Technician Lowder planted 6 acres of wheat at Crossroads WMA. Technician Lowder mowed 10 acres of weed strips and 2 miles of boundary, and distributed 20 bushels of supplemental quail feed (Nov 4 and 16) at McBee WMA.

Technician McManus repaired the broken fence at the south kiosk, mowed 1 mile of roads, daylighted 1 mile of road, removed 19 trees from roads, and graded 6 miles of roads at Liberty Hill WMA.

Technician McManus mowed 2 miles of roads at the Heritage East tract and 5 miles of roads at the Heritage West tract.

Wildlife Management Area Management Summary

Throughout Region 2, staff mowed 94 acres, mowed 2 miles of trails, mowed 9 miles of road, applied gravel to 0.5 miles of road, scraped 53 miles of roads, disced 45 acres, disced 131 acres, burned 33 acres fields and 339 acres of HP/WMA, applied forest herbicide to 80 acres, planted 79 acres, posted 0.5 miles of boundary.

Property Management Activities

Marsh WMA: Disked 2 acres. Planted 5 acres of food plots. Posted 0.5 miles of boundary. Scraped 12 miles of roads. Mowed and cleared 1 mile of roads.

Woodbury WMA: Scraped 34 miles of roads. Hauled 8 loads of rock to fix roads.

Pee Dee Station WMA: Disked 45 acres. Planted 15 acres of winter wheat. Mowed 30 acres. Hosted dove field summit.

Lake Wallace DF: Opened gates for 2nd dove season.

McBee WMA: Administered two quail hunts. Conducted quail covey count. Monitored visitor use. Mowed 10 acres of weed strips and 2 miles of boundary. Distributed 20 bushels of sorghum.

Liberty Hill WMA: Monitored visitor use. Repaired fence. Mowed 1 mile of road and graded 6 miles of roads. Removed 19 trees from roads.

Crossroads WMA: Planted 6 acres of wheat.

Angelus BDTR: Monitored visitor use.

Catawba River WMA: Mowed 2 miles of road at Heritage East and 5 miles of roads at Heritage West. Inspected culverts at Heritage West.

Draper WMA: Performed general depot and equipment maintenance. Mowed 33 acres of dove fields and wildlife openings. Disced 40 acres of wildlife openings and dove fields. Planted 5 acres of wildlife openings. Planted 15 acres of wheat in dove fields. Applied prescribed fire to 3 acres of dove fields.

Worth Mtn. WMA: Perform general equipment maintenance and repair. Disced 26 acres of wildlife openings and dove fields. Disced 1.5 miles of firebreaks. Planted 10 acres of wheat in dove field.

Scraped 1 mile of road. Applied prescribed fire to 33 acres of wildlife openings.

Broad River Waterfowl Management Area: Perform general equipment maintenance and repair. Brushed in new blinds. Began pumping to flood all impoundments. Perform 22 days of water level management.

Landsford Canal FLA: Disced 18 acres of dove fields. Planted 8 acres of wheat in dove fields.

Heritage Preserve Management Activities

Heritage preserve (HP) management staff worked on endangered species and ecosystem monitoring, restoration and management; on longleaf and shortleaf pine, piedmont savanna and prescribed fire management, outreach, policy and education; on management plans; on conservation planning, and on maintaining and improving access and other preserve attributes. Heritage Preserve Manager Stowe was awarded Professional Wildlife Biologist of the Year by the South Carolina Chapter of The Wildlife Society. Staff conducted controlled burns on a 185-acre burn block, a 150-acre burn block, and a 4-acre burn block, both larger blocks being mostly wetlands that staff has been trying to burn for several years but unable to because of wet soils and fuels. The larger blocks burned in a mosaic, about one-half of each block burning well. Staff cleared 4.6 miles of firebreaks and assessed firebreaks, soil and water-table conditions, and fuels; cleared around RCW cavity trees as well as snags, cat-faced trees, gates, signs, utility poles and other hazards or sensitive elements; and worked on equipment and gathered supplies in preparation for prescribed fire. Staff maintained preserves by assisting the SCDNR LED with enforcement, by monitoring for abuse, by removing trash, by managing vegetation and by maintaining gates, trails, parking areas and boundaries.

Property Management Activities

Forty Acre Rock HP/WMA: Staff maintained the preserve by assisting game wardens with surveillance (SCDNR LED issued no tickets or warnings) by monitoring for abuse, by removing trash and hazardous trees, by covering graffiti, by managing vegetation, and by maintaining gates, trails, parking areas and boundaries.

Longleaf Pine HP/WMA: Staff conducted 2 controlled burns, a 4-acre burn and a 185-acre burn. The larger block was mostly wetlands that staff has been trying to burn for several years but unable to because of wet soils and fuels. The larger block burned in a mosaic, about one-half of each block burning well. The smaller block was a training burn, serving as the third of five required for Savannah Hebler to gain certification as a SC Certified Prescribed Fire Manager. Because of lack of rain after the burn, as a precaution, staff monitored smoldering fuels on many days.

Rock Hill Blackjacks HP/WMA: Region 2 technician Jordan Moses mowed 15 acres of piedmont prairie habitat, which includes habitat for federally-endangered Schweinitz's sunflowers (*Helianthus schweinitzii*). Staff applied herbicide (via hack-n-squirt) to sweetgum, and to invasive exotics callery pear (*Pyrus calleryana*), Chinese privet (*Ligustrum sinense*) and autumn olive (*Elaeagnus umbellata*), spot-treating 2 acres).

Woods Bay HP- Staff conducted a controlled burn on 150 acres. The burn block was mostly wetlands that staff has been trying to burn for several years but unable to because of wet soils and fuels. The area burned in a mosaic, about one-half of the block burning well. Because of lack of rain after the burn, as a precaution, staff monitored smoldering fuels on many days. Staff cleared 1.5 miles of firebreaks.

Wildlife Region 3

Summary

Staff hosted a multitude of hunts across the region's wildlife management areas. Staff attended a joint region 1 and 3 meeting at Belfast Wildlife Management Area and toured the White Plains Tract. November dove hunts at both Santee Cooper Wildlife Management Area and Santee Dam Wildlife Management Area were very productive. Select staff attended a dove field summit workshop at Pee Dee Station Wildlife Management Area. Biologist Forehand completed the management plan for Crackerneck Wildlife Management Area. Biologist Bennett and staff installed new water control structure in the green tree reservoir at Wateree River Heritage Preserve.

Wildlife Management Area. Biologist Young presented a regional heritage preserve update at the Heritage Trust Advisory Board meeting held at the Parker Annex on November 4th.

Regional Coordinator

Assisted regional staff with purchase requisitions, receiving and inspection reports, and personnel transactions forms. Met with Assistant Chief Simmons to order vehicles for regional staff and discuss regional budgets. Attended gathering at Belfast Wildlife Management Area for staff from Regions 1 and 3. Assisted with interviews for Technician II job working on heritage preserves. Visited the following heritage preserves and wildlife management areas in region 3; Belfast, Peachtree Rock, Shealy's Pond, and Wateree River.

Regional Operations Activities

Unit 3A

Regional staff spent a significant amount of their time prepping for upcoming lottery draw deer and waterfowl hunts. A meeting was conducted at the Belfast Wildlife Management Area to discuss the potential Revolutionary War historical sites that may be used for a future vehicle tour. The timber harvest has begun at Belfast WMA. Bennett and Technician Baldwin attended the dove field summit workshop at the Pee Dee Station Dove Field. Bennett assisted with the interviews for the Region 3 Heritage Preserve Technician position. Baldwin assisted with the TOMO men's clinic held at the NWTf site in Edgefield.

Deer draw hunts concluded for the year at Wateree River Heritage Preserve Wildlife Management Area. With lottery waterfowl hunts starting staff has dedicated some time scouting ducks for successful applicants. Staff hosted the annual lottery youth deer hunt at Wateree WMA. Waterfowl impoundments are still being monitored for hog intrusion daily at Wateree River HP/WMA. The waterfowl impoundments on the Goodwill portion of the property are flooded. The Green Tree Reservoir has had the new riser structure installed and water is being pumped into it on a weekly basis to keep up with dry conditions, evaporation, and leaching. The waterfowl impoundment on the Cook's Mountain side of the property still doesn't have water on it due to the extremely low river levels. Technician Kiker and Technician Flemming have replanted several winter food plots due to hog damage. The overflow at the fishpond still show signs of beaver activity and staff has spent several days trapping them. Staff has spent a significant amount of time working to reclaim an abandoned waterfowl impoundment at the upper end of the property above the Haul Rd. Staff built some tables to be used in the shops around the region. The gates have been set on the gate post around the small waterfowl impoundment at the Love Wildlife Management Area. Baldwin has spent a significant amount of time moving and spreading spoil dirt in the sand pit area created from the clearing and construction for the shooting range. Equipment has started being prepared in preparation for upcoming spring planting. A hog trap has been designed and is starting to be fabricated for use on the Love WMA.

Much of November was spent pumping Enoree Waterfowl Area and working managed deer hunts at Belfast Wildlife Management Area. Enoree was pumped for 2 weeks with multiple mechanical problems that were ultimately resolved until attaining a huntable water level. Waterfowl hunts began opening youth weekend. Deer draw hunts concluded for the year at Belfast WMA. There was 1 violation for an undersized buck harvest with 1 citation issued. Staff hosted a regional meeting with 40 in attendance at the Belfast House. There was a pre bid meeting at the Belfast shop for roof repair and replacement. Technicians Stephens and Rex inventoried the assigned vehicles and gas cards to help correct assigned accounts. Rex began construction of a hog trap.

Unit 3B

Forehand and Wildlife Technicians Chapman and Rinder manned and worked the gate for all open days. Chapman worked on equipment for 2 days, planted 10 acres and attended the Region 1 & 3 meeting. Rinder mulched 5 acres, scraped 10 miles of roads, disked 40 acres of food plots, fertilized 18 acres, bushhogged 10 acres at Hallman dove field and worked on equipment for 2 days. Forehand worked on and submitted the annual progress report and annual grant report to the Department of Energy Savannah River Site, assisted South Carolina Department of Health and Environmental Control with cesium sampling in harvested wildlife, attended the Region 1 & 3 meeting at Belfast Wildlife Management Area and completed the Crackerneck Management Plan.

Unit 3C

All staff worked public dove hunts and youth deer hunts. Technician Mackey and Technician Greenthaler planted wheat on dove fields across the unit. Hickory Top Wildlife Management Area green tree reservoir has been flooded and the pump serviced. Daily monitoring of water level continues as well as the oil level in the pump. The pump will be pulled when the green tree reservoir is full for repairs to a leaking seal. Staff placed deer stands on Santee Cooper Wildlife Management Area in preparation for upcoming youth deer hunts. Staff spent a considerable amount of time maintaining and repairing equipment. Biologist Shuler answered multiple calls from the public concerning wildlife management issues. All staff completed cyber security training classes and attended the joint region 1 and 3 meeting at Belfast Wildlife Management Area.

Heritage Preserves

Young and Technician Kiker conducted multiple site visits to the heritage preserves and wildlife management areas in Region 3. Young presented a regional heritage preserve update at the Heritage Trust Advisory Board meeting held at the Parker Annex on November 4th. Young assisted in receiving the wood duck boxes and predator shields for the lottery distribution at Styx. Young sorted the predator shields to be distributed to all SCDNR sites. Kiker has been plowing firebreaks at Ditch Pond Heritage Preserve and Aiken Gopher Tortoise Heritage Preserve. Young and Kiker attended a joint region 1 & 3 meeting held at the Belfast Wildlife Management Area house and toured the new White Plains tract. Young attended a virtual meeting regarding the Eastern Mallard Transmitter project with Waterfowl Biologist Kneece and Region 4 Assistant Regional Coordinator Hook. Young, conducted interviews for the vacant Technician position with Region 3 heritage preserves with the help of Unit 3A biologist Bennett and Region 3 Coordinator Kesler. Kiker and Young cleaned and serviced equipment at Styx. Young mulched around the Region 3 Wildlife and Freshwater Fisheries Styx office fence. Young and Kiker repaired rocket nets and prepared them for winter storage. Kiker picked up litter at Ditch Pond Heritage Preserve, Aiken Gopher Tortoise Heritage Preserve, and Peachtree Rock Heritage Preserve. Young attended a meeting with the FBI at Peachtree Rock Heritage Preserve to search for any evidence from a cold case back in the 1980s. Kiker and Young began to bait the hog trap at Congaree Bluffs Heritage Preserve. Kiker cleaned up the deer stands from the youth hunts that were held this year at Congaree Bluffs Heritage Preserve. Kiker placed CWD awareness posters at several of the heritage preserves within Region 3.

Wildlife Region 4

Highlights

Region 4 staff spent considerable time on preparations and management for public deer, waterfowl, and dove hunts. Public dove hunts and lottery waterfowl and deer hunts were conducted safely and effectively by staff throughout the Region. Various staff attended the Dove Field Summit at Pee Dee Station WMA.

Regional Coordination

Purchase requisitions were processed including the purchasing of nine vehicles on state contract for the Region, and several SCBO ad postings. A road-kill cub bear was transported to a local processing for potential taxidermy mount for educational purposes. The annual professional evaluation of management practices of Spring Island was attended along with representatives from the Audubon Society, Folk Land Management, the Nemours Foundation, and others, along with members of the Spring Island Trust staff and board. Staff meetings to discuss conducting the season's first waterfowl lottery hunt were held at Santee Coastal Reserve and Bear Island.

Assistant Regional Coordination

Hook coordinated with staff for upcoming lottery waterfowl hunts and assisted with brushing blinds, moving boats, and materials on CAT 1 Waterfowl Areas. The Waterfowl Harvest Spreadsheet was updated for the 2021-2022 season. Various permitting activities were completed for work on Santee Coastal Reserve WMA. Interviews and associated paperwork were completed for technician vacancies in Region 4 Unit B. Hook assisted Technician Deavers with one youth deer hunt on Sandy Beach WMA. Hook attended the Dove Summit at Pee Dee Station WMA. Two days were spent assisting with an aquatic herbicide application at Dungannon HP. Hook, Waterfowl Biologist Kneece, and HP Biologist Young met virtually to discuss upcoming waterfowl research.

Unit 4A: Horry & Georgetown

Coastal Bear: There were 2 nuisance calls, 1 sighting and 4 roadkill's reported. One site visit was conducted in Carolina Forest. A roadkill cub from October was dropped off at a taxidermist. This cub mount will be used for educational purposes and displayed in the Samworth WMA office. There were 28 teeth collected from bear harvests that will be sent off for aging, along with the upstate samples. Two other tooth and hair samples have been received since, making that 30 of the total 38 samples received. Coordination efforts with The Farm HOA (Carolina Forest) have begun for a public bear presentation.

Unit 4A Heritage Preserves: Heritage Preserves in Horry County were visited 9 times. Biologist Brantley continued assisting with Heritage Preserve matters. Brantley continued working with GIS Technician Walters on updating HP maps. Technician Matthews assisted with designing and constructing a cradle for a spillway at Dungannon HP. This will help with board removal when managing the water level. There were 5 calls answered pertaining to hunting HP properties. Biologist Brantley participated in the third round of HP Coordinator interviews. The 2021 RCW nesting season data was submitted to Project Leader Lerow for LOBHP and Samworth WMA. One RCW cluster was mowed for understory management on LOBHP.

Samworth WMA Uplands: Routine administrative duties were carried out. Significant time was spent coordinating with vendors and completing one truck requisition. The fuel card survey was completed. Technician Matthews was released to full duty (work related incident). Additional strips were mowed in the dove field as Samworth held its last dove hunt for the 21-22 season. Soil samples were collected for the 2022 planting season. Sandspur eradication

efforts continued at the beginning of the month before the colder temperatures arrived. Strips were disked and planted with winter wheat. Biologist Brantley attended a dove field summit at Pee Dee Station. Freeze protection around upland buildings were carried out when freezing temperatures were expected.

Unit 4B: Berkeley & Charleston

November activities were dominated by wildlife opening preparation, conducting dove, duck, and deer hunts, and preparing impoundments and blinds for waterfowl season.

Bonneau Ferry WMA: 53 general visitors and 184 hunters utilized Bonneau Ferry. Fall planting was completed. Equipment was serviced and grounds cleaned and maintained. Staff monitored and assisted hunters with adult/youth and lottery duck and deer hunts. Substantial time was devoted to trouble-shooting the pump at the pump ponds and eventually borrowing and setting up the pump from Santee Coastal Reserve. Flooding of impoundments and blind preparation were completed.

Canal WMA: Staff continue to work with USACE personnel via weekly conference calls. Dove fields continue to be maintained and dove hunts are being coordinated by staff on scheduled Saturdays. A quail call survey was completed by staff. Wheat fields were disced, planted, and fertilized. Staff assisted with the completion of the liming project in Wambaw. Staff disposed of a road killed bear.

Sandy Beach, Cross Generating Station, and North Dike WMA: Flooding impoundments and blind preparation were started. Staff conducted Santee Cooper/DNR youth deer hunts. The water control gate at Stoney Bay has been closed.

Francis Marion National Forest: Wildlife openings are being planted across all units. Staff are monitoring activity at Elmwood Check Station during peak hours. Staff assisted with conducting hunts at Tibwin. Staff removed one hog at Waterhorn. Staff coordinated the liming of another 70 acres on Wambaw WMA.

Other Unit activities: Staff attended a “dove summit” to exchange information on dove field management. Staff met with a hunter to issue a CITES tag for his harvested alligator. Staff conducted interviews for two technician vacancies. Staff hosted three class field trips at Dennis Center.

Wildlife: A total of 132 wildlife calls were handled at the Charleston office (18 alligator, 2 bear, 112 other nuisance animals). There were 10 licensing/boat titling calls emailed to the licensing/permitting office. Hunting regulation and property calls were handled for 9 callers. Deer tag inquiries were answered for 3 callers. One Property Alligator Depredation Permit was mailed. 44 Harvested Alligators have been reported through end of November. Issued 15 Cites Tags.

Unit 4C: Colleton & Dorchester

Routine administrative and management duties were conducted for the month. Visits were made to WMAs within the unit to assess habitat conditions and other management items. Water levels in all impoundments on Donnelley and Bear Island WMAs were monitored and adjusted appropriately. All water control structures have been set to make food readily available for wintering waterfowl and waterbirds that have begun their migration this fall. Dove field management and preparation continued to keep staff busy across the unit as fences are checked daily, herbicide application, mowing, and disking occurred. Deer hunts across the unit were in full swing. The dove field summit meeting was attended by staff from Unit 4-C. There was a minimum of 3,805 visitors and 438 hunters for the month in Unit 4-C.

Bear Island WMA: Dike maintenance entailed addressing areas with potential to cause travel issues during duck season. Some last-minute miscellaneous areas bush hogged, and gates have been locked with signage posted to prevent any disturbance of duck habitat. The longarm was walked 6 miles back to shop for winter maintenance. Sim Thornhill, our lead operator, has done an exceptional job winterizing the longarm. Machine has been degreased, pressure washed, old paint wire wheeled and chipped off, rust spots have been addressed with a treatment of OSPHO. Once prepped, undercarriage, body and stick have been coated with Denso corrosion sealant and painted. Machine looks brand new. Technician Thornhill currently has the bucket removed to get pin sleeves built up once he gets his quotes. Agriculturally, wheat plots were planted. West Cut was burned then flooded. Duck season preparation was wrapped up and three lottery waterfowl hunts were conducted during the first season. Ground’s maintenance included grading Ti-Ti from highway to end of property. A badly needed new commercial gate controller was installed on front main gate. Construction/maintenance technician Armstrong ordered necessary lumber and began refurbishing observation decks at Bear Island and Donnelley WMAs. A staff house project to replace all doors and windows was completed. Technician Armstrong is currently coordinating refurbishing the bathrooms in Donnelley Lodge, erecting an additional tractor shed at Bear Island and replacing the door and windows at the Botany Bay main house. When time or weather direct, he is building a unique gun rack for this year’s Tech meeting. Miscellaneous jobs addressed during the month include building a spillway for December installation, painting as needed in the Nancy Hill house, and cleaning/straightening shops etc. after a busy summer and fall.

Botany Bay Plantation WMA: Staff has spent the month continuing to conduct deer hunts. Staff has also continued maintaining dove fields for the last hunt next month. Staff and volunteers cut overhanging limbs, small pines, and hedgerows of the ag fields for tractors to get through; cleared piles of debris; cut trees that were blocking the causeway to the beach after this month's King Tides and pressure washed Big House. Volunteer hours totaled 480. There were 2 horseback riding parties with 4 riders. We have had 3,805 visitors with 1,180 vehicles.

Donnelley WMA: Agriculturally, approximately 25 acres of wheat was planted. Although our last dove hunt has passed (Nov. 13) the fields are being maintained to attract doves. Open areas are continually disced, crops are bush hogged conservatively to draw feed out through the winter. Deer lottery gun hunts were concluded. Duck season preparation included dressing blinds, staging boats, and impoundments have been bush hogged as needed. A bridge was built across a canal that borders middle dike to make blind access easier. Gates are closed and signage posted to prevent disturbance of duck habitat. The spillways we manipulate for the CAT 2 hunts were cleaned of debris and had spillway boards added. One CAT 2 hunt was offered during November and small game season opened on Donnelley on November 25th. Road maintenance included Pineland Road was worked with dozer and had crush and run applied. Both main roads were blown free of straw and graded. Miscellaneous jobs addressed during the month include, two staff members renewed their CDL licenses, replaced tires on utility trailer, a newly acquired piece of property across 17 from Donnelley that was overgrown was groomed with mini track hoe and cutter head.

Edisto River WMA: Property was regularly monitored for use.

GIS/GPS/Miscellaneous: Maps of Bonneau Ferry WMA were printed and laminated (10 each 11x17 with aerial and 5 each 11x17 with timber stand ID and acreages) for the area technician to assist with property management activities. The Side B map of Bonneau Ferry WMA was edited. Editing work on Waccamaw HP/WMA data continued. Assistance was provided with the mapping of the 2021 Bear harvest data. Maps of the Francis Marion National Forest WMAs were printed and laminated for the area to assist new DNR staff with property management activities. The kiosk supplies at Edisto River WMA were monitored. Miscellaneous GIS work was conducted. Assisted with kiosk monitoring at Donnelley WMA. Miscellaneous supplies were picked up and ordered.

Unit 4D: Beaufort, Hampton, & Jasper

The majority of staff time this month was spent facilitating draw hunts on Webb, Hamilton Ridge, and Palachuola WMAs. 111 non-hunting users signed in to the 3 WMAs during the month with activities including: scouting for hunting, birding, wildlife viewing, archery range, fishing, paddling, and photography. Routine administrative and management duties were conducted for the month. Biologist Atkinson made visits to all properties within the unit to assess habitat conditions and other management activities and worked on procuring bids and writing specifications for multiple projects for the unit. Atkinson and Ginn assisted as mentors for a TOMO women's deer hunt. Atkinson, Biologist Moss, and Technician Tant attended the Dove Field Summit at Pee Dee Station. Webb staff completed 15 quail covey counts on the WMA. Webb staff & facilities hosted 1 meeting, Master Naturalists (1 day, 20 attendees). Lower Coastal Alligator activity for the month: issued 1 commercial permit with 2 tags, issued 2 individual permits and 4 tags, distributed 4 alligator signs, and received 3 nuisance calls.

Habitat management: Staff spent time disking and mowing in the dove fields prior to the last hunt. Staff spent time with the brown tree mower to cut approximately 10 acres of midstory competition.

Facilities & Infrastructure maintenance: Staff graded approximately 31 miles of roads and 2 miles were mowed. Staff hauled ~30 loads of rock and repaired 2 miles of roads. Staff removed 5 deer stands and installed 4 new ones. Staff spent time constructing and installing 2 sets of stairs on deer stands. Staff spent time cleaning and staining benches and facilities at the Webb rifle range. Staff conducted regular range maintenance at Palachuola WMA.

Equipment maintenance: Staff time was spent on general equipment maintenance & repairs.

Monthly Totals: 371 hunters, 111 Non-Consumptive WMA users, 333 range users, and 20 other users (meetings/trainings/organized groups and events). Grand total: 835

Upper Coastal Waterfowl Project

Santee Coastal Reserve WMA:

Hunting: The Waterfowl season started with 4 hunts on the Santee Coastal Reserve. A total of 55 hunters harvested a total of 236 waterfowl.

Upland: The avenue and the campground were mowed. Hog traps were set and baited.

The Cape: Several large areas in the Peach Tree 2 impoundment were roller chopped to create good drop off spots for waterfowl hunters. Low spots on the dikes were filled with FLBC to facilitate more comfortable hunter drop offs. All access points to the Cape were closed off to the public for the remainder of the waterfowl season. All Cape dikes were mowed. The Peach Tree dike was tilled. Two waterfowl draw hunts were conducted. Water levels were monitored, and adjustments were made as necessary. Salinities and water temperatures were measured and documented.

Murphy Island: The long-reach excavator re-topped 1,125 feet of cross dike between the Thompson Creek and Black Point impoundments. Lumber and hardware were moved with the airboat to an interior spillway box. The spillway box was repaired, re-cabled and re-topped. The amphibious excavator re-topped 160 feet of low dike adjacent to the new exterior water control structure in the Thompson Creek impoundment. All accessible dikes near the main dock were mowed with the mini excavator. A long tail boat and three skiffs were moved into the impoundments to facilitate hunter drop offs. A dock box was filled with camo life jackets and taken to the island. A nighttime hunter-drop-off test run was conducted in preparation for waterfowl season. One waterfowl draw hunt was conducted. Water levels were monitored, and adjustments were made as necessary. Salinities and water temperatures were measured and documented.

Cedar Island: The amphibious excavator was floated to the Peter Pond setback dike. The setback dike was re-topped at a length of 896 feet. A waterlogged floating dock was replaced with a larger floating dock. A new boat slip was built for the mudboat inside the Cotton Ridge and Jordan Marsh impoundment. A mud boat and a skiff were moved into the impoundments to facilitate hunter drop offs. A dock box was filled with camo life jackets and taken to the island. Phragmites was sprayed on all Cedar Island dikes with the Kubota. The Kubota was then barged back to the mainland. One waterfowl draw hunt was conducted. Water levels were monitored, and adjustments were made as necessary. Salinities and water temperatures were measured and documented.

Repairs: Several hydraulic lines on the long reach excavator were replaced. A hay rake was welded to be better suited for raking the pine straw on the avenue. The vandalized Kubota was picked up from the dealership and barged to Cedar Island. A broken 150HP Yamaha boat motor was picked up for parts from Styx in Columbia. That motor allowed us to finish a repair on a broken motor on our Hanko boat. The “new” boat motor was broken in to be ready for duck season. The blades on the 10’ bush hog were replaced. The airboat sprayer pump was repaired. The airboat trailer was repaired. Zero turn blades were replaced. The Marsh Master sprayer was repaired.

Other Activities: A boat was borrowed from MRD to temporarily replace the broken Sea Ark for Murphy Island hunter drop offs. Benches were built for that boat. First aid kits for all staff were received, tweaked based on the information gained during the Wilderness First Aid class at the Webb and issued to all staff members. CAT parts were ordered for the amphibious excavator. Staff received a tour of the historic Hampton Plantation and a joint Parks and DNR staff cookout was held afterwards. A mini excavator was taken to Samworth. Cables were cut and prepped for heavy equipment mats.

Santee Delta WMA:

Phragmites was sprayed on Delta West. All gates, dikes and impoundments were repeatedly checked on Delta East and Delta West. A tractor was moved back from the Deltas to the SCR mainland.

Samworth WMA:

Much effort was invested this month in preparing and moving materials to close off the breach in the Big Field impoundment. Pilings, hog panels and sandbags were set across approximately 250 LF to construct a coffer dam to close off the breach and to aid in construction of a bulkhead this winter. High water due to flood tides slowed progress this month as low tides are necessary to complete breach repairs. Rabbit Island, Cane Patch, Middle Carr, and Mill Pond were mowed for duck season. Following mowing, Middle Carr, Cane Patch, Mill Pond and Backfield were burned and have been flooded for duck season. A partial burn has been completed on Rabbit Island at this time. Fifteen steps were installed on the inside trunk uprights to aid in the setting and removing of spillway boards. Staff gauges for monitoring water levels were installed on 6 impoundments. Water level loggers were installed in four locations on tidal creeks and rivers throughout the WMA to aid in the monitoring of flood events in the area. Wood duck boxes were received for distribution.

Habitat Report: Water levels in all flooded impoundments have been routinely monitored for waterfowl season.

Small flocks of green-winged teal have been observed on these units

Repairs: Repairs were made to the right-side track on a Marsh Master. A coolant leak was located during the repairs on a Marsh Master. An issue was diagnosed with a hydraulic leak in the left drive motor of the Marsh Runner tracks. Repairs are ongoing both in-house and with a repair shop to return the Marsh Runner to full operation. Sensors and other repairs were made to the emissions control systems of the backhoe and amphibious excavator.

Contractor Updates: Contractors continue to make progress on both Upper and Lower Middleton renovations. Both areas experienced minor wash over damage due to large tides in November. Upper Middleton did experience a small breach on a section of old cross dike that will be abandoned with the completion of a new setback dike, as part of the contract project on Upper Middleton. However, the breach necessitated repair due to on-going construction of the new setback dike. A second trunk was also installed on the Upper Middleton Cut Impoundment. On Lower Middleton all trunk installations have been completed and progress continues to be made with canal cleanout and retopping. Chief Dukes and Asst. Chief Chapplelear made a site visit to both contract sites.

Heritage Preserves

Cartwheel Bay HP: Staff conducted property checks multiple times throughout the month.

Dungannon HP: Staff visited Dungannon to get measurements on spillway. Unit 4A Technician Matthews assisted with designing and constructing a cradle for spillway. The cradle will be installed at a later date. An herbicide application was carried out in the rookery.

Lewis Ocean Bay HP: All roads and parking areas were graded. Staff continued to fix “spin outs” throughout the preserve that were present after weekends. A land marker was checked for the survey crew. Several firebreak signs were installed along Henry Road. Staff monitored for litter.

Little Pee Dee HP: Routine property checks were conducted on all tracts. Staff cut one fallen tree out of the road on Gunter’s Island. Staff coordinated with SCDNR LE upon finding tents and a firepit set up Gunter’s Island. This was not a designated camping area. Posts were installed adjacent to two gates to halt ATV’s from driving around on Huggins Landing.

Tillman Sand Ridge HP: Technician Kalinowsky ran perimeters and collected routine trash at gates multiple times this month. Several large trees were removed from interior firebreaks. A dead Gopher Tortoise was spotted by LE leaving Green Swamp Hunt Club and Technician Kalinowsky retrieved the carcass.

Waccamaw River HP: Roads were graded included Bridges, Ellis, Simpson Creek and Loris Hunting Club Tracts. A site visit with conducted with upper-level staff to Carter Stilley to inspect newly installed culverts and double bridge. Staff temporarily renovated the double bridge and installed 2 gates on either side to eliminate vehicle traffic. Foot traffic is welcomed.

Miscellaneous: Region 4 Heritage Preserve is currently short staffed but continues to make progress in the field. Technician Bell assisted Unit 4A one day in the dove field. The fuel card survey was completed. One trailer tire was repaired, and filter parts were ordered the 5525. Time was spent coordinating with vendors to gather quotes for a new truck and one requisition was submitted. A large rock bid was rewarded, and that project is set to begin the first of December.

Tom Yawkey Wildlife Center

Habitat and Infrastructure Maintenance

Twelve miles of roads were graded and shaped, fifteen miles of dikes were side-cut, and three miles of dike and roads were mowed. Six acres of wildlife openings were disked and planted with winter mixes.

Two hundred feet of the Lower Reserve setback dike was re-topped along Mosquito Creek. Two failing trunks were decommissioned during the month in Upper Reserve and Santee Pond to prevent dike damage. They will be replaced in the spring. Ninety acres of the invasive plant Phragmites was sprayed from an airboat on Cat and South Islands. Project equipment was serviced and repaired. Staff removed and reinstalled the tracks from the project bulldozer for pin replacements. Staff also replaced the track rollers and guide bearings on the project long-reach excavator and repaired a broken track on the amphibious excavator working on the Lower Reserve setback dike. Two surplus vehicles were transported to the Styx Surplus yard in Columbia. Worked with the State Surplus Office to post five surplus items online to sell on site. The items have been removed by the successful buyers. Twenty miles of sweetgum and Chinese tallow tree were treated adjacent to Cat Island roads and wildlife openings. Staff also hand treated two acres of shrubs in the higher portion of the Lower Goose Pasture managed wetland with herbicide. This treatment is part of the on-going research project related to black rail habitat management activities. Worked closely with the DNR legal staff and the Yawkey Foundation to facilitate the transfer of the Blackout tract donation before the end of this calendar year. Monthly inspection of the South Island swing bridge safety gear determined that two of the mainland navigation warning lights were not functioning. Staff located and repaired a damaged section of electrical wire and conduit. Inspected property boundaries and ensured posted signs were in place prior to the opening of waterfowl season. Met with inspectors from the SC Department of Health and Environmental Control for the annual inspection of our public municipal water system on South Island. The inspectors found the Water Management Plan and distribution system hardware were in good order and issued a new certificate of use for the property. Reviewed requests for and issued six camping permits for YWC beaches. Attended a virtual meeting of the Yawkey Foundation Board of Trustees and gave an update on activities during the last quarter and upcoming budget related issues.

Research and Survey

Staff conducted and assisted with numerous research and survey projects during the month. Water quality and levels were monitored for waterfowl food production. The monthly waterfowl and wading bird point counts detected 4,029 waterfowl and 1,175 wading birds. These are higher than average numbers for November surveys. Biologist Mary Catherine Martin monitored the barn owl boxes on Cat and South Islands. Seven of the eight boxes are active. Archaeologists with SCDNR Heritage Trust Program and the Institute of Archaeology and Anthropology were onsite for three weeks conducting digs at the former fishing village on South Island and shovel testing on Cat

Island. Artifacts were located, cleaned, and catalogued on-site. Twenty-two seed head inflorescences of the invasive plant *Phragmites* were collected and shipped to a Tulane University graduate student who is mapping the genome in the southeastern United States. Joy Brown from the South Carolina Chapter of the Nature Conservancy conducted a site visit to inspect the oyster castle erosion sites established along Winyah Bay in 2010. Most of the sites have suffered severe damage during the last several hurricanes. Land protection staff from TNC were also assisted with the annual monitoring of the easement on the Cat Island tract at Yawkey Wildlife Center. Cornell University PhD candidate Amanda Hardin visited the South and Cat Island portions of the property to photograph several sites related to her research. She is investigating the role of former resident Alexander Hume Ford (1868-1945) in the resurgence of surfing as a sport in Hawaii. Hosted Dr. Robert Minsinger from the Blue Hill Observatory in Massachusetts, the oldest weather observatory in the United States. Dr. Minsinger is investigating the potential for a partnership with the Yawkey Wildlife Center on several hurricane related research projects.

Education and Outreach

The education program conducted 15 socially distanced programs for 134 participants. One intern from Horry-Georgetown Technical College completed 22 hours of work this month. Six camping permits were issued for YWC beaches. The winter 2022 public tour schedule was developed and posted.

Staff developed five social media posts that had 14,200 interactions. Hosted the executive staff from the Coastal Carolina Council of the Boy Scouts for a site visit and planning session for the council wide environmental weekend planned for March 2022 on Cat Island. Staff also met with an Eagle Scout candidate to develop a final design for his Senior project. Yawkey Wildlife Center hosted 25 students from the Clemson University Wildlife Management class for a weekend lab visit. Students learned about management activities and current research projects taking place on the property. Conducted a presentation at Horry-Georgetown Technical College Career Day on Yawkey Wildlife Center internship opportunities and careers with SCDNR.

Statewide Forester

Continued working with the three local Longleaf Implementation Teams (LIT's) in SC, the State Longleaf Coordination Team, and the South Carolina Prescribed Fire Council (SCPFC). Continued various duties as SEAFWA representative to the regional Longleaf Partnership Council (LPC). Continued collaboration with Forest Stewards Guild, USFWS, and Clemson University (Dr. Stephen Peairs) on hardwood management demonstration/outreach area grants, including timber harvest planning at Hamilton Ridge WMA. Continued collaboration with USFS on Good Neighbor Authority project on the Enoree RD of the Sumter NF. Recently awarded timber sale (579 acres of loblolly pine thinning) has not yet commenced. Completed 80 acres of skidder application herbicide site prep at McBee WMA. Visited Huntington Beach State Park with SCPRT, SCFC, and Brookgreen Gardens staff to assess timber harvest and fuel mitigation strategies. Forestry mulching on Mason WMA continued (nearly complete). Forestry Mulching on Webb WC and Hamilton Ridge WMA commenced and was completed. Mechanical brush/tree removal on two larger isolated wetlands (gopher frog project) at Webb WC was completed. Brood field clearing project at McBee WMA stalled with contractor issues, roughly 70% completed. Monitored and administered ongoing timber harvesting operations. Assisted Chief Dukes and Asst. Chiefs with timber budgets.

Harvesting operations remain suspended at Hamilton Ridge WMA (618 acres of plantation loblolly second thinning and 77 acres of clearcut) and Woodbury WMA (792 acres of plantation loblolly first thinning and 28 acres of second thinning), but are very close to completion. Harvesting operations on Bonneau Ferry WMA (784 acres of natural loblolly first thinning, 160 acres of planted loblolly and longleaf first and second thinning, and 80 acres of natural loblolly clearcut) are still delayed due to wet ground conditions, but are being monitored closely for resumption. Harvesting operations on two timber sales at Hamilton Ridge WMA (521 and 504 acres of plantation loblolly first thinning) continued and made substantial progress. Harvesting operations at Palachucola WMA (270 acres planted loblolly and slash marked thinnings and 138 acres clearcut for longleaf restoration) continued robustly through the month and are close to completion. Harvesting operations resumed at James L. Mason WMA (408 acres natural loblolly marked thinnings). Close-out in progress at the South Heritage Tract (276 acres planted loblolly second thins). Harvesting operations at Draper WMA (60 acres of oak woodland thinning, 57 acres of planted loblolly first thins) have yet to commence. Harvesting operations at Belfast WMA (591 acres planted loblolly second/third thins) commenced mid-month and made good progress. Timber sale at Love Farms (64.5 acres planted loblolly pine for dove field expansion and shooting complex, 7.6 acres of thinning) has been completed, except for a few acres. Awarded timber sale at Santee Coastal Reserve timber sale (338 acres of marked natural mixed pine thinning, 81 acres of natural mixed pine clearcut) has yet to commence. Awarded timber sale at Woodbury WMA (1,132 acres planted longleaf and loblolly) has yet to commence. Continued working with staff on planning/preparation of numerous upcoming sales.

December

Regional Operations Activity Summary

Wildlife technical guidance was provided to 287 contacts along with 13 technical guidance site visits. Seven (7) management plans were written. Other agencies were assisted on 41 occasions requiring 48 person-days. Two hundred three (203) nuisance wildlife complaints (including 18 bear and 24 alligator calls) were handled. Eighteen (18) nuisance site visits were made. Field studies required 45 person-days and data analysis required 58 person-days. Eleven (11) quail surveys, 60 bat surveys were conducted and 9 other surveys were conducted. Fourteen (14) antlers were scored. Four (4) woodduck boxes were checked and 10 woodduck boxes were installed. Five (5) news releases were submitted. Nine (9) programs/presentations were given with 440 in attendance. There were a total of 112 water level management days.

Heritage Preserve (HP) Habitat Management Summary

Heritage Preserve staff conducted 310 site visits. Exotic control occurred on one (1) heritage preserve. Forty-nine (49) miles of trails were maintained, 54 miles of firelanes were disced, 2 miles of roads were scraped and 5 miles of road were graveled.

Wildlife Management Area Habitat Management Summary

Field agricultural activities on WMAs included 207 acres mowed/bushhogged, and 228 field/agriculture acres were disced. Sixty-four miles (64) miles of roads were scraped, 15 miles of roads were mowed and 7.75 miles of roads were graveled. Prescribed burning occurred on 3 agricultural acres. Agricultural herbicide occurred on 18 acres. Fourteen (14) miles of trails were mowed, 4 miles of dikes were mowed, 1.5 miles of dikes were retopped, 85 miles of firelanes were disced and .75 miles of boundaries were cleared. Fifty-one (51) acres of annuals were planted and 15 acres of perennials were planted. One (1) water control structure was installed. One hundred forty-nine (149) WMA signs, 1 WMA boundary sign and 58 other signs were posted. Thirty-two (32) gates were refurbished or installed. Five hundred sixty (560) WMA phone calls were answered.

WMA Hunts and Visitation

Marsh WMA – 330 visitors of which all were hunting or scouting. Hunters harvested 27 squirrels, 34 raccoons, 77 ducks, and 1 rabbit.

Woodbury WMA – 705 visitors of which 688 were hunting or scouting. Hunters harvested 4 deer (does), 2 hogs, 116 raccoons, 122 squirrels, 3 woodcock, and 32 ducks.

Pee Dee Station Site – 44 visitors of which all were hunting or scouting. Hunters harvested 13 squirrels and 2 raccoons.

Great Pee Dee HP – 199 visitors 185 hunting (89 squirrels, 9 raccoons, 2 ducks and 1 hog were harvested) 5 visitors fishing 3 doing research and 8 looking or scouting

McBee WMA-13 visitors, including 8 quail hunting and 5 illegal hunting. Thirteen quail were harvested.

Draper WMA- 101 total hunters - 76 deer hunters (5 harvested), 3 coyote hunters (2 harvested), 4 squirrel hunters (3 harvested), 8 dove hunters (1 harvested), 5 quail hunters, 4 woodcock hunters (1 harvested) and 1 raccoon hunter (1 harvested).

Worth Mtn. WMA-163 total users – 115 deer hunters (2 bucks harvested), 15 coon hunters (2 harvested), 20 squirrel hunters (28 harvested), 3 woodcock hunters, 6 rabbit hunters and 4 hikers.

Broad River WMA- 29 hunters harvested 70 ducks.

Liberty Hill WMA: 286 visitors, including 236 hunting, 27 scouting, 5 hiking, 15 sightseeing, and 3 biking. One deer and 3 squirrels were harvested.

Landsford Canal FLA Bird Dog Training Area: 16 total users- 14 deer hunters, 1 dove hunter and 1 rabbit hunter.

Angelus Bird Dog Training Area: 12 hunters released 49 quail and harvested 30 birds.

Belfast WMA - 107 small game hunters

Enoree Waterfowl Area - 2 adult days: 43 hunters harvested 62 ducks

Wateree River WMA - 3 lottery hunts: 15 hunters harvested 17 ducks

Crackerneck WMA - 371 hunters and fishermen; Harvest: 7 Whitetail deer, 5 feral hogs, 55 Eastern gray squirrels, 2 mourning doves, 2 woodcock, 4 wood ducks, 14 Channel Catfish, and 5 Largemouth Bass.

Santee Cooper WMA - 15 youth hunters; harvested 4 does

Santee Cooper WMA - 34 hunters; shot 327 times and harvested 61 doves

Oak Lea WMA - 8 hunters; shot 5 times and harvested 1 dove.

Bland Field - 27 hunters; shot 10 times and harvested 2 doves

Toumey Field - 8 hunters; shot 18 times and harvested 1 dove

Santee Cooper WMA - 27 hunters; shot 37 times and harvested 19 ducks

Hickory Top WMA - 138 hunters; shot 1308 times and harvested 214 ducks

Potato Creek WMA - 6 hunters; shot 5 times and harvested 0 ducks

Bonneau Ferry WMA Adult/youth deer - 26 days, 99 hunter days, 6 deer harvested.
 Bonneau Ferry WMA lottery deer - 10 days, 132.5 hunter days, 10 deer harvested.
 Bonneau Ferry WMA - 1 CAT I youth waterfowl hunt, 7 hunters, 15 ducks harvested.
 Tibwin Mobility Impaired deer - 2 days, 35 hunter days, 8 deer harvested.
 Cross Generating Station youth deer - 2 days, 5 hunter days, 0 deer harvested.
 Sandy Beach WMA youth deer - 1 days, 8 hunter days, 6 deer harvested.
 Sandy Beach WMA - 2 CAT I waterfowl hunts, 9 hunters, 19 ducks harvested.
 Francis Marion NF either-sex dog drive - 1 day, 5 staff checked in 101 deer.
 Bear Island WMA - 8 CAT I Waterfowl Hunts: 98 Hunters, 269 ducks harvested.
 Botany Bay WMA - Archery Deer Hunts: 60 Hunters, 0 bucks, 3 does harvested. Lottery Deer Hunts - 113 Hunters, 2 bucks, 7 does harvested. Dove Hunts - 42 Hunters (21 Adults/26 Youth), 2 doves harvested.
 Donnelley WMA - Small Game Hunts: 52 Hunters, 31 Squirrels, 22 Raccoons, 5 armadillos harvested.
 2 CAT I Waterfowl Hunts - 8 Hunters, 22 ducks harvested.
 CAT II Waterfowl Hunts - 89 Hunters, 138 ducks harvested.
 Edisto River WMA - 31 Deer hunt days offered with no harvest results.
 Webb WMA Lottery Deer Hunts - 3 Hunts, 8 days, 61 hunters. 6 Bucks, 6 does, and 2 hogs harvested.
 Palachucola WMA Lottery Deer Hunts - 2 Hunts, 6 days, 41 hunters. 4 Bucks, 13 does, and 2 button bucks harvested.
 Hamilton Ridge Draw Hunts - 2 Hunts, 6 days, 57 hunters. 8 Bucks, 8 does, 1 button buck, and 4 hogs harvested.
 Small Game Season - 15 Days, 249 hunters. 3 rabbits, 35 squirrels, 12 raccoons, 1 hog, and 22 ducks harvested.
 Santee Coastal Reserve - 9 CAT I waterfowl hunts. 128 Hunters harvested a total of 499 ducks.

Wildlife Regional Operations – Chief

Participated in two virtual meetings as a member of the Search Committee for the Assistant Unit Leader for the SC Cooperative Fish and Wildlife Research Unit at Clemson.

Refiled Emergency Regulations for Public Dove Fields.

Compiled Wildlife Section accomplishments for 2021 and forwarded to OMO for social media posting.

Responded to a minimum of 7 miscellaneous technical guidance calls during the month.

Administrative duties related to the migratory bird program and maintaining agency bird banding permit included: Updating of subpermittees and request for additional authorizations, distribution of band recovery records to appropriate banding personnel and assisting the Bird Banding Lab with data requests.

Regions 1 & 3 Assistant Chief Activities

Assisted regional staff with purchase requisitions, receiving and inspection reports, and personnel transactions forms. Submitted purchase card summaries by email for Region 3 Staff on December 7 and 9. Met with Scott Spears about requesting an increase in budget authority for Beaverdam Waterfowl Area Project. Conducted the 2022 Summer Internship Interviews from December 6th-9th. Conducted 2nd interviews for the summer internship program on December 15th and 16th. Attended a meeting with Coordinator Cloninger, Biologist Waldrop, State Waterfowl Biologist Kneece to look at the project at Beaverdam Waterfowl Area. Worked on summer intern applications and email responses. Visited the following heritage preservers, waterfowl areas, and wildlife management areas in region 1&3; Bald Rock, Beaverdam, Belfast, Clemson, Congaree Bluffs, Fant's Grove, Henderson, Love Farm, Peachtree Rock, Shealy's Pond, Santee Cooper, Santee Dam and Wateree River.

Regions 2 & 4 Assistant Chief Activities

Met with Chief Dukes, Deputy Director Cope and assistant Chiefs Simmons and Dillman on various topics. Met with Regional Coordinator Farrell on various topics. Toured Buckfield property with several other DNR staff.

Significant time was spent resubmitting requested documentation for FEMA projects from Flood 2015, Hurricane Matthew 2016, and Hurricane Irma 2017. Participated conducting interviews for the Samworth Biologist II vacancy in Region 4 and Biologist II vacancy at Broad River WMA in Region 2. Worked either-sex deer hunt with dogs on Francis Marion Forest and coordinated activities with local DNR Law Enforcement. Participated in a conference call with Senior staff concerning Ramsey Grove. Participated in a Leadership conference call with staff on my committee. Spent time working on necessary paperwork to start the NAWCA Project on Santee Delta. Submitted paperwork for hiring on various vacant positions. Inspected ongoing capital projects at Samworth (Upper and Lower Middleton) with Biologist Kneece and Treptow.

Wildlife Region 1

Summary

Met with Assistant Chief Simmons and Waterfowl Biologist Kneece, along with Region 1 staff, at Beaverdam to discuss planned improvements and repairs. Distributed wood duck boxes to successful applicants. Staff completed a virtual four-hour defensive driver training course. Met with Pickens County Emergency Management, DOT, and Fire officials on Sassafras gate closures during weather events. Conducted the upstate private lands youth deer hunt. Completed annual conservation easement monitoring reports. Biologist Miller attended the Pickens County Advisory Board meeting on December 7th. Interviewed candidates for the 2022 summer internship program. Discussed necessary habitat work for mountain sweet pitcher plant sites on Eva Chandler HP and Ashmore HP with the state botanist and assistant state botanist. Met with the former director of SCPRT to discuss issues at Bald Rock HP and possible solutions.

Region 1 Coordinator

Completed administrative activities including budgeting, purchasing, personnel actions, correspondence, and mobility impaired vehicle permits. Met with Assistant Chief Simmons and Waterfowl Biologist Kneece, along with Region 1 staff, at Beaverdam to discuss planned improvements and repairs. Spent two days distributing wood duck boxes to successful applicants. Met Biologist Swaynham at Jocassee to review a proposed timber harvest and update GIS data. Assisted with summer intern interviews. Met Biologist Carroll to discuss needs for the Union office. Completed a virtual four-hour driver training course. Attended the Clemson University Animal Care and Use Committee meeting and reviewed 2 research protocols. Checked WMAs including Beaverdam, Fant's Grove, and Jocassee. Checked Ashmore HP.

Nuisance Wildlife Activities

Conducted 55 nuisance wildlife investigations, made 12 site visits, and issued four depredation permits. Biologist Miller investigated a deer pen complaint in Oconee County. Assisted landowners with complaints on deer damage, raccoons, opossums, and an alligator.

Upstate Bear Report

Staff handled 13 bear complaint calls/sightings, made four site visits, and removed eight roadkill bears. One nuisance bear was trapped and removed from Oconee County and one bear was illegally harvested in Greenville County.

Unit 1A (Anderson, Greenville, Oconee & Pickens)

Worked to maintain proper water levels in the waterfowl areas. Monitored pig damage and worked two trap sites. Boundary lines were checked on several properties and WMA signs were replaced as needed. Staff scored deer as requested in the Clemson office.

Property Management Activities:

Beaverdam Waterfowl Area – Worked on maintaining proper water levels and stabilizing dikes. Repaired damaged blind. Hosted one waterfowl draw hunt.
Caesars Head WMA – Checked boundaries on WMA and reposted signs as needed.
Clemson Waterfowl Area – Monitored water levels and removed beaver dams. Re-topped dike with gravel. Hosted one youth waterfowl draw hunt.
Fant's Grove WMA – Planted wheat in dove fields. Reposted a boundary lines as needed.
Keowee WMA – Checked boundary lines and gates.
Long Creek Tracts WMA – Monitored dove field conditions.
Pickens Rifle Range Dove Field – Monitored dove field conditions.
Ross Mountain Dove Field – Monitored dove field conditions.
Tall Pines WMA – Removed beaver dams from spillway several times. Repaired two gates and picked up litter in parking areas and around the lake.

Unit 1B (Abbeville, Edgefield, Greenwood & McCormick)

Met with SCDNR statewide forester, mastication contractor, procurement forester, and a consulting forester to discuss Mason Tract projects. Completed a virtual driver training course, attended a holiday lunch at the Clemson office, and scouting locations for duck trapping.

Property Management Activities:

Bordeaux Dove Field – Applied herbicide to field. Trapped and removed 22 pigs. Hosted one dove hunt.
James L. Mason WMA – Monitored timber harvest and understory mastication contract work. Applied herbicide to Japanese climbing fern.
Plum Branch Dove Field – Repaired gate.
Russell Creek Waterfowl Area – Repaired riser walkways, checked wood duck boxes, and monitored water levels. Hosted 5 waterfowl hunts.
USACE-owned "unnamed" WMA – Placed hunt data cards at Bordeaux Bobwhite Focal

Area. Erected exclusion cages on clover plots. Repaired gate and masticated at “Greenoaks”. Trapped and removed 1 hog at “Old Augusta”.

Unit 1C (Cherokee, Laurens, Spartanburg, Union)

Conducted the upstate private lands youth deer hunt. Seven youth participated, harvesting a total of 3 deer. Investigated two wildlife disease cases in Union County. Collected and entered waterfowl data from hunts. Conducted conservation easement monitoring site visit and prepared and submitted conservation easement monitoring report. Attended Region 1 meeting at the Clemson office. Flagged open well and coordinated with USFS on USFS WMA land in Laurens County following hunter reports.

Property Management Activities:

Blalock WMA – Collected and entered waterfowl hunt data.

Sumter NF - Dunaway WMA – Collected hunt data and entered waterfowl hunt data.

Sumter NF - Duncan Creek WMA – Collected hunt data and entered waterfowl hunt data.

Sumter NF - Tyger WMA – Collected hunt data and entered waterfowl hunt data. Repaired riser boards.

Thurmond Tract WMA – Continued stumping and piling logging debris adjacent to dove field.

Unit 1D (Jocassee Gorges – Oconee, Pickens)

Completed administrative activities including personnel, correspondence, and purchasing. Responded to 33 email and telephone inquiries. Met with Pickens County Emergency Management, DOT, and Fire officials on Sassafras gate closures during weather events. Met with Duke Energy on powerline issue at Jocassee. Met with DNR IT on Jocassee IT issues. Two employees continue on-line LE training. Attended SBR Fire Learning Network meeting at Table Rock SP. Met with the Cliffs Community equestrian staff and community manager on JG horse issues. Attended an online meeting with a Ruffed Grouse Society representative and Michael Hook on a potential timber sale. Procured supplies for Sassafras and the Jocassee work center. Conducted maintenance on vehicles and equipment.

Property Management Activities:

Jocassee WMA – Pushed firelines on two burn blocks and installed two culverts. TNC crew prepped 5 miles of firelines. Regraded and graveled a road. Inspected all roads and removed several fallen trees. Continued marking timber on Canebreak Road site.

Sassafras Tower – Regular restroom cleaning, inspections and public assistance were carried out.

Continued preparations to replace secondary overlook and to pave access trail.

Heritage Preserve Activities

Assisted with the Region 1 wood duck box pick up. Interviewed candidates for the 2022 summer internship program. Discussed necessary habitat work for mountain sweet pitcher plant sites on Eva Chandler HP and Ashmore HP with the state botanist and assistant state botanist. Joined in a virtual meeting with Atlanta Botanical Garden and USFS about future research that will be funded for Miccocukee gooseberry at Stevens Creek HP. Met with the former director of SCPRT to discuss issues at Bald Rock HP and possible solutions. Met with the Director of the School of Landscape Architecture at Clemson University and the President of Friends of Bald Rock to discuss a graduate project at Bald Rock HP. Biologist Attaway and Technician Conley participated in a four-hour defensive driver training course. Technician Conley attended the annual SBR FLN meeting and gave an update on HP burns plans for 2022. All HP technicians worked together to complete four annual conservation easement inspections. Worked with Deputy General Counsel Whitehead to resolve an encroachment issue on Blackwell HP. Conducted maintenance and repairs on equipment.

Property Management Activities:

Ashmore HP – Inspected pitcher plant sites. Checked management roads.

Bald Rock HP – Picked up litter five times. Assisted with a volunteer workday hosted by Friends of Bald Rock. Installed a “take your litter with you” sign on the trash can.

Belvue Springs HP – Inspected property.

Blackwell HP – Checked field to look at mulching and bush-hogging progress.

Brasstown Creek HP – Bush-hogged roads. Inspected property.

Bunched Arrowhead HP – Inspected property. Repaired sign. Enforced camping regulations.

Buzzard Roost HP – Inspected trail.

Chandler HP – Inspected property. Removed tent, tarp, and litter from an abandoned campsite.

Chestnut Ridge HP – Inspected and cleared management roads.

Glassy Mountain HP – Inspected trails.

Peters Creek HP – Inspected trails.

Watson-Cooper HP – Inspected entrance roads and started working on procuring gravel.

Wildlife Region 2

Summary

Region 2A staff distributed 157 of the 215 wood duck nest boxes and predator guards. Staff adhered to SCDNR C-19 emergency protocols in field work and office work, following social distancing and sanitation measures. The department has continued to provide personal protective equipment and sanitation supplies to staff to help us work safely and productively. Heritage preserve management staff worked on endangered species and ecosystem monitoring, restoration and management; on longleaf and shortleaf pine, piedmont savanna and prescribed fire management, outreach, policy and education; on management plans; on conservation planning, and on maintaining and improving access and other preserve attributes. Staff discussed complaints about WMA abuse with deer hunters in Lee County.

Regional Operations Activities

Unit 2A

Biologist Oates and Administrative Assistant Ridgill distributed 157 wood duck boxes and predator guards. Biologist Oates and technician Parsons met with Santee Cooper biologist Johnson to discuss burn plan and management strategies for Pee Dee Station WMA. Biologist Oates and technician Parsons fixed 27 gates at Lake Wallace dove field. Biologist Oates cleared .75 miles of boundary at Marsh WMA. Technician Parsons and Alston graded 30 miles of roads at Marsh WMA. Technicians Parsons and Alston repaired drain at Woodbury. Technicians Parsons and Alston hauled 10 loads of rock in Woodbury and Marsh to repair roads and washouts. Technician Parsons mowed 35 acres of corn and sunflowers at Pee Dee Station and Lake Wallace dove field. Technician Parsons disked 4 miles of firebreaks at Pee Dee Station. Technician Alston disked 8 acres of brood rearing patches at Marsh WMA. Region staff had 84 technical assistance contacts (mostly phone calls) pertaining to wildlife and regulations, 43 WMA lands calls, and 14 nuisance calls (2 nuisance bear).

Unit 2B

Unit 2B staff continued maintenance of WMA public dove fields in York and Chester Counties.

Unit 2B staff spent considerable time on scheduled equipment maintenance. Technician Moses maintained wildlife openings at Draper, Ross, Kirsh, Landsford, and McConnells WMAs. Technician Wyatt maintained roads and firebreaks at Worth Mountain WMA. Technician Wyatt continued maintenance of Worth Mountain public dove field. Unit 2B staff continued maintenance of crops at Broad River Waterfowl Management Area. Unit 2B staff continued flooding impoundments and preparing duck blinds at Broad River Waterfowl Management Area. Technician Smith monitored water levels, beaver activity in ditches, and water control structures at BRWMA. Unit 2B staff monitored mitigation project at Landsford Canal WMA.

Unit 2C

Biologist Cockman scored one deer head at the Camden office. Staff prepared for and administered four quail hunts at McBee WMA. Biological data were collected from 13 harvested birds. Staff began planning and equipment prep for prescribed burning. Biologist Cockman and volunteer Mason conducted a wildlife presentation to 50 third graders at Jefferson Elementary on December 3. Biologist Cockman, Regional Coordinator Stokes and Asst Chief Chappelle conducted panel interviews for the vacant Unit B Biologist job on December 7. A decision was made to readvertise the position. Biologist Cockman met with a land clearing contractor at McBee WMA to obtain an estimate to finish the clearing job that was defaulted last month. Biologist Cockman completed annual stream easement inspections at Liberty Hill WMA on December 13. The regional Christmas lunch was held at McBee WMA on December 14. DLEO Cockman assisted the LE section with 5 illegal hunting cases at McBee WMA. Technician Lowder worked on setting up the shop and distributed 20 bushels of supplemental quail feed (Dec 16, 31) at McBee WMA. Technician Lowder conducted a landowner consult about prescribed burning and assisted Unit A by welding some trailer repairs. Technician McManus repaired damaged split rail fencing at the south kiosk, graded and daylighted 5 miles of roads and cut 6 trees from the roadways at Liberty Hill WMA. Technician McManus hauled 2 loads of rock to go around the new shop at McBee WMA.

Wildlife Management Area Management Summary

Throughout Region 2, staff mowed 57 acres, scraped 40 miles of roads, disked 14 acres of brood patches, disked 4 miles of firebreaks, repaired 27 gates, cleared .75 miles of boundary, hauled 10 loads of rock.

Property Management Activities

Marsh WMA: Scraped 30 miles of roads. Hauled 4 loads of rock. Repaired 2 washouts. Cleared .75 miles of boundary.

Woodbury WMA: Hauled 6 loads of rock. Repaired one road tile and 3 washouts.

Pee Dee Station WMA: Mowed 15 acres of corn and sunflowers. Mowed 12 acres of fields. Disked 4 miles of firebreaks.

Lake Wallace DF: Mowed 20 acres of corn and sunflowers. Mowed 10 acres around field. Repaired 27 dove field gates.

McBee WMA: Administered four quail hunts. Monitored visitor use. Distributed 20 bushels of sorghum

Liberty Hill WMA: Monitored visitor use. Graded and daylighted 5 miles of roads. Cut 6 trees from roadways.

Angelus BDTR: Monitored visitor use.

Catawba River WMA: Inspected culverts at Heritage West tract.

Draper WMA: Perform general depot and equipment maintenance.

Disced 8 miles of firebreaks. Planted 4 acres of trails/firebreaks.

Worth Mtn. WMA: Perform general equipment maintenance and repair. Disked 2 miles of firebreaks Mowed 2 miles of roads. Mowed 6 acres in dove field. Scraped 4 miles of road. Put up 25 WMA signs.

Broad River Waterfowl Management Area: Administered 3 waterfowl hunts.

Perform general equipment maintenance and repair. Brushed in new blinds. Began pumping to flood all impoundments. Performed 10 days of water level management. Scraped 1 mile of roads.

Heritage Preserve Management Activities

Staff ordered shortleaf pine seedlings and arranged for short term cooler storage at Clemson University Pee Dee Research and Education Center. Staff reviewed Region 2 Heritage Preserve webpages. Staff completed a three-year term on the board of Directors of the International Association for Wildland Fire, and was asked to serve another term, and accepted. Stowe wrote the foreward to the Southeast Prescribed Fire Training Needs Survey Report, a document published by the National Cohesive Wildland Fire Prescribed Fire Training Coordination Work Group. Staff's introduction to this document centered on economics, specifically on how we have created a regional demand for prescribed fire that is far exceeding supply and therefore must look for a market-based solutions to the problem of getting more fire on-the-ground. Staff was invited to speak at a US Forest Service Research and Development workshop and serve on a team that will produce a nationwide Prescribed Fire Assessment in the form of a USFS General Technical Report. Staff was invited to speak on firelighting in a conference series of the National Wildfire Protection Association but declined due to time constraints. Staff attended a meeting of the SC Prescribed Fire Council. Staff attended retirement gatherings for Dr. Ernie Wiggers (President of Nemours Wildlife Foundation and long-time partner on a wide range of SCDNR waterfowl, fire and other research, education and outreach projects) and John Maitland, forester at Fort Jackson. Both men were, with Stowe, inaugural members of the SC Prescribed Fire Council (inception in 2004). Staff discussed public use of Great Pee Dee River HP/WMA with Ben Zeigler on several occasions, and separately, with Ken Prosser, SCDNR Legal Counsel and Region 2 Coordinator Stokes. Mr. Zeigler now leases the former Clanton property, which our public and management access easement crosses, and has taken great interest in public use of our legal, explicit easement. Staff spoke to 10 classes (about 250 students plus teachers and teacher assistants) at Doby's Mill Elementary School, speaking outside to two classes at a time about the benefits and joys of reading books, wildlife signs, weather and other natural phenomenon. Each student in the school (>600), received a copy of SCDNR bilingual coloring book.

Staff assisted South Carolina Wildlife magazine with an article on Mark Catesby ("Catesby in Carolina") reviewing material and being interviewed by SCW Editor Joey Frazier. Staff ended up being quoted at length in an accompanying article centering on fire ecology, history and management ("A Burning Question: When is Fire the Right Tool for Land Management") published in the same issue (January: February 2022). Staff assessed firebreaks, soil and water-table conditions, and fuels; cleared around RCW cavity trees as well as snags, cat-faced or hollowed trees, gates, signs, utility poles and other hazards or sensitive elements; and worked on equipment and gathered supplies and trained in preparation for prescribed fire. Staff maintained preserves by assisting the SCDNR LED with enforcement, by monitoring for abuse, by removing trash, by managing vegetation and by maintaining gates, trails, parking areas and boundaries. Staff ordered shortleaf pine seedlings and arranged for short term cooler storage at Clemson University Pee Dee Research and Education Center. Staff reviewed Region 2 Heritage Preserve webpages.

Property Management Activities

Forty Acre Rock HP/WMA: Staff maintained the preserve by assisting game wardens with surveillance (SCDNR LED issued 2 tickets and 1 warning) by monitoring for abuse, by removing trash and hazardous trees, by covering graffiti, by managing vegetation, and by maintaining gates, trails, parking areas and boundaries. Researchers from Elon University and SCDNR Botanist Bradley conducted a drone survey and a Carolina Vegetation Survey on endemic granitic outcrop plants.

Great Pee Dee River HP/WMA Staff discussed public use of the preserve and WMA with Ben Zeigler, and separately, with Ken Prosser, SCDNR Legal Counsel and Region 2 Coordinator. Mr. Zeigler now leases the former Clanton property, which our public and management access easement crosses, and has taken great interest in public use of our legal, explicit easement.

Longleaf Pine HP/WMA: Staff assessed firebreaks, soil and water-table conditions, and fuels; cleared around RCW cavity trees as well as snags, cat-faced or hollowed trees, gates, signs, utility poles and other hazards or sensitive elements; and worked on equipment and gathered supplies and trained in preparation for prescribed fire.

The preserve's tightknit group of deer hunters had a productive season, killing several mature bucks and numerous other deer

Lynchburg Savanna HP/WMA: Closely monitored neighbor's timber harvest (site is being clearcut adjacent to CC Road and preserve entrance road). Staff assessed firebreaks, soil and water-table conditions, and fuels; cleared around RCW cavity trees as well as snags, cat-faced or hollowed trees, gates, signs, utility poles and other hazards or sensitive elements in preparation for prescribed fire.

Woods Bay HP- Staff assessed firebreaks, soil and water-table conditions, and fuels; cleared around RCW cavity trees as well as snags, cat-faced or hollowed trees, gates, signs, utility poles and other hazards or sensitive elements; and worked on equipment and gathered supplies and trained in preparation for prescribed fire.

Segars-McKinnon: Mary Ridgeway, Director of Kalmia Gardens, retired after a long and productive tenure. Staff is hopeful Coker University will find a new director who is as good a partner as Mary. Staff discussed management of the preserve with Al Segars, whose family made donations critical to forming the preserve. Mr. Segars and his family (including his late brother Kenny Segar's immediate family) remain outstanding neighbors and supporters of the department's conservation of the preserve. Staff monitored water levels in Black Creek and waited on SCDNR Engineering staff to schedule float trip to assess boardwalk.

Wildlife Region 3

Summary

Staff hosted a multitude of hunts across the region's wildlife management areas. Staff conducted annual conservation easement monitoring at Craig's Pond, Peachtree Rock Heritage Preserve, Savannah River Bluffs Heritage Preserve and Hitchcock Woods. Biologist Shuler and staff began conducting youth deer hunts on Santee Cooper Wildlife Management Area and continued monitoring at Hickory Top Greentree Reservoir, which continues to hold a significant amount of wood ducks. Biologist Forehand began working with Savannah River Site Forest Service on a potential pollinator habitat project. Biologist Bennett and staff spent a significant amount of time working to reclaim an abandoned waterfowl impoundment at Wateree River Heritage Preserve Wildlife Management Area. Biologist Young and Technician Kiker responded and helped contain a 10-acre wildfire that ignited on Henderson Heritage Preserve along Croft Mill Road.

Regional Coordinator

Assisted regional staff with purchase requisitions and receiving and inspection reports. Met with Assistant Chief Simmons to discuss regional budgets. Assisted Region 2 staff with lottery waterfowl hunts at Broad River Waterfowl Management Area. Attended a site visit in Mountville for a prospective property acquisition. Assisted with interviews for Technician II job working on heritage preserves and interviews for summer interns. Visited the following heritage preserves and wildlife management areas in region 3; Belfast, Peachtree Rock, Shealy's Pond, Henderson, Janet Harrison High Pond, Ditch Pond and Wateree River.

Regional Operations Activities

Unit 3A

Regional staff spent a significant amount of their time prepping and conducting lottery waterfowl hunts. The Wateree River Heritage Preserve Wildlife Management Area lottery waterfowl hunts kept staff scouting ducks for successful applicants. Waterfowl impoundments are still being monitored for hog intrusion daily at Wateree River HP/WMA. The waterfowl impoundment on the Cook's Mountain side of the property still doesn't have water on it due to the extremely low river levels. The overflow at the fishpond still show signs of beaver activity and staff is still trying to trap them. The trash rack on the overflow pipe has been compromised and staff has started pumping the pond down to address the issue. Staff spent a majority amount of their time working to reclaim an abandoned waterfowl impoundment at the upper end of the property above the Haul Rd. Pipes were replaced and dikes were repaired ahead of forecasted rain with hopes of catching rainwater. Hog traps are still being constructed. Hog trapping on Wateree River WMA has been successful with staff trapping 8 hogs.

The impoundment at Love Wildlife Management Area has been monitored and scouted for overflow lottery waterfowl hunts. Technician Baldwin disked some of the dove field area with hopes of having increased winter kill of sedges. Wood duck boxes were cleaned out and checked. Hogs trapping on Love WMA has been successful with catching 23 hogs.

Logging continues at Belfast Wildlife Management Area with late month rains slowing operations down. Vandalism and gate issues at Enoree Waterfowl Area have prompted area wildlife staff and local law enforcement to address these problems. Gates were repaired and cameras set up for surveillance. Several equipment repairs were made along with charging batteries. Technician Rex has begun constructing several hog traps to be put in use next month.

Unit 3B

Forehand and Wildlife Technicians Chapman and Rinder manned and worked the gate for

all open days and completed the Savannah River Site annual security training. Rinder mulched 2 acres, disked 5 miles of firebreaks, bushhogged 40 acres at the Crackerneck dovedfield and worked on equipment for 4 days. Chapman planted 10 acres of food plots and worked on equipment for 2 days. Forehand repaired the Skinface pond overflow, planted 5 acres of food plots, and worked with Savannah River Site Forest Service on a potential pollinator habitat project.

Unit 3C

All staff worked public dove hunts and youth deer hunts. Technician Mackay and Technician Greenthaler repaired roads and equipment on Santee Cooper Wildlife Management Area. All risers were maintained, and water levels checked while flooding continued in the greentree at Hickory Top. Staff prepped and put up all youth deer stands on Santee Cooper Wildlife Management Area. Staff continued to maintain and repair equipment. Staff completed online training. Shuler answered multiple calls from the public concerning wildlife management.

Heritage Preserves

Young and Kiker conducted numerous site visits to the heritage preserves and wildlife management areas within Region 3. Young, assisted Unit 3A Biologist Bennett in clearing an old waterfowl impoundment at Wateree Heritage Preserve. Young and Kiker conducted a site visit to easement property, Craig's Pond. Young attended site visits for easement properties, Hitchcock Woods, Savannah River Bluffs Heritage Preserve, and Peachtree Rock Heritage Preserve. Young and Kiker responded to a wildfire that ignited on Henderson Heritage Preserve along Croft Mill Road. South Carolina Forestry Commission estimates it was about 10 acres burned and unaware of the cause. SCFC used bulldozer to contain the fire. Kiker has been plowing firebreaks at Aiken Gopher Tortoise Heritage Preserve. Kiker has cleaned up litter at Shealy's Pond Heritage Preserve, Ditch Pond Heritage Preserve, and Peachtree Rock Heritage Preserve. Young and Kiker cut down two dead snags along the trail at Peachtree Rock Heritage Preserve, which was a safety hazard to hikers. Young and Kiker assisted distributing wood duck boxes at Styx. Young, assisted Assistant Chief Simmons in conducting Intern interviews. Kiker assisted Region 3 staff in moving equipment around the region. The septic tank at Congaree Bluffs Heritage Preserve Education Center was cleaned out. Kiker placed CWD awareness posters at several of the heritage preserves within Region 3. Young made an offer to a potential candidate for the vacant technician position with Region 3 Heritage Preserves.

Wildlife Region 4

Highlights

Region 4 Staff devoted significant time to the preparation and management of lottery waterfowl and deer hunts. Multiple rounds of interviews for different openings were conducted throughout the Region. Staff began preparing fire lines and equipment for prescribed fire operations.

Regional Coordination

Purchasing and procurement paperwork was dealt with in all forms and fashions, including assisting staff with declined credit card and fraud errors. A conservation easement was monitored. Several meetings were attended, virtually and in person, including the ACE Basin Taskforce meeting. Additional steps were taken to fill the Region 4 Heritage Preserve Coordinator position, and we are hopeful it will be filled soon. Interviews were conducted for the Upper Coastal Waterfowl Project Biologist II position (Samworth), and the position will be reposted. Assistance with interviews for the Bio II Nuisance Alligator Biologist was provided. Two Region 4 meetings were scheduled for the new year.

Assistant Regional Coordination

Hook assisted with Category 1 Waterfowl hunts throughout Region 4. Hook and Biologist Brantley conducted interviews for Region 4 Heritage Preserve Technicians and processed hiring paperwork. The ACE Basin Task Force Meeting was attended at Lavington Plantation. Coordinated registration of staff in need of Certified Prescribed Fire Manager course with South Carolina Forestry Commission. Water level management at Dungannon Heritage Preserve was conducted. Post Construction Forms for projects on CAT I Waterfowl Areas were submitted to OEP for submission to the U.S. Army Corps of Engineers. Hook coordinated with OEP and Engineering for upcoming projects.

Unit 4A: Horry & Georgetown

Coastal Bear: There were 2 nuisance calls, 1 sighting and 4 roadkill's reported. In addition, there were 2 other bear related calls received but those could not be confirmed. One site visit was conducted at Brookgreen Gardens. A public presentation scheduled for the first of January was canceled due to the increase in Covid cases.

Unit 4A Heritage Preserves: Heritage Preserves in Horry County were visited 18 times. Biologist Brantley continued assisting with Heritage Preserve matters. Brantley spent 2 man-days organizing Lewis Ocean Bay and Little Pee Dee River Heritage Preserve computer files. An additional day is needed to finish. Brantley coordinated with Vulcan Materials Company on getting the large rock project started. Technician Matthews spent 5 man-days diskings firebreaks at LOBHP. Matthews also assisted with installing electricity and air lines in the new pole shed at

LOBHP. Staff assisted with replacing a collapsed culvert on Littler Pee Dee Heritage Preserve. Road conditions were checked and monitored on Loris Hunt Club and Simpson creek for scheduling rock hauling.

Samworth WMA Uplands: Routine administrative duties were carried out. The remaining corn was mowed in the dove field, in addition to the wildflower patch. Strips of winter wheat were fertilized. One fence section and corner post were repaired. Potholes along the Samworth avenue were fixed. A small Christmas/retirement lunch was held for Mike Ward. Biologist Brantley spent a day with Technician/GIS specialist Walters on updating Unit and Heritage Preserve maps.

Unit 4B: Berkeley & Charleston

December activities were dominated by preparing for and conducting deer and waterfowl hunts.

Bonneau Ferry WMA: 81 General visitors and 152 hunters utilized Bonneau Ferry. Equipment was serviced and grounds cleaned and maintained. Staff monitored and assisted hunters with adult/youth and lottery deer hunts. Flooding of impoundments and blind preparation were ongoing. Boundary signage was installed. One field and numerous fire lanes were disced. Lottery waterfowl hunts were conducted.

Canal WMA: Staff continue to work with COE personnel via weekly conference calls. Dove fields continue to be maintained and dove hunts are being coordinated by staff on scheduled Saturdays. A quail call survey was completed by staff. Wheat fields were disced, planted, and fertilized. Staff assisted the completion of the liming project in Wambaw. Staff disposed of a road killed bear.

Sandy Beach, Cross Generating Station, and North Dike WMA: Flooding impoundments and blind preparation continued. Staff conducted Santee Cooper/DNR youth deer hunts. Shed improvements continued as enclosure of storage room was started. Lottery waterfowl hunts were conducted.

Francis Marion National Forest: Wildlife openings were planted in Wambaw and Waterhorn. Staff are monitoring activity at Elmwood Check Station during peak hours. Staff assisted with conducting Mobility Impaired hunts at Tibwin. Contract liming has been completed on all units.

Other Unit activities: Staff coordinated wood duck box pick up sessions with cooperators at Dennis Wildlife Center. Staff attended driver safety training. Staff worked 5 check stations on the Francis Marion on the either-sex dog drive.

Wildlife: A total of 85 wildlife calls were handled at the Charleston office (10 alligator and 75 other nuisance animals). There were 7 licensing/boat titling calls emailed to the licensing/permitting office. Hunting regulation and property calls were handled for 3 callers. 1 Property Alligator Depredation Permit was mailed. 67 Harvested Alligators have been reported through end of December.

Unit 4C: Colleton & Dorchester

Routine administrative and management duties were conducted for the month. Visits were made to WMAs within the unit to assess habitat conditions and other management items. Water levels in all impoundments on Donnelley and Bear Island were monitored and adjusted appropriately. All water control structures have been set to make food readily available for wintering waterfowl and waterbirds that are down for the winter. Dove field management and preparation continued to keep staff busy across the unit as fences are checked daily, herbicides applied, mowing, and disking occurred. Deer hunts across the unit were in full swing. Waterfowl hunts continued through December and consumed staff's time. The ACE Basin Task Force meeting was attended at Lavington Plantation. There was a minimum of 3,805 visitors and 438 hunters for the month in Unit 4-C.

Bear Island WMA: Dike maintenance has shut down for duck season. A spillway box has been constructed and hauled to Donnelley WMA to replace a cracked box. Trask impoundment was mechanically pumped back to duck level after the initial level had fallen due to seepage. Agriculturally, the last couple of wheat plots were finished. Duck season lottery hunts encompasses the majority of the staff's hours, but several winter maintenance jobs have been addressed such as replacing worn out shingled kiosk roof with new metal, repairs to damaged tilt deck trailer, disc harrow disassembled and had disc, bearings, axles replaced as needed along with addressing rust spots with treatment. Structures such as Springfield house steps and deck were cleaned and treated with protective stain and Nancy Hill house had a bedroom used for storage cleaned, broken and/or useless furniture removed, and new coats of paint as needed.

Botany Bay Plantation: Volunteers continued the ongoing projects of cutting the overhanging limbs for tractors as well as cutting small pines out of ditches. Volunteers raccoon proofed bird feeders at the kiosk; cleaned limbs and debris from the avenue and started cleaning out duck boxes. On December 11th Craig Watson lead the bird walk trailer tour which was very successful with 24 in attendance. On December 16th we had a primitive weapons & archaeology workshop for volunteers conducted by Scott Jones with 35 in attendance and CRO staff. Volunteer hours = 426. There were 5,054 visitors with 1,702 vehicles for the month of December. We had 3 horseback riding parties with 8 rides. There was 1.42" of rain for the month of December.

Donnelley WMA: Agriculturally, any remaining wheat plots were finished. Although our last dove hunt has passed, the fields are being maintained to attract doves. Open areas are continually disced, and crops are bush hogged conservatively to draw feed out through the winter. Three CAT II hunts were conducted and two youth lottery hunts. Small game hunting is currently open at Donnelley with a steady attendance of mostly squirrel and racoon hunters. Winter preventative maintenance on lawnmowers, ATVs, and tractors was finished. Miscellaneous jobs addressed during the month include, prepping fire truck for burn season, disassembling cultivator and disc harrow and replacing parts as needed, hauled a load of boats to STYX and picked up predator guards for duck boxes while there, and repaired broken 3-pt hitch on bush hog. The lodge, office and shop yards were run across with lawnmower to freshen up their appearance after most winter leaves have fallen.

Edisto River WMA: The map display box on the Bird Dog Training kiosk at Edisto River WMA was replaced with a new one. The kiosk supplies at Edisto River WMA were monitored. A site visit was made to develop a burn plan for the upcoming late winter and spring. The bird dog training area continues to get steady use.

GIS/GPS/Miscellaneous: The map display box on the Bird Dog Training kiosk at Edisto River WMA was replaced with a new one. The kiosk supplies at Edisto River WMA were monitored. Met staff from the Charleston Greenbelt Program at Dungannon HP/WMA for the annual monitoring of the Clark Tract. Assistance was provided with monitoring Donnelley WMA kiosk supplies. Met with the waterfowl biologist to assistance was with mapping of banding and harvest data. Met with the biologist from Samworth WMA and assisted with various mapping/GIS data questions. Grid maps were edited/generated for Donnelley WMA and Bonneau Ferry WMA to assist staff with prescribed burn planning. Miscellaneous GIS work was conducted.

Unit 4D: Beaufort, Hampton, & Jasper

Much of the staff time this month was spent wrapping up the lottery hunts for Webb, Hamilton Ridge, and Palachucola. Staff began preparing burn equipment and started winter disking. 67 non-hunting users signed in to the 3 WMAs during the month with activities including: scouting for hunting, birding, wildlife viewing, archery range, fishing, paddling, and photography. Routine administrative and management duties were conducted for the month. Biologist Atkinson met with contractors on various projects, checked on timber operations, and scored one deer for state record book. Webb staff & facilities did not host any meetings in December. Lower Coastal Alligator activity for the month: issued 1 individual permit with 1 tag, distributed 4 alligator signs, and received 2 nuisance complaints.

Habitat management: Staff spent significant time winter disking 41 acres of wildlife openings and brood fields. 10 miles of fire breaks were disked. Staff spent time mowing ~5 acres for midstory control.

Facilities & Infrastructure maintenance: Staff graded approximately 3 miles of roads. 2 miles of roads were cut with the sidearm mower. Staff conducted regular range maintenance at Palachucola.

Equipment maintenance: Staff spent significant time preparing ATVs for burn season, rebuilding the tri-fold disk harrow, and replaced windshield on sidearm mower. Staff time was also spent on general equipment maintenance & repairs.

Monthly Totals: 408 hunters, 67 Non-Consumptive WMA users, 305 range users, and 0 other users (meetings/trainings/organized groups and events). Grand total: 780

Upper Coastal Waterfowl Project

Santee Coastal Reserve WMA

Upland: Several burn blocks were prepped for burning, RCW trees were raked and painted, and snags were cut along the edges. The avenue and the campgrounds were mowed. Hog traps were repeatedly baited. The board walk was repaired and cleaned. Big Well repair work started by re-topping a stretch of dike at a length of 450 feet.

The Cape: Several areas in the Blake Impoundments were roller chopped to create openings for waterfowl. Trees were trimmed along the Long Island dike to facilitate easier hunter drop off. The Christmas Bird Count was conducted. Three waterfowl draw hunts were conducted. Water levels were monitored, and adjustments were made as necessary. Salinities and water temperatures were measured and documented.

Murphy Island: The dock was repaired. Small LED lights were installed on the floating dock to increase safety. The long-reach excavator re-topped 1,190 feet of cross dike between the Thompson Creek and Black Point impoundments. Three waterfowl draw hunts were conducted. The new director of the James Kennedy Waterfowl and Wetlands Conservation Center tagged along scouting and prepping a hunt with us. He was able to meet staff and see waterfowl and habitat. The Christmas Bird Count was conducted. Water levels were monitored, and adjustments were made as necessary. Salinities and water temperatures were measured and documented.

Cedar Island: An interior canal was cleaned out at a length of 4,000 feet to improve water flow and facilitate passage by mud boat. The amphib was then moved to Big Well. Both Cedar Island docks were repaired, and pressure washed to remove thick accumulations of mainly cormorant guano. Small LED lights were installed on the

floating dock to increase safety. Three waterfowl draw hunts were conducted. Water levels were monitored, and adjustments were made as necessary. Salinities and water temperatures were measured and documented.

Repairs: The large Santee Coastal Reserve WMA entrance signs were taken down, refurbished and re-installed. A new bilge pump was installed on the Cedar Island mud boat.

Santee Delta WMA

All gates, dikes and impoundments were repeatedly checked on Delta East and Delta West. A wildfire on a neighboring property during Christmas was repeatedly checked on from the ground and by drone. It came very close, but never spread to the Delta East impoundments. A large fallen tree on Delta East was cleared.

Samworth WMA

The amphibious excavator was moved to the Big Carr Impoundment where it is retopping a section of dike along Big Carr Creek. Multiple trips were made to refuel this machine. Mowing was completed on Rabbit Island (12 ac). The short-reach excavator was barged from Santee Coastal to Samworth for use on future dike work. All tractors and Marsh Masters were barged into the shop for the winter. The Marsh Master was cleaned and loaded on a trailer for transport to Louisiana for major repairs. Predator guards and wood duck boxes were picked up from Columbia. WMA signs were posted on the Lower Units. The Smoke House was cleaned and organized for storage of equipment. Hydrologist Brooke Czwartacki joined staff at Samworth for a day and assisted in set up of water level loggers. Aerial images of all impoundments were taken by drone.

Habitat Report: Water levels in all flooded impoundments have been routinely monitored for waterfowl season.

Repairs: Two trips were made to Florence for repairs of a hydraulic drive motor for the Marsh Runner. The motor was installed on the machine and tracks re-assembled. Winch rollers were repaired on a tractor. Assembly was completed on an herbicide engine and pump.

Contractor Updates: Contractors continue to make progress on both Upper and Lower Middleton renovations. Trunk installations have been completed on Lower Middleton, and the contractor is working to complete retopping of the dikes. One trunk remains to install on Upper Middleton, along with extensive bulkhead work. However, retopping is nearly completed on the Upper Middleton Project.

Statewide Waterfowl Biologist

Three site visits were made to three waterfowl properties (Clemson Youth Area, Beaverdam, and Donnelley). Assistant Chief Willie Simmons, Regional Coordinator Pat Cloninger, Biologist Tammy Waldrop, and Technician Matt Norris met on site at Beaverdam Waterfowl Area where we examined existing infrastructure issues with the property and a pending NAWCA project to be completed there. Toured the Clemson Youth Waterfowl Area. Management and planting overviews were discussed related to both properties. Met with Biologist Daniel Barrineau on Donnelley WMA and examined invasive Cuban Bulrush in the field and discussed the plan to control the further growth of the vegetation into our freshwater wetland areas at Donnelley. Goals were outlined and possible panel members for an evaluation of wetland management practices and infrastructures on Bear Island WMA.

In coordination with Joe Lemeris, an ArcGIS Survey 123 form was developed to allow field staff to efficiently capture specific pictures of waterfowl harvested on our Category 1 lottery hunts. Pictures from this survey will be used by the USFWS in the development of a program to speciate, age, and sex waterfowl in field condition.

Attended Bio II interviews for the vacant Samworth waterfowl position. Assisted in a photo shoot for upcoming lottery waterfowl hunt communications. Coordinated and reviewed permits for eDNA and lethal sampling collections of waterfowl as part of a bioenergetics study being conducted by Mississippi State University on coastal properties, including select WMAs in South Carolina. Virtually attended meetings for an upcoming Atlantic Flyway Mallard Research Project, the National Science Support Team, and a Highly Parthenogenic Avian Influenza webinar.

In relation to the Atlantic Flyway Mallard project, a meeting was held with Lisa Walters to complete mapping of locations mallards banded in the NE US and Eastern Canada have been harvested in SC over the last 20 years. From that information, began coordinating land access with private landowners in key areas of the state. Coordinated with SCDNR staff assisting with trapping.

Assisted with scouting and operation of 5 hunts at Santee Coastal Reserve. At Samworth, monitored habitat and water level management, contract project progress, dike retopping, and organized a contact-free wood duck box pick up.

Heritage Preserves

The Heritage Coordinator position remains vacant as well as 2 technician positions. Unit 4A Biologist Brantley has been covering the duties of the HP coordinator, overseeing staff, ensuring that properties are maintained, and projects remain on track. A large rock project began on Heritage Preserve properties in Horry County.

Cartwheel Bay: Staff conducted property checks multiple times throughout the month.

Dungannon: Assistant Regional Coordinator Hook continued to adjust water levels. The rookery is being drawn down to review the possibility of mechanical manipulation of rank vegetation to optimize habitat for nesting wood storks.

Lewis Ocean Bay: All roads and parking areas were graded. Staff continued to fix “spin outs” throughout the preserve that were present after weekends. Staff installed 2 trail cameras to surveil parking areas as they continuously are destroyed by vehicles. Due to extremely dry conditions, 95% of the firebreaks were disked. Staff monitored for litter. State Botanist Bradley led a one-day field trip for the South Carolina Association of Naturalists on property.

Little Pee Dee: Routine property checks were conducted on all tracts. Through coordination with a Resource Management Service, LLC (RMS) representative, a collapsed culvert was replaced prior to rock hauling. The culvert was located on the access road into the property, which is shared by SCDNR and RMS. 400 tons of #4 ballast and 22 tons of #57 was chain spread on roads/ culvert crossings and water crossing areas.

Tillman Sand Ridge: Technician Kalinowsky ran perimeters and collected trash at gates routinely. Treating gums and tallow by hack and squirt continued. Several trees were removed from interior firebreaks. Hog sign was down this month. Kalinowsky took his annual break in service during December.

Waccamaw River: 200 Tons of #4 ballast and 545 tons of #57 were chain spread on roads/culvert crossings and water crossing areas.

Miscellaneous: Staff worked closely with vendor on scheduling rock hauling to different properties within Horry County. One week was spent monitoring and directing trucks to ensure rock spreading occurred on proposed roads. Equipment was cranked weekly to charge batteries. With the help of Unit 4A staff, electrical and airlines were installed on new pole shed. Staff attended a small Christmas/retirement lunch for Mike Ward at Samworth. Technician interviews were conducted virtually and one in person interview was held. Staff collectively made 24 site visits to 5 preserves this monthly including Tillman Sand Ridge, Lewis Ocean Bay, Waccamaw River, Cartwheel Bay, and Little Pee Dee River HPs.

Tom Yawkey Wildlife Center

Habitat and Infrastructure Maintenance

Water quality and levels were monitored for waterfowl food production. Two camping permits were issued for YWC beaches. One water control structure was replaced on South Island. Twelve miles of roads were graded and shaped, two miles of dikes were side-cut, and four miles of dike and roads were mowed.

One-hundred fifty feet of the Lower Reserve setback dike was re-topped along Mosquito Creek.

Worked closely with the DNR legal staff and the Yawkey Foundation to facilitate the transfer of the 256-acre Blackout tract donation on Cat Island. This tract was a key inholding within the property.

Reviewed requests for and issued two camping permits for YWC beaches. Staff attended the December meeting of the Yawkey Foundation Trustees remotely. Two staff members resigned their DLEO commissions and turned in equipment due to changes in certification requirements. Staff discovered a boat with three duck hunters illegally hunting in the sanctuary area on South Island. Their information was gathered and turned over to SCDNR law enforcement officers who issued several tickets. The water control structure in the Santee Pond managed wetland failed unexpectedly. The structure was decommissioned, and a new rice trunk and bulkhead were installed. A piling holding the island side dock broke due to high tides and winds. This allowed the dock to swing around and pin the project pontoon boat against the South Island swing bridge. The Bimini top and rails on the boat were damaged. The dock has been temporarily placed back in its original location and a new piling will be installed.

Research and Survey

Staff conducted and assisted with numerous research and survey projects during the month. The monthly waterfowl and wading bird point counts detected 7,707 waterfowl and 835 wading birds. These are higher than average numbers for December surveys. Coordinated and assisted with the 2021 Winyah Bay Christmas Bird Count at the Tom Yawkey Wildlife Center. Staff attended the successful Clemson University master's degree defense for Mikayla Thistle on her thesis entitled “Response of Bachman's sparrow (*Peucaea aestivalis*) to habitat management in a wiregrass-free ecosystem”. Assisted researchers Bonnie Ertel and Dr. John Weinstein from The Citadel on the South Island Beach. They are surveying various locations to determine plastic concentrations. Met with Clemson University wildlife biology student Luis Garcia to discuss potential summer internship opportunities. Luis is a Georgetown high School graduate and current Yawkey Scholar. The interim report for the SWIG project entitled “Response of Bachman's sparrow (*Peucaea aestivalis*) to habitat management in a wiregrass-free ecosystem” was provided to the US Fish and Wildlife service in fulfillment of the grant guidelines.

Hosted Clemson University Baruch Institute director candidate Dr. Mazeika Sullivan (Ohio State University) for a tour of Yawkey Wildlife Center. Continued our long-term research project on American alligator

reproduction and ecology by examining game camera photographs placed at 18 nests during the summer of 2020. These cameras were deployed to record information on alligator nest associates (other wildlife present at each nest). This long-term monitoring will allow us to examine how other wildlife species use alligator nests over a full year (June-May), as the nests slowly decompose. Staff deployed 7 game cameras to examine winter basking behavior of American alligators. We also deployed thermistors at each basking site and in the adjacent water to collect associated information on temperature during this period. Participated in a virtual meeting with Clemson University and the Kiawah Conservancy about the upcoming project examining the ecology and ecotoxicology of bobcats at Kiawah Island and Yawkey Wildlife Center.

Education & Outreach

The education program conducted 12 socially distanced field programs for 158 participants. Staff developed four social media posts that had 10,395 interactions. Hosted a weekend camporee for twelve members of Boy Scout Troop 300 from Georgetown on South Island. SCDNR Board Member Jerry Lee was given a tour of the Cat and South Island portions of the property.

Statewide Forester

Continued working with the three local Longleaf Implementation Teams (LIT's) in SC, the State Longleaf Coordination Team, and the South Carolina Prescribed Fire Council (SCPFC). Attended SCPFC steering committee meeting at Sandhills REC. Continued various duties as SEAFWA representative to the regional Longleaf Partnership Council (LPC). Continued collaboration with Forest Stewards Guild, USFWS, and Clemson University (Dr. Stephen Peairs) on hardwood management demonstration/outreach area grants, including timber harvest planning at Hamilton Ridge WMA (timber marking contracted). Continued collaboration with USFS on Good Neighbor Authority project on the Enoree RD of the Sumter NF. Recently awarded timber sale (579 acres of loblolly pine thinning) has not yet commenced. Forestry mulching on Mason WMA, Webb WC, and Hamilton Ridge WMA completed. Planning for further herbicide work on isolated wetlands (gopher frog project) at Webb WC. Planning for winter tree plantings at McBee WMA. Brood field clearing project at McBee WMA has stalled with contractor issues, roughly 70% completed. Monitored and administered ongoing timber harvesting operations. Assisted Chief Dukes and Assistant Chiefs with timber budgets.

Harvesting operations remain suspended at Hamilton Ridge WMA (618 acres of plantation loblolly second thinning and 77 acres of clearcut) and Woodbury WMA (792 acres of plantation loblolly first thinning and 28 acres of second thinning), but are very close to completion. Harvesting operations on Bonneau Ferry WMA (784 acres of natural loblolly first thinning, 160 acres of planted loblolly and longleaf first and second thinning, and 80 acres of natural loblolly clearcut) are still delayed due to wet ground conditions, but are being monitored closely for resumption. Harvesting operations on one of two timber sales at Hamilton Ridge WMA (521 and 504 acres of plantation loblolly first thinning) continued and made substantial progress. Harvesting operations at Palachucola WMA (270 acres planted loblolly and slash marked thinnings and 138 acres clearcut for longleaf restoration) continued early in the month and are now close to completion. Harvesting continued throughout the month at James L. Mason WMA (408 acres natural loblolly marked thinnings), and are nearing completion. Close-out in progress at the South Heritage Tract (276 acres planted loblolly second thins). Harvesting operations at Draper WMA (60 acres of oak woodland thinning, 57 acres of planted loblolly first thins) have yet to commence. Harvesting operations at Belfast WMA (591 acres planted loblolly second/third thins) continued throughout the month and made substantial progress. Timber sale at Love Farms (64.5 acres planted loblolly pine for dove field expansion and shooting complex, 7.6 acres of thinning) has been completed, except for a few acres. Awarded timber sale at Santee Coastal Reserve timber sale (338 acres of marked natural mixed pine thinning, 81 acres of natural mixed pine clearcut) has yet to commence. Awarded timber sale at Woodbury WMA (1,132 acres planted longleaf and loblolly) has yet to commence. Continued working with staff on planning/preparation of numerous upcoming sales.

The Law Enforcement Division Report
will be sent separately

January 7, 2022

Happy New Year everyone. The South Carolina Wildlife team is happy to announce that we sold nearly 1,800 calendars (at \$20 each) for an additional stream of revenue for the magazine program. It was a very successful project. Also, the new issue, January-February 2022, has been extremely well received by the subscribers. We are getting many phone calls and email from readers who love this special issue.

We are gearing up for a great year with lots more great stories, photography and original art on the slate. We are excited about participating in both the Hampton Wildlife Ball and the PSC in March as well. We continue to help other programs with photography (especially the LE Division) and editing various publications for other sections.

And we are preparing to take full advantage of the new Brant store front that will be coming to our licensing website, too.

Please don't hesitate to contact me with any questions or suggestions.

Thanks,

Joey Frazier, editor

South Carolina Wildlife

LAND, WATER & CONSERVATION

STATE CLIMATE OFFICE

November and December Report

The SCO answered 29 data requests on various topics from the general public, law firms as well as various state and federal agencies. One request was certified, and four media interviews provided.

The State Climate Office and Flood Mitigation Program try to meet virtually once a month to stay connected, share work activities, training opportunities, and provide encouragement.

Melissa presented a webinar on South Carolina Tropical Cyclones and Preparedness to the Clemson Emeritus College. She was a guest lecturer for the Department of Geography at the University of South Carolina, discussing the geography and climate of the state. Melissa worked with the SCDNR Office of Media and Outreach to create content to be shared on the agency's social media platforms. She assisted with the Post-Harvest Weather and Water webinar, hosted by the office, and helped facilitate the November SCDNR Board Meeting. She presented two virtual presentations for the NWS SKYWARN recognition Day, hosted by the Columbia Office. She discussed the importance of the NWS Cooperative Weather Observer and Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) programs, and held an interactive trivia game for attendees about the climate and geography of the state. Melissa was interviewed about the value of CoCoRaHS and citizen science by the SciStarter program (<https://scistarter.org/>), a globally acclaimed online hub of citizen projects hosted by Arizona State University and the National Science Foundation. Her interview will be featured in an upcoming podcast (<https://scistarter.org/podcast>). She assisted with the SC Drought Response Committee Call on December 9, and started work on the 2021 CoCoRaHS newsletter, and the SCO 2021 Annual Weather Review. Melissa drafted and posted eight weekly weather summaries online on the SC State Climate Office website and information for the Monthly Weather and Water Update report. Data from these summaries are also highlighted in the weekly USDA Crop Progress and Condition Reports. She answered ten (10) data requests, one of which was a certified lawyer's report, and three (3) from state agencies, including the SC Aeronautics Commission, the SC Department of Health and Environmental Control, and the Law Enforcement Division of the SC Department of Natural Resources. The remaining data requests focused on obtaining temperature and precipitation data for general interest or reporting purposes.

Elliot coordinated drought monitoring for SC, coordinated the release of drought infographics for drought communication on social media and the Drought Response Committee, coordinated the efforts for the archival effort for drought conditions on the SC drought website, and participated in multiple meetings/calls/workshops/webinars. For drought monitoring, he led the efforts of USDM input for SC for 9 weeks, created 8 infographics released to DNR social media and released 8 infographics to GovDelivery for weekly changes in USDM conditions that was sent out to the SC Drought Response Committee, and created 9 weeks of maps (18 maps in total) for CMI and PDSI drought indicators. Beyond drought monitoring, he coordinated the efforts for updating and archiving drought data on the SC Drought page (4 weeks), participated in 26 different meetings or calls, and attended 3 webinars. Beyond typical duties, he worked on 6 different office tasks/projects: created and presented the Post-Harvest Weather and Water Status Update webinar (1 presentation), continued working on updating the climate normals maps, worked with Kirstin Lackstrom at CISA to work on the Local Drought Planning Guide, completed the training for Data Science using R Programming, and created an updated NWS field office map of South Carolina, assisted Hope with preparation and conducting the SC Drought Response Committee and he conducted field work for soil and crop conditions in Richland and Sumter Counties. He drafts a Monthly Water Resources Summary which discusses climate, water resources and drought conditions each month. He provides the drought conditions overview and serves as "editor" and point of contact for the report. Melissa provides a climate overview and Priyanka provides a water resources overview.

Frank attended six meetings or webinars; presented weather forecast information or demonstrated a product in four of them. He issued five weather alerts. As of the issuance of the final regular alert for the Hurricane season, there were 38,275 Weather Alert subscribers, which is an increase of 339 during November and an increase of 2,620 since Frank issued his first alert on July 5. He answered four requests for information or specialized forecast requests, one from within state government and three from members of the media. He worked on three separate projects, the teleconnections report and two projects involving the department's social media team. He reviewed and corrected over 50 errors in the SC Winter Weather Database. Frank used Twitter to relay weather and forecast information. He composed 251 tweets in November and 320 tweets in December. He continued researching and summarizing how various atmospheric and oceanic teleconnections impact South Carolina's weather. He conducted statistical analysis on the West Pacific Oscillation. He presented a seasonal winter outlook at the remaining two DPS Winter Storm Planning Meetings. Frank finalized and disseminated the Executive Summary for the Winter Weather Database and led the team in demonstrating the Interactive Winter Weather Database during the monthly CISA call. Melissa and Frank worked with Jessica Egan on the creation of a video and imagery concerning winter weather in South Carolina and the outlook for this winter for the

DNR social media group. Melissa and Frank worked with the social media team to create winter weather related imagery to share during SC's Winter Weather Preparedness week. <https://fb.watch/9DGkaH93g1/>

Hope responded to four requests for forecast information, responded to two data requests and participated in 22 meetings/calls/webinars. She attended the Citadel Climate Center Advisory Meeting and the 3-Day DNR Adaptive Leadership Training. She gave a Climate and Weather Update Presentation for the SCDNR Board. She participated in six meetings as a part of the Statewide Resilience Planning effort (2 full advisory committee meetings, two subcommittee meetings, and two meetings focused on the Climate Chapter. Hope, Elliot, and Frank reviewed the Westinghouse Environmental Impact Study. Hope and Elliot conducted a SC Drought Response Committee Meeting. Following the meeting Hope drafted a press release and staff mailed the release to 400 water systems. Hope completed the quarterly report for the HMGP grant. She continued to quality control Hydrometportal and conducted one call with DTN to review issues. She provided regular guidance for office interns and staff.

The office interns, Caiden Dinkins, and Sophia Grimsley, worked on the climate normals project, building the flood database, and assisted in routine office operations.

Thanks to months of work by all SCO staff and Rob Clarke the Interactive Winter Weather Database was made available to the public on November 5.

Additional Information on Staff Activities

- Melissa serves as a co-host with Valerie Shannon to help facilitate SCDNR and Harry Hampton virtual board meetings.
- Hope serves as the SCDNR representative on the SC Statewide Resilience Plan Advisory Committee
- Hope serves on the Citadel Climate Center Advisory Committee
- Hope serves as the SCDNR representative on the SC State Hazard Mitigation Plan Advisory Committee
- Elliot serves as a member of the SC Water Chats Advisory Committee
- Elliot completed a training on Data Science using R Programming provided by Simpliv (November 22nd through 24th) (15-hour course)
- As of the issuance of the final regular Weatheralert for the Hurricane season, there were 38,275 Weather Alert subscribers, which is an increase of 2,620 since Frank issued his first alert on July 5.

Conferences, Meetings, and Presentations

- Melissa: Historical Hurricane Information for Clemson Emeritus College – Nov. 4
- Melissa: NOAA RISA in the Carolinas Call – Nov 5
- Melissa: SCDNR Winter Weather Social Media Chats – Nov 8
- Melissa: SCDNR Broad Meeting Facilitation – Nov 18
- Melissa: Guest Lecture for USC Geography – Nov 19
- Melissa and Frank: SCDNR 'Ask a Climatologist' Social Media Video – Nov 19
- Melissa: CTP – MRD/SCO Conversation – Dec 1
- Melissa: NWS Columbia SKYWARN Recognition Day – Dec 4
- Melissa: Clemson Weather Team Conference Call – Dec 9
- Melissa: SciStart Podcast Recording/Interview – Dec 10
- Melissa: CISA and SCSCO Climate Connections Meeting – Dec 14
- Melissa: CU Weather Installation in Lexington County – Dec 15
- Melissa: AASC Holiday Meet-Up – Dec 16
- Melissa and Frank: NWS Greer Winter Weather Update Conference Call – Dec 16
- Elliot: Weekly NC DMAC Calls -Nov 2, 9, 16, 23, 30 and Dec 7, 14, 21
- Elliot: SE DEWS Drought Workshop Planning Group Call - Nov 5
- Elliot: NOAA Webinar for new RISAs: Alaska and Carolinas –Nov 5
- Elliot: NIDIS Webinar: Southeast Monthly Climate – Nov 9
- Hope and Elliot: SC Office of Resiliency Meeting-Nov 10
- Elliot: Call with Gordon Mikell (NRCS), call with Leonard (NWS Columbia) and call with Josh Palmer to discuss drought conditions - Nov 16, Nov 30, Dec 14
- Elliot: Edisto River Basin Council Meeting - Nov 17 and Dec 15
- Elliot: Drought Planning Guide Call with Kirsten Lackstrom -Nov 19 and Dec 17
- Elliot: Water Chats Source Water Advisory Group meeting - Nov 29
- Hope and Elliot: Meeting with Washington SCO to discuss their Climate Trends Tool – Dec 10
- Hope and Elliot: Meeting with Greg Carbone about Climate Trends Project - Dec 13
- Frank and Elliot: Southeast Climate Monthly Webinar – Dec 14

- Frank: Hurricane Task Force – Nov 4
- Frank: Southeast Climate Monthly Webinar - Nov 9
- Frank: Dept of Public Safety Winter Storm Planning Meetings - Nov 3 and Nov 10
- Hope: Call with Jason Caldwell – Nov 4
- Hope: Meeting with Sea Grant Nov 10
- Hope: SCDNR Adaptive Leadership Training –Nov 15-17
- Hope: SCDNR Board Meeting – Nov 18
- Hope: EPA OED Climate Research and SCOR – Nov 23
- Hope: Meeting with SC Statewide Resilience Planning Advisory Committee – Nov 23, Nov 29, Dec 2
- Hope: SERCC Technical Advisory Committee – Dec 8
- Hope: SCDNR Adaptive Leadership Follow-Up – Dec 13, Dec 14
- Hope: Meeting with Sea Grant – Dec 14
- Hope, Elliot, and Frank conducted a site visit to the Sassafras Weather Station – Nov 2
- Hope and Melissa: CISA and SCSCO Climate Connections Meeting – Nov 9
- All Staff: CISA Monthly Full Team Call – Nov 5, Dec 4
- All Staff: Post-Harvest Weather and Water Webinar – Nov 10
- All Staff: SC Drought Response Committee Conference Call – Dec 9
- All Staff: Holiday Brunch for SCO/Flood Staff - Dec 10

GEOGRAPHIC INFORMATION SYSTEMS

November Report

General

Work this month included updates to the Coastal Groundwater Monitoring program and the Potentiometric Map database. SCGS data and domains were updated for the Piedmont field data collection program, along with continued development of the SCGS Borehole Database. Additional work was done with the Climatology group and the Scenic River Program's SC Paddle website partnership.

Webinars attended this month included the USGS's NGGDPP (National Geological and Geophysical Data Preservation Program) and GeMS (Geologic Map Schema) meetings. Met with SCGS and collaborative Southeastern GeMS group that consists of geologic professionals from South Carolina, North Carolina, and Virginia. Discussions and presentations were given on current geologic mapping standards and on obstacles encountered with upcoming mapping projects.

State Climate Office

Updates and corrections were made to several narratives within the Winter Weather Database, along with adding a splash screen to the application. This screen comes up immediately when you enter the website and provides a how-to for users, while also linking back to the SC Climatology webpage and the Winter Storms of South Carolina Executive Summary. This provides users with a more in-depth and thorough description of winter weather in South Carolina. Updates still need to be made to 2019-2020 events.

Earth Science Group (ESG)

Edits to the Piedmont Data Collection Process were made. New maps and hosted feature layers were setup online to include the addition of new data and fields from last month. Continued development also took place with the SCGS Borehole Database, and holes drilled in Horry County since 2015 were updated with the most recent data from drill logs. Once older historic wells are updated development will begin on an application to show borehole information around the state.

Scenic Rivers

Edits to the SC Paddle website continued along the Black River. New landing sites were added, and older sites were removed or changed with updated data.

Hydrology

Updates to the Coastal Well Plain Viewer and Potentiometric Map Database were made. Updates to the Coastal Well Plain Viewer included adding new wells and making edits made to existing wells. Hosted data were updated online, and edits made to the Coastal Well Plain viewer website.

Updates were made to the Potentiometric Map Database. Water-level data were updated for the Crouch Branch, McQueen, Floridan, and Gordon aquifers dating back to 2017 and then contours lines were digitized and or transformed

from existing hydrologic reports. Using these new contours, digital elevation models were created showing the top of each aquifer and appended to the database. Most of these data have been brought forward, but there are some minor edits to be made. Future discussions will focus on the current development process to improve its efficiency and accuracy.

Flood Mitigation Program

No GIS work done this month.

South Carolina Conservation Bank

No GIS work this month.

Archaeology

No GIS work this month.

Cultural Heritage Preserves

No GIS work this month.

December Report

General

Work this month continued updating the SC Paddle website and Winter Weather Database, as well as the SCGS Borehole Database in Horry County. Several online conferences and webinars were attended.

Conferences and webinars attended included the Geologic Mapping Forum, the Digital Mapping Techniques Conference (USGS), and “Accelerating the Analysis of Geographic Change” (National Academies of Science, Engineering, and Medicine). Both the Geologic Mapping Forum and the Digital Mapping Techniques Conference dealt with geologic applications across the country, and the nationwide adoption of a standardized USGS GeMS (Geologic Map Schema) schema.

State Climate Office

Significant work was done on the Winter Weather Database. Features and narratives were created for all 2019, 2020, and 2021 events. Weather station data containing Total Snowfall, Lowest Minimum Temperature, and Total Precipitation measurements were added for each event. Other work on the database included correcting numerous historical events. Other edits are correcting events that have missing counties in their extents. Once edits are complete the Winter Weather Database will be up to date, with only the addition of new events to be added each year.

Earth Science Group (ESG)

Significant progress was made on the SCGS Borehole Database in Horry County. After finalizing the 375 wells that have been drilled since 2015, we looked at all wells dating back to the 1950’s. This work involved research done by the drill crew to verify well locations using the written descriptions on drill logs. Work is also being done to input the data into a digital format for storage and future use.

Scenic Rivers

The addition of new landing sites along the Black River was completed. One new trip was added from Red’s Pumphouse Landing down to Pea House Landing. The data now will be exported to KML/GPX format and uploaded onto the SC Paddle website.

Hydrology

No GIS work done this month.

Flood Mitigation Program

No GIS work done this month.

Archaeology

No GIS work this month.

RIVER CONSERVATION PROGRAM

November Report

River Conservation / Scenic Rivers:

- Black River: The Advisory Council has requested a meeting with SCPRT-State Parks Director to address a list of questions and concerns related to the proposed State Park on Black River. Three memberships to the Advisory Council were confirmed by letters of appointment from Director Boyles mailed on Nov 9. Staff participated in the Black River Water Trail/Park Network Project focus group meeting of Nov 9 to address boater access needs and facilities.
- Ashley River: Since Dorchester County Council voted in September to amend county zoning and land use plans in order to allow development of a gas station at Cooks Crossroads (a vote contrary to the interests of many conservation groups of the area) a lawsuit was filed in November by Dorchester Trust Foundation calling for the amendment to be reversed.
- Lynches River: SCDNR is now agreeing to the closure of public access to North Pitch Landing Road and Pitch Landing on Lynches River on condition that DNR is granted an easement to access the landing and adjacent state properties; therefore, staff are now involved in related procedures for the closure and the easement.
- S.C. Aquatic Connectivity Team: Staff participating in meeting of this group on Nov 3, which addressed potential new funding opportunities for dam removal, potential projects, and formation of project teams.
- State Water Planning: Staff is participating in the evaluation of proposals for meeting facilitation services for the Broad River Basin.
- Scenic Rivers Program Plan: Staff is compiling information to assist with an effort to review and revise goals and priorities of the program.

FERC Hydroelectric Projects:

- Broad River Mitigation Trust Fund: Staff assisted in researching and resolving SCDNR internal questions about the funding obligations of utility companies associated with this fund.
- Santee Accord for Diadromous Fish Restoration: Staff participated in the Nov 4 annual meeting of the accord to receive updates on ongoing studies and projects and to approve new projects for 2022.

Heritage Trust: Staff participated in a Habitat Protection Committee meeting on Nov 23 to address ongoing land conservation activities and contributed to Committee evaluations for one upstate property being considered for acquisition.

December Report

River Conservation / Scenic Rivers:

- Black River: Staff participated in the Black River Water Trail/Park Network Project Steering Committee meeting of December 9 to address Project findings and final recommendations.
- Saluda River: Staff completed a Saluda Scenic River easement annual inspection and related 2021 monitoring report on December 15-16.
- Lynches River: Staff continued to address procedures involved with Florence County closure of public access to North Pitch Landing Road and Pitch Landing on Lynches River on condition that DNR is granted an easement to access the landing and adjacent state properties.
- Edisto River: Staff participated in Friends of the Edisto Board meeting on December 6 to address ongoing issues to include recreational user conflicts at Givhans Ferry and water planning.
- State Water Planning: Staff is participating in the evaluation of proposals and selection of meeting facilitation services for the Broad River Basin.
- Paddle SC Website: Staff continued updating and correcting information presented on the SCDNR supported website, Paddle SC (gopaddlesc.com).
- Scenic Rivers Program Plan: Staff is compiling information to assist with an effort to review and revise goals and priorities of the program.

FERC Hydroelectric Projects:

- Parr Shoals Hydroelectric Project: Staff provided review and comments to address the Operation Compliance Monitoring Plan proposed for Parr Hydro Project by Dominion Energy SC.

BOTANY AND PLANT CONSERVATION PROGRAM

November Report

Tracked Plant List Revision:

Efforts to revise the Track Species List have continued through November and will be a focus of the program through the winter. We anticipate having a major revision for the year completed by March, with new additions of overlooked rare species, removals of more common species, and re-ranking of most species currently listed.

- Continued mining of data from the Biota of North America Program's Floristic Synthesis Database
- Continued re-ranking of species already on tracked species list
- Worked with Joe Lemeris to update existing Element Occurrence records
- Samantha Tessel has conducted virtual specimen evaluations in the Southeast Regional Network of Expertise and Collections (SERNEC) to resolve taxonomic problems that affect ranking of tracked species and species being evaluated for tracking
- Technicians (Csilla Czako, Celeste Gross) continue to make progress in georeferencing and digitizing herbarium specimens of tracked plant species, and species under evaluation for tracking, at the University of South Carolina. This effort is leading to a major improvement in the DNR tracked species database because of DNRs long-term history of the development of the SERNEC herbarium portal. The team is now incorporating on a weekly basis EO records of newly tracked plant species to the Heritage Trust database

Field Surveys and Monitoring:

- Conducted surveys of rare plants, invasive plants, and assessed management needs at Aiken Gopher Tortoise HP, Buzzard Roost HP, Groton Plantation (private), Jocassee Gorges WMA, Laurel Fork HP, Peachtree Rock HP, Poe Creek State Forest, Stevens Creek HP, Stumphouse Mountain HP, Watson-Cooper HP, and Wildcat Wayside State Park
- Surveyed McCormick County for Cuthbert's Holly. This rare shrub was previously known globally to be present at and adjacent to Stevens Creek HP. During our surveys a new population was discovered on Army Corps of Engineers property adjacent to Lake Strom Thurmond
- Surveyed Edmund area of Lexington County to map new occurrences of Woody goldenrod, one of the state's rarest shrubs, as well as other rare species including Florida rosemary.
- Processed data from 2021 field surveys and entered rare plant data into Heritage Trust database

Conservation and Management:

- Participated in meeting for the conservation of the Federally Endangered Mountain sweet pitcher plant (*Sarracenia jonesii*). We are collaborating with Austen Attaway (WFF) and the Atlanta Botanical Garden plan statewide conservation of this species
- Advised on Venus flytrap restoration activities and funding in the vicinity of Loris, SC on private properties in collaboration with USFWS and USDA-NRCS
- Collected seeds and assessed management needs of *Sarracenia jonesii* (Mountain Sweet Pitcher Plant) at Ashmore HP and Poe Creek State Forest) for a project with Atlanta Botanical Garden to store seed, evaluate fertility, and restore natural populations

Habitat Protection Committee:

- Participated in bimonthly committee meeting
- Coordinated LWC evaluations for 1 potential property in Greenville County
- Surveyed potential acquisition site in Greenville County

Other:

- Attended Heritage Trust Advisory Board meeting
- Participated in NASA Develop meeting on modelling of Venus flytrap habitats
- Updated and provided Element Occurrence data for Bog spicebush (*Lindera subcoriacea*) to the USFWS for the agency's upcoming Species Status Assessment
- Provided Botany Program annual Sikes Act activities to WFF for annual SCDNR reporting
- Participated with partners (University of South Carolina, Furman University), on planning for implementation of a South Carolina Plant Atlas, and processed floristic data for the project
- Participated in steering committee conference calls with University of South Carolina A.C. Moore Herbarium
- Processed herbarium specimens collected in 2020/2021 for deposit at the University of South Carolina A.C. Moore Herbarium and Clemson University Herbarium
- Applied for and received a collection permit for Sumter and Francis Marion National Forests

December Report

Tracked Plant List Revision:

Efforts to revise the Track Species List have continued through December and will be a focus of the program through the winter. We anticipate having a major revision for the year completed by March, with new additions of overlooked rare species, removals of more common species, and re-ranking of most species currently listed.

- Reviewed and annotated herbarium specimens at the University of South Carolina and University of North Carolina for 2 weeks, focusing on tracked and potentially tracked species
- Continued mining of data from the Biota of North America Program's Floristic Synthesis Database
- Calculated rank estimates for species being added to tracked list
- Continued re-ranking of species already on tracked species list
- Worked with Joe Lemeris to update existing Element Occurrence records
- Conducted virtual specimen evaluations in the Southeast Regional Network of Expertise and Collections (SERNEC) to resolve taxonomic problems that affect ranking of tracked species and species being evaluated for tracking
- Technicians (Csilla Czako, Celeste Gross) continue to make progress in georeferencing and digitizing herbarium specimens of tracked plant species, and species under evaluation for tracking, at the University of South Carolina. This effort is leading to a major improvement in the DNR tracked species database because of DNRs long-term history of the development of the SERNEC herbarium portal. The team is now incorporating on a weekly basis EO records of newly tracked plant species to the Heritage Trust database

Field Surveys and Monitoring:

- Conducted surveys of rare plants, invasive plants, and assessed management needs at Aiken Gopher Tortoise HP, Ashmore HP, Buzzard Roost HP, Eva Russell Chandler HP, Groton Plantation (private), Jocassee Gorges WMA, Laurel Fork HP, Lewis Ocean Bay HP, Peachtree Rock HP, Poe Creek State Forest, Stevens Creek HP, Stumphouse Mountain HP, Sumter National Forest, Tillman Sand Ridge HP, Watson-Cooper HP, Webb Wildlife Center, Wildcat Wayside State Park, and two Naturaland Trust properties
- Surveyed McCormick and Greenwood counties for Cuthbert's Holly. This rare shrub was previously known globally to be present at and adjacent to Stevens Creek HP. During our surveys a new population was discovered on Army Corps of Engineers property adjacent to Lake Strom Thurmond
- Surveyed Edmund area of Lexington County to map new occurrences of Woody goldenrod, one of the state's rarest shrubs, as well as other rare species including Florida rosemary.
- Participated in Elon University study of vernal pool vegetation at Forty Acre Rock HP
- Processed data from 2021 field surveys and entered rare plant data into Heritage Trust database

Conservation and Management:

- Participated in meeting for the conservation of the Federally Endangered Mountain sweet pitcher plant (*Sarracenia jonesii*). We are collaborating with Austen Attaway (WFF) and the Atlanta Botanical Garden to plan statewide conservation of this species
- Participated in meeting for the conservation of the Federally Endangered Miccosukee Gooseberry (*Ribes echinellum*).
- Advised on Venus flytrap restoration activities and funding in the vicinity of Loris, SC on private properties in collaboration with USFWS and USDA-NRCS
- Collected seeds and assessed management needs of *Sarracenia jonesii* (Mountain Sweet Pitcher Plant) at Ashmore HP, Eva Russell Chandler HP, and Poe Creek State Forest) for a project with Atlanta Botanical Garden to store seed, evaluate fertility, and restore natural populations

Habitat Protection Committee:

- Participated in bimonthly committee meeting
- Coordinated LWC evaluations for 1 potential property in Greenville County
- Surveyed potential acquisition sites in Greenville, Jasper, and Newberry counties

Other:

- Led South Carolina Association of Naturalists field trip to Lewis Ocean Bay HP
- Attended Heritage Trust Advisory Board meeting
- Participated in NASA Develop meeting on modelling of Venus flytrap habitats
- Updated and provided Element Occurrence data for Bog spicebush (*Lindera subcoriacea*) to the USFWS for the agency's upcoming Species Status Assessment
- Provided Botany Program annual Sikes Act activities to WFF for annual SCDNR reporting

- Participated with partners (University of South Carolina, Furman University), on planning for implementation of a South Carolina Plant Atlas, and processed floristic data for the project
- Participated in steering committee conference calls with University of South Carolina A.C. Moore Herbarium
- Processed herbarium specimens collected in 2020/2021 for deposit at the University of South Carolina A.C. Moore Herbarium and Clemson University Herbarium
- Applied for and received a collection permit for Sumter and Francis Marion National Forests
- Samantha her official SCDNR truck and associated equipment and trained her on how to use it

CULTURAL PRESERVES PROGRAM

November Report

Meg Gaillard

- Prepared fieldwork logistics for the Edisto Island archaeology project (e.g., housing contracts, catering contracts, medical kits)
- Attended the North American Heritage at Risk (NAHAR) weekly virtual meetings/lectures each Friday morning at 9am.
- Wrote letters of recommendation for various former interns who are applying to graduate schools.
- Continue to monitor and grade coursework from the Fall 2021 Project Archaeology Investigating Shelter virtual workshop. I provided an extension to all participants until January 31, 2022.
- 11/1: Distributed the November Archaeology newsletter (13,384 current subscribers)
- 11/4: Attended the HTAB meeting at Parker Annex.
- 11/8: Kickoff meeting with Nick Linville and Jamie Koelker, vendors who will conduct historical research, produce documentary films, and deliver completed Esri ArcGIS Story Maps about various SCDNR properties and topics over the next five years.
- 11/11: Provided a virtual lecture to the University of St. Andrews (Scotland) about the Pockoy Island Shell Ring Complex.
- 11/12: Met virtually with Dawn Mullins, grants coordinator at the SC State Library, to discuss applicable grants for future projects.
- 11/15: Met with Scott Jones (Media Prehistoria) to discuss the development of a model shell ring at Parker Annex as a second garden/interpretive space for the public.
- 11/17: Met with UofSC students at Parker Annex who are interested in Archaeology as a career.
- 11/17: Sat for my PhD studies interview with Dr. Gemma Angel at the University of Leicester (England).
- 11/29: Archaeology public outreach check-in meeting with Ella and Lelia.
- 11/29: Sat as a committee member to hear and approve Reece Spradley's UofSC Honors College senior thesis – a children's book about archaeology. I would like for SCDNR to support this work in 2022 by applying for a grant to have the book published and distributed. Reece developed the storyline, produced original illustrations, and based the entire book on real archaeology.
- 11/30: SCDNR volunteer database virtual meeting with those in the agency who work with volunteers.

Lelia Rice

- Presented 20 Archaeology for Kids programs to 544 people
 - Including hand dropping and picking up select supplies
 - Prepared supplies for 498 students
- Cataloged and stored 123 Baynham vessels

Ella Goulding

- Catalogued and shelved Baynham Jugs
- Entered archival materials into LibraryThing
- Continued Research on SC State Hospital

December Report

Meg Gaillard

- Prepared fieldwork logistics for the Edisto Island archaeology project (e.g., housing contracts, catering contracts, medical kits)
- Attended the North American Heritage at Risk (NAHAR) weekly virtual meetings/lectures each Friday morning at 9am.
- Wrote letters of recommendation for various former interns who are applying to graduate schools.

- Continue to monitor and grade coursework from the Fall 2021 Project Archaeology Investigating Shelter virtual workshop. I provided an extension to all participants until January 31, 2022.
- Wrote a book chapter about SCDNR public archaeology efforts, with a focus on the work at the Pockoy Island Shell Ring Complex, for a pending public archaeology book to be published by UGA press.
- Wrote a journal article about the SCDNR Archaeological Archive Flood Recovery Project following the 2015 Flood for a special thematic journal volume highlighting work done by the Heritage at Risk Committee. To be published by the Society for Historical Archaeology.
- Wrote the first Hurricane Irma grant quarterly report for the Pockoy Island Shell Ring Complex.
- Preparing paper to present at the Society for Historical Archaeology conference taking place in Philadelphia, PA during the first week of January 2022.
- 12/1: Distributed the December Archaeology newsletter (13,384 current subscribers)
- 12/2: Measured the Pockoy Island shoreline using an Arrow Gold RTK unit and confirmed Katie Luciano's findings that we have indeed lost approximately 10 meters of the Pockoy Island Shell Ring Complex over the past month. All of Ring 1 is now gone.
- 12/2: Assisted with shovel testing of Bleak Hall Plantation, located on the Botany Bay Plantation HP/WMA to ground truth enslaved dwellings that appear on a plat from the 1800s. Collected samples of oyster shells from various tabby structures on Botany Bay Plantation HP/WMA to send off for testing to see if the shells might have been mined from Late Archaic era shell middens.
- 12/6 – 12/10: Attended virtual meetings hosted by the Heritage Emergency National Task Force and Smithsonian as part of their virtual Heritage Emergency and Response Training program.
- 12/8: Attended the virtual board meeting of the Society for Historical Archaeology's Heritage at Risk Committee. I was asked to take over as the co-chairwoman of this committee but am still deciding as this would be a massive commitment of time.
- 11/16: Attended the webinar "Planning for Coastal and Marine Heritage in a Changing Climate".
- 11/16: Met virtually with LeeAnne Wendt of the Muscogee Nation.
- 11/17: Met virtually with Lori Foley of FEMA to discuss the development of a database of cultural institutions and sites across S.C. to provide information to emergency managers for disaster response. This database would supplement the Natural and Cultural Resources Response Support Function Annex that was developed last year in partnership with the SCEMD.

Lelia Rice

- Went into the field (Edisto Island) December 5th-10th
- Preparing for Spring 2022 Archaeology programs

Ella Goulding

- Entered archival materials into LibraryThing
- Participated in the Edisto Island research trip
- Researched SC State Hospital

CONSERVATION DISTRICTS

November and December Report

Statewide Projects

Staff attended/participated in:

- Led Local Work Group (LWG) Committee Meeting to address ways to improve the LWG meetings in all 46 Conservation Districts and ultimately develop an outline/framework for Districts on how to conduct the best possible annual LWG meeting
- Marion Conservation District Annual Awards Banquet
- Hosted Envirothon Steering Committee Meeting to plan for in person SC Envirothon 2022
- Attended National Conservation Foundation (NCF) Envirothon Operating Committee Meeting
- Dorchester SWCD meeting
- Barnwell SWCD meeting
- DNR Leadership Workshops/training
- PLEAF Networking sessions
- SC Farm Bureau Annual meeting
- SC SIC Forestry Committee meeting

Staff also:

- Planned, staffed/hosted the final quarterly LWC Advisory Committee Meeting for 2021
- Provided Commissioner applications and District certifications for the DNR Board's review and consideration
- Provided Commissioner Specialty License Plates information to all districts; collected, reviewed, and compiled information from every district to submit to SCDMV for Commissioners as well as for LWC Advisory Committee members
- Launched Envirothon Training Trunk Program and delivered trunks
- Assisted Lee, Clarendon, Florence & Marlboro Conservation Districts with Farm Bill Programs
- Conducted Palmetto Leadership in Environment, Agriculture and Forestry (PLEAF) Cohort 2 interviews
- Planning continues for the SC Envirothon 2022 Season and Coaches Training
- Continues/ongoing work on applications and follow-up for FY 22 State Appropriations funding for SC SWCDs
- Strategic Planning for Conservation Districts sessions ongoing with Phase I complete

Watershed:

- Attended Horse Range Watershed meeting in Orangeburg.
- Attended SEACD conference in Gatlinburg.
- Attended National Watershed Coalition Virtual Conference.
- Assisted with Dam inspections in York County.
- Attended ASDSO conference in Charleston.
- Collaborated with partners regarding multiple watershed endeavors in their areas to address concerns.
- Continued working on easement issues with multiple stakeholders & worked with partners from local, state, and federal agencies to address concerns and issues in multiple areas.
- Assisted with inspection in Orangeburg County.
- Attended annual joint Watershed and SWCD meetings in Colleton and Cherokee Counties.

Conservation Districts:

Aiken Conservation District – Nov – staff attended the SECDEA conference in Pigeon Forge. SC had a total of 7 in attendance. I presented the micro green necklace during the state's *share fair*. We received a reward for being a mentor to our Greenstep school (Aiken Elementary). Visited Aiken Elementary to see the upcycled scarecrows the students made. Our grain drills were once again used for over 200 acres for November. Six more pre-audits were conducted for our Mobile Irrigation Lab grant with NRCS in November.

Allendale District – Nov - staff installed two seasonal high tunnels. One high tunnel was installed in East Pelzer, SC, and one in Seabrook, SC. On November 9, Allendale SWCD worked with Clemson Extension to host an in-person/virtual workshop on pruning crepe myrtles presented by the Clemson Extension Area Horticulture Agent. This was the first workshop held since the COVID pandemic began in March 2020. In the past, Allendale County Clemson Extension and Allendale SWCD have co-partnered to hold a monthly workshop called "Lunch and Learn." Please contact our office if you have producers in your district that need technical assistance or have questions with seasonal high tunnel (SHT) installation.

Anderson District – Nov – our Education Coordinator has taken a position with NRCS. We will be filling this position hopefully soon. Please contact us if you are interested. We did attend several online meetings this month, including SCDNR LWG Committee, Lake Hartwell Partners for Clean Water, CD/CART Training, Anderson County Water Resources, and the NWC 2021 Annual Meeting. The District Manager has been working with NRCS to assist with EQIP eligibility for 80+ applications, as well as finishing up CSP/CSP-GCI Payments.

-Dec- we will be looking to fill their Education Coordinator position soon. Otherwise, we have been busy finishing up our CSP/CSP-GCI applications and moving to eligibility for the 2022 EQIP cycle with 84 applications. Field visits will be made in the month of January.

Berkeley District – Nov. - *Berkeley Outdoor Life* Update: Over half of the Berkeley Bikeways are complete. We currently have 12 exciting bicycle routes and trails for Berkeley County. This compliments the 25 Blueways, 23 Walkways and the Berkeley Gameways programs. Our anticipated completion is now early February 2022. *The Berkeley Earth Team* continues to do cleanups at the county boat landings. The Earth Team made ornaments from recycled items and sold them to benefit the Berkeley Museum. A total of \$250 was raised for the museum. Some of the ornaments were purchased by an individual and placed in shoe boxes to be sent to children all over the world for Christmas. The Earth Team hosted an exhibit at the Coastal Carolina Fair in the Education Division of the Horticulture Section. The team's exhibit won 1st Place!

The *Swampfox Remediation Project Phase III* is moving along swiftly and smoothly. It is expected to be completed by

the end of 2021. BSWCD has been working with Palmetto Conservation and the US Forest Service on this enormous project. A ribbon cutting is expected in early 2022. Our Fall Newsletter was mailed which included our 2021 Affiliate Membership list. We are very thankful for our affiliates who are so faithful in supporting our District.

-Dec- We continue to have exciting meetings every month. The office staff hosted a Christmas Drop-in on December 20th. We were delighted to have Representative Sylleste Davis, and Senator Larry Grooms stop by and talk with our commissioners about future possibilities for our District. A Planning/Board meeting session is scheduled for January 25, 2022. Our Earth Team volunteers will join us for a thank-you luncheon on that day.

Berkeley Outdoor Life: 15 of the 20 Berkeley Bikeways are now complete. We have added an Accessible Trails page and are proud to report that nine (9) of our Walkways are accessible. Our anticipated completion of Berkeley Outdoor Life is now mid-February.

Earth Team: The Berkeley Earth Team members are collecting aluminum cans to be given to the local fire department for the “Burned Children Fund.” Cans picked up during the monthly cleanups are also set aside from the rest of the trash for this project. The team met for a Christmas lunch at a local restaurant and then came by the BSWCD office for dessert afterwards. Pinecones that had been painted by the group were given to the Berkeley Sheriff Department for Christmas, along with cards of appreciation.

Beaufort District – Nov - Beaufort SWCD gave a presentation on the history of water quality in Beaufort County to the Leadership Beaufort Class of 2021. We also did *Enviroscape* presentations and tour talks about Crystal Lake Park. Educators participated in three days of Kids in Kayaks, giving 17 *Enviroscape* programs and another two *Enviroscape* presentations with an emphasis on flooding at Ladys Island Middle School. Commissioners and staff held their quarterly *Together for Beaufort County Water Quality Coalition* Meeting with the Lowcountry Stormwater Partners. Commissioners and staff are working on a campaign to reach out to all high schools in the county to recruit some Envirothon Teams. Staff participated in a KidFest planning meeting, Project Wild Zoom, and have been working on a presentation for a Tabletop Rain Simulator given to us by the SC Forage and Grazing Lands Coalition. Staff also assisted several residents with Diamondback Terrapin reporting, problems with feral hogs, signage for Dry Hydrants, and other wildlife issues.

-Dec- we have formed a partnership with the City of Beaufort in their development of the Southside Park Planning Project. They want to involve neighboring citizens in gardening, and we think this may be a great project for an Urban Agriculture Grant. We have two schools that want to participate in the Envirothon. We have also been working on a presentation for the County Council Natural Resources Committee, and meeting with the Kids Fest Planning Committee.

Chester District – Nov – Our Arbor Day Project on November 29 was a huge success. 46 apple trees and 30 shrub/pollinators were given away to Chester County landowners. An ornament with our logo etched on it was purchased and delivered to be hung on the Chester County Chamber of Commerce’s tree in downtown Chester. Our two no-till seed drills were utilized on 94 acres.

-Dec- After having to cancel our 2021 Affiliate & Awards Banquet due to the Covid Pandemic, Chester SWCD made plans for a March 2022 Banquet and booked both a venue and a speaker. Our District completed and emailed the new Annual Report form to SCDNR on December 21. Affiliate brochures were mailed to potential members on December 28. Our two no-till seed drills were utilized on 7 acres.

Charleston District – Nov - working on Affiliate Christmas Thank you outreach for their year/annual support. We are also sponsoring 2 students for Camp Wildwood. Additionally, we are planning for 2022 for our Poster and Essay support; and working on end of the year updates.

Clarendon District -Nov/Dec – staff out of office on temporary leave and someone is in the office covering things such as: handling the grain drills & trying to answer calls because we currently do not have an NRCS DC.

Colleton District – Nov – We are promoting our poster and essay contest. All entries must be turned in to the Conservation District Office by January 11, 2022. Entries will be judged, and awards will be presented to the winners. The Annual Joint Meeting with Willow Swamp Watershed will be held in December. We continue work on the Annual Affiliate Membership Drive.

-Dec - Commissioners and the Willow Swamp Watershed Directors met at Rizer’s Pork & Produce in Lodge, SC for their Annual Joint Meeting. Twenty-five people attended the meeting. We were pleased that Chris Workman, SC DNR Watershed Districts Program Manager, joined us. All entries to our poster/essay contest must be turned in to the District Office by January 11, 2022. License Plate Renewal information was given to interested commissioners. The District Board is reviewing plans for FY 2022.

Dorchester District – Nov - Dorchester SWCD held its annual board meeting on Tuesday November 16th. The commissioners met with Brooke Myres to discuss the new MOA. The MOA meeting was a success. The District Photo Contest has come to an end. A total of 18 photo entries were received. Winners were CONSERVATION IN ACTION; 1ST Place – Gavin Mcalhaney/Dorchester Academy – “The Pivot” & 2nd Place – Cameron Garcia/Fort Dorchester High School – “Waterway with Plants”. CLOSE UP CONSERVATION; 1st Place -- Clara Cassaday/Fort Dorchester High School – “Purple Flower” & 2nd Place – Carley Gardner/Fort Dorchester High School – “Country Vibe Plants”. CONSERVATION PRACTICES: 1ST Place – Gavin Mcalhaney/Dorchester Academy – “New Growing Pines” & 2nd Place – Gavin Mcalhaney/Dorchester Academy – “Fresh Cut Millet”. AGRICULTURE & CONSERVATION ACROSS AMERICA; 1ST Place --- Anderson Lopez/Fort Dorchester High School – “Apples to Apples” & 2nd Place --- Cameron Garcia/Fort Dorchester High School – “Eggs”. The district will be sending all first-place photos to the NACD Photo Contest. Tammi is working on getting the Poster Contest information out to the Dorchester School Districts. Dec — did not hold an official board meeting this month. Tammi is in the process of updating the prize information for the upcoming poster contest and working on finding a venue for the Annual Affiliate Banquet. Some of our county’s COVID-19 restricts are lifting and we are hoping that we will be able to offer school presentations this year to help promote the poster contest.

Fairfield District – Nov - Awaiting approval from the submitted paperwork for Adopt-A-Highway to begin this project. Adopt-A-Stream Lab equipment has arrived, and work will begin soon on this project. Working on an outreach program to assist with these two projects. Reminder sent to the participating schools for their Arbor Day participation. Commissioners have made their reservations for the Partnership Conference to be held in February 2022. Registration Forms/Fees for the conference have been paid. No-Till Drill remains in high demand. Continue to assist NRCS with the Farm Bill Program.

-Dec- Held our regular board meeting. The No-till-Drill was once again in use this month. Two commissioners have signed up to attend the Annual Conference in Feb. Adopt-A-Stream Equipment arrived, and water sampling has begun. Participated with a local school's Wildlife Class for a tree planting in observance of Arbor Day. Sammy Soil Booklets continue to be popular. Ongoing assistance continues with NRCS re: The Farm Bill Program.

Georgetown District – Nov - District Board of Commissioners held their regular monthly meeting on November 15th. The District’s Scholarship information was sent to Horry Georgetown Technical College to be distributed. Two students from Horry Georgetown Technical College were sponsored to attend the American Fisheries Society Meeting. The Photography Contest began in November with the rules and applications being sent to the teachers.

Greenville District – Nov - taught 104 students at Travelers Rest High School about soil health using hands-on activities, both indoor and outdoor. We also demonstrated the rainfall simulator seven times to various audiences including high school and college students, educators, and farmers. We published an article on buying local in the Greenville Journal and participated in a phone interview with Channel 7 WSPA regarding composting pumpkins. We attended a community festival at Famoda Farms, reaching 200 people. We educated 25 people in the Azalea Garden Club about 20 ways to conserve water in their back yards and 25 children at Freetown Community Center about watersheds. We continued giving technical advice to Greenville citizen concerns regarding flooding and drainage issues as well as continuing our outreach efforts with the Reedy River Water Quality Group. Staff continues to support other county divisions with graphics/brochure creation and social media support.

-Dec- We have been reaching out to Community Centers and 4H clubs this month. In an ongoing effort to strengthen partnerships, we have committed to a several-month series of regular teaching spots at the Freetown Community Center and with local 4H clubs. The students enjoy doing fun projects and learning interesting things about our environment. In addition, we are continuing our Seed Library program in partnership with the Greenville Library System, and our work with the Reedy River Water Quality Group. In service to the Greenville County community, we offer free “There Is No Poop Fairy” yard signs to educate about pet waste effects on local streams. We also offer free consultations to landowners on erosion, drainage, and flooding problems.

Hampton District – Nov - To commemorate America Recycles Day, Hampton district staff created displays that were showcased in the Hampton County libraries throughout the month of November. Through these displays, citizens were encouraged to reduce, reuse, and recycle, as well as not to litter. The Conservation District’s board met in November and the state allocation funds were received. Hampton district staff attended the *Keep America Beautiful* national conference held in Washington, DC. Several KAB affiliates from South Carolina met with staff members from Senator Lindsey Graham's and Senator Tim Scott's offices while in DC. They were able to meet with SC Congressman Ralph Norman in person. Additional feral hog traps have been received for the conservation district's pilot program.

-Dec- Arbor Day was celebrated at Patrick Henry Academy with a tree planting by 28 Interact Club members. Brooke Myers provided district staff with an Envirothon training trunk and instruction on what is included in the trunk. The

training trunk was delivered to the team coach by staff. The DNR Annual Report was completed and submitted by district staff. Pig Brig hog traps for the conservation district's pilot program have been ordered and received. T-posts were purchased to complete the traps, and wildlife technicians picked them up from the district office.

Horry District – Nov/Dec - We presented the District awards this month. Due to Covid, HSWCD could not have their regular annual awards banquet, so the Commissioners presented each award at their farm and school location. The HSWCD presented the Farmer of the Year at the Farmer's farm. We presented the award to a father and son farming operation this year. Also, this year was the first time that HSWCD has presented the Educator of the Year award to two teachers this year. District staff and Commissioner also went to each school and presented the District Essay School winners along with their teachers with their certificates and checks for the 1st, 2nd and 3rd place winners for the 5th and 7th grade level. With the funds for two 319 water quality grants from SCDHEC, the District is still working with landowners who have septic system problems.

Jasper District – Nov – we have been working with Jasper County and NRCS for an updated conservation plan evaluation. Our plan is over 14 years old, and plans need to be updated every 5-10 years. With Jasper County being one of the fastest growing areas in the Southeast, we need to stay on top of the developments encroaching on our land. We need to emphasize the importance of wise land use and management of our natural resources, and critical issues associated with natural resources conservation. We partnered with the Ivy Garden Club to plant 2 trees for Arbor Day at 2 local schools. We had 78 2nd graders to participate. Our director attended the National Keep America Beautiful Conference in Washington, DC, with Keep South Carolina Beautiful and other South Carolina affiliates. While in DC, we also met with our Senators and Representatives, Tim Scott, James Clyburn, and Ralph Norman, from South Carolina to update them on our successes and concerns regarding litter prevention for South Carolina. This was a very informative conference on litter laws, prevention, recycling, and volunteering.

-Dec- District participated in the County year-end review of agriculture and natural resource assessment. The discussions included compiling a list of threatened and endangered species, endangered species associated with longleaf pine, rare endangered species associated with wetlands and rare endangered or threatened species associated with ocean beaches, marine and estuarine habitats. We also reviewed trying to balance between traditional land management practices such as farming, and the local and second home buyers. Because agricultural districts are voluntary and flexible, the benefits and restrictions can be designed to meet local conditions.

The Keep Jasper County Beautiful program has completed their year-end report to Palmetto Pride and has applied for a \$25,000.00 Litter Crew Grant to contract a company to assist in litter pick up on our county roads.

Kershaw District – Nov/Dec- We hosted an Arbor Day program on Friday, December 3rd, at Doby's Mill Elementary School. The District Coordinator worked with Boykin Tree Farm in Rembert in donating, and planting, a maple tree on the school grounds. An unofficial board meeting was held after the program that included an update on a grant that has been applied for through the NACD. If funded, the grant implementation will begin in February.

The district also began receiving mini-grant applications from the schools that applied in Kershaw County.

Commissioners are in the process of reviewing these proposals. The next board meeting will be Tuesday, January 4th.

Laurens District – Nov - we had a chicken stew fundraiser for the Adair Outdoor Education Center. This money made it possible to complete the new pollinator garden. We completely sold out before the stew was even delivered. We were a sponsor for the Laurens United 5K at Lake Rabon Park, one of our watersheds. This event started a few years ago after several teenage suicides in our small community. Our photo contest received 154 entries this year, which is a record for us! Winners have been chosen by our judges. You can find them on our *Facebook* (Laurens County Conservation District) and *Instagram* (@laurensconservation). The winners get a cash prize, a feature in our next calendar, and honored at our awards banquet. Sadly, we lost our Commissioner Emeritus, Mr. Calvin Robertson, who passed in November. He was an extremely active board member for over 18 years, serving as Chairman for many years. He was passionate about conservation and educating the young people in our community. He will be missed.

Newberry District – Nov - Attended the SECDEA annual meeting in Pigeon Forge to network with other state district coordinators to learn about programs they offer. Wrote an article for the Newberry Observer on Prescribed Fires. Worked with Girl Scout Leaders from Newberry County and taught a class from the *Project Learning Tree* guide. Helped NRCS complete the 2022 applications, with 85 EQIP and 16 CSP contracts. Attended the Indian Creek meeting with the Forestry Service and loaned the Prescribed Fire trailer for a Burn Seminar they taught.

-Dec- Staff served as judge at the Christmas Parade for City of Newberry Dec. 4, 2021; also delivered 4 boxes of toys to the Toys for Tots Program; hosted the Envirothon training trunk meeting for District Coordinators with the DNR Brook Myres and Deanne Myrick; helped NRCS with CSP applicants and files; submitted article to Newberry Observer Monthly Column titled: Food Waste; finalized and sent affiliate letters for 2022 membership; also delivered Christmas tree to Boys Farm; attended Zoom meeting with DNR series on Sturgeon; continued/ongoing maintenance on our social media and website; attended training NRCS Watershed class.

Oconee District – *Dec* – our work included finalizing CSP contracts through the Technical Assistance Grant from NACD. Thirteen contracts were approved in the last session and work has begun on the next round of funding. A fee simple purchase and conservation easement will be placed on the historic Crawford Mill Farm in lower Oconee County. This forty-acre open and forested tract is the last vestige of an over 200-acre Revolutionary War land grant to the Crawford family. OSWCD is pleased to help protect this parcel with the Conservation Easement. More details to come on this project soon. EQIP projects are also being looked at for the upcoming application round through the technical assistance grant.

Orangeburg District – *Nov* - held our monthly board meeting on November 23, 2021. Tyler Brown attended the meeting to present the MOA. Chris Workman also attended, as well as members of the Horse Range Watershed. OCSWCD Staff and Commissioner Harold Donnelly attended the 2021 South East Conservation District Employee Association Conference (SECDEA) in Pigeon Forge on November 9-11. It was a great learning experience and awesome to attend an in-person conference. OCSWCD hosted a *Project Learning Tree* Professional Development for students at SCSU on Saturday, November 20. Our no-till seed drill was utilized this month and is scheduled to be used again soon. State Appropriations were received. Staff assisted NRCS as needed. *Keep Orangeburg County Beautiful* partnered with SCSU Environmental Club for a Litter - Free Football Game Day on Saturday, November 13. The concept Reuse, Reduce, Recycle was a topic discussed at the game.

Richland District – *Nov* - provided three soil science and vermicomposting classroom presentations for 50 students at Cutler Jewish Day School and Brockman Elementary School. The District loaned a rainfall simulator to Heathwood Hall Episcopal School. Staff served as an expert panelist for a conservation-related science fair project at Dutch Fork Elementary School and provided technical assistance to the Franklin Conservation District in KY as they develop a seed library program. The District co-hosted the Midlands Meetup for environmental educators at Harbison State Forest; 16 people attended the event. RSWCD staff member Chanda Cooper completed her term as president of the Environmental Education Association of SC and was recognized during an officer inauguration. SCDHEC Adopt-a-Stream program coordinator Sierra Hylton presented to 20 participants at the District's November meeting. Staff co-hosted the Midlands Local Food Collaborative's quarterly meeting for 13 participants. Staff and commissioners also provided support to the SC Conservation District Employees Association Training Committee, SC Forage and Grazing Lands Coalition Board of Directors, Clemson University Dept. of Forestry and Environmental Conservation, SC New and Beginning Farmer Program, Environmental Education Association of SC Awards and Conference Committees, and the Richland County Human Resources Department. One staff member graduated from the Carolina Farm Stewardship Association's Member Advocacy Program. Our monthly e-newsletter reached >3,000 subscribers and social media posts reached >2,000 followers.

-Dec- We were awarded a \$5,000 grant from Dominion Energy to sustain and expand the Seed Sanctuary program. The District co-hosted a Holiday Drop-In for more than 50 conservation partners and supporters. Staff led one SuperSoil! program for 10 students at the Cutler Jewish Day School. The District provided support for statewide environmental education efforts by co-hosting the Environmental Education Association of SC's (EEASC's) quarterly board meeting, which was attended by 11 board and leadership team members; and the December Midlands Meetup, which was attended by 18 environmental educators. District staff also co-hosted an EEASC 2022 Conference Committee Meeting and participated in an EEASC Executive Committee meeting. Staff and commissioners also provided support to the SC Conservation District Employees Association Training Committee, SC Forage and Grazing Lands Coalition Board of Directors, Southeastern Environmental Education Alliance, Sustainable Midlands, and the Richland County Human Resources Department. The District's monthly e-newsletter reached >3,000 subscribers and social media posts reached >2,000 followers.

Spartanburg District – *Nov* - I was able to help our DC with some of the contract paperwork and mailings. We were also able to present awards in person to some of the Poster Contest winners. One of the winning artists had drawn an opossum, front, and center in their poster, so Mimi (our federally licensed educational ambassador opossum) and I visited with the class and spent some time talking about habitat conservation and many of the myths surrounding opossums. We received the 2022 calendars we had made up featuring the winning posters for each month from the printer; they look great!

-Dec - It really felt like Christmas in the Newberry County Soil and Water Conservation District where Crista had a hot chocolate bar set up for our Envirothon Trunk meeting. Thank you, Crista! It was great to meet with Brooke and Deanne in person as well. Our coaches are looking forward to utilizing the trunks. We were able to mail the 2022 calendars made with submissions to the Poster Contest to our affiliate members along with their Christmas cards. Our Christmas Dinner was attended by all commissioners, associate commissioners, NRCS staff as well as previous and current coordinator where all received copies of the calendars. Have a great new year, everyone!

Pickens District *Nov/Dec* – Commissioner Chuck Owens was sworn in at our November meeting; year-end wrap up work continues.

Sumter District – *Nov* – Sumter SWCD has awarded the first part of the Fellowship Award to both recipients. The fellows have begun to research and inspect Sumter Conservation Easements and will also be inspecting the Pocotaligo next month. Plans are underway for an upcoming teacher workshop the Spring of 2022. The Sumter SWCD continues to offer support to the NRCS programs and administrative needs.

-Dec- Sumter SWCD fellowship recipients continue to assist with conservation easements. There was no board meeting in December. The next meeting will be in January, and the board will welcome the newest Emerging Leader student to the meeting. Sumter SWCD has been assisting NRCS with contracts and administrative tasks. The DC position remains empty in Sumter.

Williamsburg District – *Nov* - began the annual Photo Contest by sending the rules and information to the local schools. The District's Senior Award information and applications were sent to eligible schools for distribution. The Board of Commissioners met on November 9th at the SC Forestry Commission for the monthly board meeting.

York District – *Nov* - Chasity attended the inspection(s) of all 4 dams of our local Fishing Creek Watershed. All dams are in working, functioning order. FCWSB is also dealing with a potential quarry being built adjacent to one of their earthen dams, so we are working diligently to protect the people and property to ensure that everyone's safety has been taken into consideration.

-Dec- Staff is preparing for the upcoming Legislative Dinner in January. YSWCD got an Envirothon Training Trunk from SCDNR and picked it up at Newberry SWCD, which allowed Chasity to see how another conservation district was functioning. Chasity will also be attending an easement inspection by the end of the year.

EARTH SCIENCE GROUP

November Report

Earthquake Activity: Three (3) earthquakes in November: on 11/1 Jenkinsville and Monticello Reservoir, Fairfield County, M2.0; 11/9 near Summerville, Dorchester County, M1.5; 11/16 north of Liberty, Pickens County M2.2. No reports of damage with any event. The Pickens earthquake is possibly associated with quarry operations, unloading and fluid movement.

Special Mentions: Andy Wykel, Zach Zelaya, Jordan Suttles, and Michael Georgopoulos are acknowledged for their efforts in collecting, logging, and archiving the Optically Stimulated Luminescence (OSL) samples collected for FY21 STATEMAP.

South Carolina Geological Survey

Geological Information

STATEMAP: Andy Wykel and Zach Zelaya continued siting FY21 STATEMAP borehole locations and hand-auger locations. Mr. Wyke, Mr. Zelaya, Jordan Suttles, and Michael Georgopulo collected sixteen (16) vibracores for OSL sampling, which completes the OSL field work. The samples for OSL dates will be sent out in December. Robby Morrow, Zach Zelaya, and Brian Lockerbie completed 4 traverses in Edgefield and Red Hill Quadrangles, Edgefield County. Mapping focused on identifying and tracing the contact between the Richtex and Persimmon Fork Formations, which appears to be gradational but is locally offset by ductile-brittle faulting. Mr. Morrow worked on drafting the Geologic Map of the southern half of the Edgefield 7.5-Minute Quadrangle, Edgefield County, SC; the GIS is ready for layout. Scott Howard, Will Doar, Robby Morrow, and Katie Luciano worked on proposal writing and edits for upcoming USGS FY22 STATEMAP. Staff attended NGCMP webinars and Office Hours meetings that provided information on FY22 proposal requirements, GeMS, and the new GeoFramework Initiative. Dr. Doar met with NC and VA Geological Surveys coastal plain mappers to discuss regional stratigraphy. Over the next two years the three surveys will work to visit drilling sites, exposures, and collect type-section samples to compare between the states. Staff worked on FY20 final Technical Report. The FY22 budget was approved, request \$367,291, match \$367,599.

Other Mapping including Outsource Mapping:

Earth Mapping Resources Initiative: Will Doar, Katie Luciano, and Robby Morrow worked with the FL, NC, and VA geological surveys and Anji Shah, USGS, to create new geophysical survey templates for future EMRI funding. Mr. Morrow adjusted the EMRI focus areas. Dr. Doar worked with the Florida Geological Survey to adjust focus areas in Georgia. All results of the FY19 geochemistry have been received from USGS. Shah, Morrow, Doar, and Harris, (2021) "Mapping Critical Minerals from the Sky" was published in November issue of GSA Today. Robby Morrow submitted 4- and 3-page Focus Area data sheets to USGS. Focus Area data sheets will be evaluated for future development of USGS-funded projects.

General: Scott Howard attended monthly Mining Council meeting, no new business. The Geodetic Survey is vacating our building and moving their offices downtown; they will be completely out of the building by the end of December. Senior staff attended the Association of American State Geologists fall meeting. Scott Howard and Robby Morrow attended a MS thesis defense by Julian Hooker, UNCW. His thesis defense was on structural development in the southern portion of the Himalayas.

Staffing

Katie Luciano attended a SCDNR Adaptive Leadership Conference. Three interviews for the two Drill Assistant positions were planned; two candidates interviewed; the third candidate did not show. Staff interviewed Andy Jackson and Jordan Suttles (currently an hourly drill assistant). Paperwork was submitted to hire both. Jerry Krieger, Geology Intern, started work assisting in the Digital Information Program. Michael Georgopoulos was hired as an hourly Drilling Assistant. Senior staff attended the AASG virtual fall meeting.

Drilling Services and Core Repository

No drilling took place in November. Andy Wykel passed the test for his CDL training permit, and Zach Zelaya continued to study for his permit. Work continued with LWC Business Office to obtain 3 vehicles surpluses by SC Geodetic Survey. Jordan Suttles and Michael Georgopoulos organized the repository, cleaned drill rods, and provided general vehicle maintenance.

Digital Products and the Digital Information Program (DIP).

STATEMAP and Earth MRI: Taylor Turbyfill continued working on the cartography for Fork, Mullins, and Edgefield quadrangles. Ms. Turbyfill updated figures for FY22 STAEMAP proposal. Darby DeBruhl started converting Fork and Mullins quads to at least GeMS level 2 for delivery by the end of the year.

Other Mapping including Outsource Mapping: Hana Donnelly and Jerry Krieger re-labelled polygons on Adrian, Horry, and Shell quads and, fixed symbology errors in Illustrator files for these quads.

Data Preservation:

Geologic Map Schema (GeMS): Taylor Turbyfill, Darby DeBruhl, Robert Clark, Tanner Arrington, and Scott Howard discussed GIS updates regarding GeMS and STATEMAP products; a GeMS meeting with the North Carolina and Virginia surveys discussed GeMS tools usage. Darby DeBruhl wrote a script to auto populate ID fields in GeMS; and she constructed a spreadsheet for interns to fill out that assesses the GeMS migration status of every quad. By the end of the process, we will have a list of what exactly needs to be done to each quad to get it to level 3. Staff attended an NCGMP deliverable meeting where the deliverable methods for FY22 were discussed. Quinn Nisbet presented the results of his programming work that takes digital field data, exports it to Strater, and serves it in a GeMS map database format.

General: Robby Morrow gave a presentation on digital geologic field methods to the SCDNR GIS users group. Robert Clark and Andy Wykel worked on the Statewide Drillhole Database. Taylor Turbyfill made updates to SCGS website and submitted new publication records to the National Geologic Map Database.

Coastal Program (Ft. Johnson Satellite Office)

Coastal Vulnerability

Murrells Inlet to Capers Island Coastal Vulnerability Project: Katie Luciano continued work on digitizing 2020 imagery for Yawkey Nature Center (Georgetown County) and preliminary writing for associated report.

Surface Elevation Tables-SET

Katie Luciano and Dr. Will Doar measured 15 SET stations in the ACE Basin (Charleston, Colleton, and Beaufort Counties), at Withers Swash (Horry County), and Murrells Inlet (Georgetown and Horry Counties).

NOAA

Katie Luciano attended a Marsh Stakeholder Workshop, organized by ACE Basin and North Inlet/Winyah Bay NERR, to discuss present-day marshes, future changes, ongoing research, new research, and regulatory actions.

USACE-South Atlantic Coastal Study (SACS)

Katie Luciano provided overview slides and talking points about the South Carolina RSM Working group to Barbara Neale (SCDHEC-OCRM) and Nicole Elko (SC Beach Advocates, Town of Folly Beach) for a workshop on sediment regulations in the Southeast and Caribbean hosted by the Coastal States Organization (CSO) and the American Shore and Beach Preservation Association (ASBPA).

Botany Bay and Pockoy Island Projects

Katie Luciano measured the erosion transects at Pockoy Island (Botany Bay Plantation Heritage Preserve). Jessica Boynton (SCDHEC-OCRM) assisted with GPS and erosion transect data collection.

General

Katie Luciano and Will Doar met with Drs. Andrew Tweel and Denise Sanger, SCDNR MRD, to discuss a proposal to study marsh health in the ACE Basin. The SCGS SET data and existing geological maps would be quite useful to this project. No metric currently officially exists at SC DHEC or DNR to determine what is a “healthy” marsh, which this project could address.

General and Outreach

General: General information was provided to 13 customers; 1 meteorite ID; 0 gold RFI; 0 sinkhole inquiries; one (1) request for blue granite; two (2) Rock and Mineral kits. Eight map (4) and publication (4) orders.

Katie Luciano and Will Doar spoke with Chris Marsh (Director, Spring Island Trust and Lowcountry Institute, Spring Island – Beaufort County) about participating in a research colloquium on Port Royal Sound in February 2022. Will Doar collected OSL samples from behind Morris Island, Charleston County, for Dr. Frank Stapor and shipped the samples to him. The OSL age dates will help him complete a manuscript on Holocene geochronology in southern and central coastal SC. Dr. Doar reviewed SCDOT borehole data from Orangeburg County they are using for age-compaction calculations in new bridge design. Ms. Luciano and Dr. Doar worked with Dr. Randy James, retired NRCS, and his efforts to prove a Holocene sea-level higher than present by using soils. Dr. James has previously worked on sites on Spring Island and the Trust is interested in Dr. James' work. Dr. Doar assisted Brooke Czwartacki, Hydrology, in examining a donated well on the Ft. Johnson property. Minor work is needed to make it operational. Robby Morrow assisted Mark Price, Charlotte Observer, who inquired about the geology of Bald Rock Preserve. Scott Howard spoke with David Spears, State Geologist of Virginia. Dr. Spears requested permitting information about Haile Gold Mine because companies are looking into a site in Virginia; he was to DHEC-Mining for additional information.

Partnering:

USGS – Earth Surface Processes Team, NCGMP, Energy and Minerals	SCDHEC-OCRM	UGA-Skidaway Oceanographic Institute
USC-School of Earth, Ocean, and Environment	BOEM	MRD-NERR, MRRI
College of Charleston	SCDOT	USC-Civil and Mechanical Engineering
Coastal Carolina University	SGS Canada	

December Report

Earthquake Activity: Eleven (11) earthquakes in December-early January: on 12/20 near Summerville, Dorchester County, M1.1; between 12/27/21 and 1/5/22, ten (10) earthquakes occurred in southwest Kershaw County. The largest, M3.3, was the first to occur on 12/27. Focal plane studies indicate that the tremor occurred on a north-northwest steep reverse fault.

Special Mentions: Will Doar, Katie Luciano, and Robby Morrow are recognized for their efforts on the STATEMAP FY22 proposal and FY20 Technical Report.

South Carolina Geological Survey

Geological Information

STATEMAP: Andy Wykel and Zach Zelaya worked on Horry County Structure Contour map identifying lithologic units on drill logs in the Adrian, Bayboro, and Little River quadrangles. Zach Zelaya, Jordan Suttles, and Michael Georgopoulos collected the last vibracore in Marion County; cores were cut, logged, and sections prepared for shipping. The OSL samples were sent to Utah State the first week of January. Robby Morrow completed one (1) traverse in Red Hill Quadrangle, Edgefield County. Mapping focused on identifying and tracing the contact between the Persimmon Fork and Emory Formations; the contact appears gradational but has been locally offset by faulting. Twelve (12) rocks were cut and will be sent out to have thin sections made. An additional 20 samples will be collected, cut, and sent out. Will Doar, Katie Luciano, Andy Wykel, and Robby Morrow drafted the FY20 Technical Report and the stratigraphic nomenclature spreadsheet for the FY20 maps. FY20 deliverables were submitted to USGS and included the Technical Report, four (4) geologic maps, and one map database. Scott Howard, Will Doar, Robby Morrow, and Katie Luciano finished FY22 STATEMAP proposal writing and edits, which was completed and submitted.

Other Mapping including Outsource Mapping:

Earth Mapping Resources Initiative: Will Doar, Katie Luciano, and Robby Morrow submitted 4- and 3-page Focus Area data sheets for new airborne geophysical surveys and geologic mapping. Scott Howard and Robby Morrow met with Tassos Grammatikopoulos (SGS) to discuss the status of FY19 Earth MRI Samples. We discussed sample preparation and strategies for analyzing low volume samples and had preliminary discussions about future work to analyze the kaolin-rich clays for REE in the upper Coastal Plain. Andy Wykel submitted borehole locations along state roads in 2020 to Calhoun County SCDOT, Lexington County SCDOT, and Orangeburg County SCDDOT in preparation of final drilling for FY19 mapping.

General: The Geodetic Survey vacated the building except for two staff; they will be completely out of the building by the end of June.

Drilling Services and Core Repository

No drilling took place in December. Andy Wykel and Joe Koch (SC Geodetic Survey) transported the CME-75 drill rig to the International repair shop in Florence, SC to diagnose and fix electrical issues; the rig returned first week of January; no charge as work was under warranty. Work continued with LWC Business Office to obtain 3 vehicles surpluses by SC Geodetic Survey. Jordan Suttles and Michael Georgopoulos organized the repository, cleaned drill rods, and provided general vehicle maintenance.

Digital Products and the Digital Information Program (DIP).

STATEMAP and Earth MRI: Taylor Turbyfill, Will Doar, and Andy Wykel updated the DMU's for the Fork and Mullins maps. Ms. Turbyfill and Robby Morrow drafted and completed the Geologic Map of the southern half of the Edgefield 7.5-Minute Quadrangle, Edgefield County, SC. Ms. Turbyfill updated figures for FY20 technical report and FY22 STAEMAP proposal. Darby DeBruhl converted Fork and Mullins quads to at least GeMS level 2 for delivery by the end of the year; started a SCGS-specific style file to a) include in future NGMDB submissions, and b) to streamline the cartography process. FY20 maps Fork, Mullins, and Edgefield were completed.

Other Mapping including Outsource Mapping: Hana Donnelly and Jerry Krieger re-labelled polygons on recent STATEMAP maps and fixed symbology errors in Illustrator files for these quads.

Data Preservation:

Geologic Map Schema (GeMS): Darby DeBruhl finished Nixonville GeMS Level-2 map database, which was an FY20 deliverable; it also included metadata and complete file structure per the GeMS submittal checklist; developed Fork and Mullins map databases to level 3, but no metadata or required supplementary files have been made. Andy Wykel assisted Darby DeBruhl with the Geomaterial-Age sections in the GEMS tables for FY20 STATEMAP products.

General: Staff attended DMT Lite, an online forum concerning digital mapping techniques. Taylor Turbyfill presented a live Mentimeter poll at DMT to collect data on the usage of the GeMS schema and issues other state surveys are having with migrating their databases to the GeMS schema. Andy Wykel, Jordan Suttles, and Michael Georgopoulos worked on the Statewide Drillhole Database. Taylor Turbyfill made updates to SCGS website and submitted new publication records to the National Geologic Map Database. Darby DeBruhl started work on an application to export statistics from the earthquake database for a given date range.

Coastal Program (Ft. Johnson Satellite Office)

Coastal Vulnerability

Murrells Inlet to Capers Island Coastal Vulnerability Project: Katie Luciano continued work on digitizing 2020 imagery for Yawkey Nature Center (Georgetown County) and preliminary writing for associated report.

Surface Elevation Tables-SET

Katie Luciano and Dr. Will Doar measured eight (8) SET stations at North Inlet/Winyah Bay NERR, Little River, Clubhouse Creek (Cape Romain), Capers Island, and Venning Creek (Cape Romain); repairs were made to two SET sites.

Katie Luciano, Will Doar, Andy Wykel, Zach Zelaya, Jordan Suttles, and Michael Georgopoulos finished the second part of installation for the Fort Johnson SET station. Elevation and GPS measurements will be collected on the station in February 2022.

NOAA

Katie Luciano and Will Doar coauthored with Andrew Tweel and Denise a pre-proposal that was submitted for to NOAA's NERRS Science Collaborative. If funded, Doar and Luciano will be co-PI's on this project, which deals with assessing the relative vulnerability of South Carolina's marshes. The long-term SCGS SET dataset in the ACE Basin would be used along with other existing and new data collected during the course of the project.

USACE-South Atlantic Coastal Study (SACS)

Katie Luciano helped organize and lead a meeting of the South Carolina Regional Sediment Management Working Group (SC RSMWG).

Botany Bay and Pockoy Island Projects

Katie Luciano measured the erosion transects at Pockoy Island (Botany Bay Plantation Heritage Preserve).

BOEM

Ms. Luciano met with Ashley Long (BOEM) on 12/09 to discuss BOEM's plans for a National Offshore Sand Inventory (NOSI) and how it relates to regional sediment management. They also discussed with other members of SCGS sub-Q mapping and BOEM's upcoming plans to collect new data in Long and Onslow Bays.

General and Outreach

General: General information was provided to 16 customers; 7 meteorite ID; 0 gold RFI; 1 sinkhole inquiries; one (1) request for blue granite; two (2) Rock and Mineral kits. Five map (5) and publication (4) orders.

Katie Luciano participated in a virtual panel for a Sedimentology-Stratigraphy class at College of William and Mary, gave a broad overview of SCGS coastal projects, and interacted with students. Will Doar answered questions about index fossils and the stratigraphy of a core drilled by Ricky Wessinger (F&ME) where US Hwy 301 crosses the Savannah River, Allendale County; Dr. Doar also provided references to USGS publications. Dr. Doar answered questions from Dr.

Rick Berquist (VA DMME, retired) about ages of SC's late Pleistocene deposits and highstands. Dr. Berquist is working to update VA stratigraphy for the mid-late Pleistocene. Dr. Doar, at request of the New Jersey Geological Survey, is reviewing a draft geologic map of the Medford Lakes 7.5-minute quadrangle and accompanying text.

Partnering:

USGS – Earth Surface Processes Team, NCGMP, Energy and Minerals	SCDHEC-OCRM	UGA-Skidaway Oceanographic Institute
USC-School of Earth, Ocean, and Environment	BOEM	MRD-NERR, MRRI
College of Charleston	SCDOT	USC-Civil and Mechanical Engineering
Coastal Carolina University	SGS Canada	

HYDROLOGY

November Report

Water Planning

Edisto River Basin Planning: Joe Gellici and Scott Harder attended an Edisto River Basin Council (RBC) meeting on November 17th. Priyanka More and Andy Wachob attended the meeting virtually. Mr. Harder, Mr. Wachob and Mr. Gellici participated in a Planning Team meeting on November 29th to review the previous meeting and prepare for the next meeting in December. Mr. Harder periodically coordinated with Planning Team members to prepare for the RBC meeting and set the agenda. The Planning Team includes representatives from Clemson University, CDM Smith, Inc, SCDNR, the South Carolina Department of Health and Environmental Control (SCDHEC) and the United States Geological Survey (USGS). Mr. Harder also periodically updated the Hydrology website regarding planning activities.

Broad River Basin Planning: Mr. Harder made final preparations for two public meetings held on November 8th in Columbia and November 9th in Spartanburg. The public meetings served to introduce the South Carolina State Water Planning Framework to stakeholders in the basin and to solicit RBC applications. Mr. Harder finalized presentations for the meetings and gave the presentations at each meeting. Mr. Wachob, Mr. Gellici, and Ms. More attended the November 8th meeting and provided logistical support, while Mr. Pellett attended the November 9th meeting and provided logistical support. Mr. Pellett assisted Ms. More in the development of a list of top water users in the basin and their associated withdrawals for Mr. Harder to use at the public meetings if needed. Mr. Harder coordinated with agency media staff to record and post videos of the meetings for public access on the Hydrology website. Mr. Harder updated the Broad river basin planning page as well and began collecting RBC applications.

Mr. Harder, Mr. Wachob and Mr. Gellici participated in a panel briefing with procurement staff meeting to receive proposals and guidelines regarding the solicitation of a Facilitator for the Broad RBC. Proposals are currently under review. Mr. Harder met with a representative from the Tyger River Foundation on November 16th to discuss planning activities in the Broad basin.

Pee Dee River Basin Planning: Mr. Harder began coordinating with Clemson University to schedule two public meetings in the Pee Dee basin to kick-off planning activities. Mr. Harder, with assistance from Priyanka More and Alex Pellett, prepared a contact list for local governments, Chambers of Commerce, and Councils of Governments in the basin in anticipation of sending out mailings to notify these groups of the upcoming public meetings.

Ms. More is in the process of analyzing historical water use for the Pee Dee basin using the SCDHEC water use database. The data analysis will include plots and maps characterizing historical water use in the basin. Ms. More is also working on a water use summary document using an R-package.

Other: Mr. Harder met with The Nature Conservancy (TNC) and Clemson University on November 16th to prepare for a December Surface Water Technical Advisory Committee (TAC) meeting. The South Carolina Eco-flow study recently completed by TNC, and Clemson will be presented to the TAC with the goal of gaining consensus on a recommendation to apply the study in the river basin planning process.

Surface Water Program

Water-Demand Projections: Mr. Pellett continued preparing draft water-demand projections for the Broad basin. Specifically, he streamlined the process of joining surface water permit volumes from shapefiles provided by SCDHEC (which lack a *sourced* column to uniquely identify each intake) to the intakes in the water use database. He also acquired and processed updated data for water-demand calibration drivers including population from SCDHEC's Drinking Water Information System and electricity production from the US Energy Information Agency. Mr. Pellett acquired and processed updated data for water-demand projection drivers including population growth from the SC Office of Revenue and Fiscal Affairs, energy projections from each utility's Integrated Resource Plan, and industrial economic projections from the US Energy Information Agency.

Mr. Pellett also consulted with CDM Smith, Inc. regarding an irrigation efficiency scenario proposed during the Edisto river basin planning process. The paper Mr. Pellett published this year in the Journal of the SC Water Resources Center provides some basis for quantifying the potential effect of efficiency improvements for center-pivots on overall irrigation water demand.

Drought Monitoring: Ms. More continued to prepare weekly drought status updates for streamflow, lake levels and groundwater levels for publication on the State drought website. She also prepared monthly drought status maps and drought summaries for the Climate Office's monthly hydrologic conditions summary product.

Ms. More attended a Post-Harvest/Pre-Winter Water Resources webinar hosted by the State Climate Office on November 10th.

Streamflow Monitoring: Mr. Harder finalized maps and tables regarding streamflow monitoring recommendations made at two workshops completed by SCDNR in 2016 and finalized a presentation for a state and federal stakeholder meeting hosted by the South Carolina Office of Resiliency. Mr. Harder participated in the meeting on November 10th. The purpose of the workshop was to update streamflow monitoring recommendations for the State.

R-Program Training: Ms. More continues to add code and improve existing code in an R-package that processes water use data from the SCDHEC water use database. This work will help lead to the development of an annual water withdrawal report using the SCDHEC database which is updated every year. Ms. More and Mr. Pellett continue to have virtual meetings to discuss procedures for building a successful R-package that serves the purpose of the department to generate and automate water use analysis, including plots, charts, maps, and a written report.

Outreach and Other Work

Mr. Harder met with staff from HDR, Inc, York County, and the SCDNR Environmental Office to discuss York County's plans to pursue a surface water supply project in the Catawba basin. Ms. More attended a GIS webinar on October 12th hosted by Tanner Arrington, the agency's GIS manager. Mr. Pellett attended the SC Rural Water Association 2021 Conference on November 17th and gave a presentation on river basin planning efforts in the Edisto, Broad, and Pee Dee basin.

Groundwater Program

Groundwater Modeling: Mr. Harder, Mr. Gellici, Mr. Wachob, Ms. More, and Brooke Czwartacki met with the USGS and SCDHEC on November 12th to review results of the USGS's groundwater modeling of the "current use" and the "fully permitted" scenarios for the Edisto basin. SCDNR and SCDHEC met with the USGS again on November 15th to discuss an apparent problem with the groundwater modeling: An examination of the Edisto basin water budget indicated that in the "current use" scenario, the Crouch Branch (and possibly also McQueen Branch) aquifer is using future water-use rates that are 15-20% higher than the 2016–2020 averages. The USGS is investigating this apparent problem to determine if the wrong water-use rates were used or if it was an "accounting error" in the post-processing of the model data. Mr. Pellett investigated potentially erroneous withdrawal numbers for the Crouch Branch aquifer in the Edisto basin. Based on review of the monthly withdrawal volumes, it does not appear that the high withdrawal volume for 2019 can be clearly attributed to a single outlier or misplaced decimal. Because of this issue, it was agreed that no groundwater model results would be shown at the November 17th Edisto RBC meeting.

Mr. Harder, Mr. Gellici, and Mr. Wachob met with the USGS and SCDHEC on November 29th to discuss another potential problem with the groundwater modeling. A USGS review of the Edisto basin water budget from the "current use" scenario indicated that the groundwater model does not allow wells to pump as much water as they should, particularly during dry years, when the modeled pumping is as much as 30% too low. Also, during the last few years of historical data (2016 through 2020) the model seems to be pumping too much water from the wells (i.e., the modeled pumping is greater than historical values). It is unknown if these two issues are related, or why either is occurring.

Ms. More is in the process of running the Soil Water Balance (SWB) model to incorporate projected land use raster files from 2016 to 2065 provided by the USGS to estimate how groundwater recharge could change in the future. Since the projected land use rasters are in a different projection, have a different extent, and different units from the historical land use rasters previously used in the SWB model, additional processing was required for their use in the model. Ms. More is using R-programming to process all the rasters together instead of individually. The size of the files has hindered the processing, and Ms. More is currently troubleshooting errors that have arisen during the processing. Mr. Pellett assisted Ms. More in developing a cross-reference table to convert land use codes between different classification schemes to support this modeling effort.

Potentiometric Mapping: Mrs. Czwartacki and Mr. Wachob completed the final draft of the 2020 Crouch Branch aquifer potentiometric map report and sent it to the Hydrology Section for a final review before releasing it to the public on the SCDNR website.

The collection of water-level data for the 2021 potentiometric maps of the Floridan and Gordon aquifers began this month. Mrs. Czwartacki measured water levels in a total of 27 wells in Beaufort County (Region 4); Mr. Harder measured a total of 24 wells in Beaufort County (Region 4); Mr. Williams measured a total of 14 wells in Bamberg, Jasper, and Orangeburg Counties (Regions 3 and 4); and Mr. Wachob measured 13 wells in Colleton County (Region 4).

Mrs. Czwartacki worked with Robert Clark (GIS Manager, SC Geological Survey) to expand the potentiometric level database by adding contours, well information, and metadata from the 2018 Floridan/Gordon maps, the 2019 McQueen Branch map, and the 2020 Crouch Branch map to the existing GIS database.

Geophysical Logging: Mr. Williams collected a suite of geophysical logs from a new public-supply well being drilled for the Grand Strand Water and Sewer Authority in Myrtle Beach (Horry County, Region 4).

Outreach and Other Work

Hydrology staff provided hydrologic and water-well information or other technical assistance to 10 groundwater customers. Mrs. Czwartacki attended the monthly IRT meeting via WebEx on November 3rd and submitted comments to the Office of Environmental Programs regarding hydrology and model use for mitigation banks located in Colleton and Berkeley Counties (Region 4). Mrs. Czwartacki attended a National Groundwater Monitoring Network funding opportunity meeting on November 10th. Mr. Wachob participated in SCDHEC's second meeting of the Santee-Lynches Capacity Use Area stakeholder workgroup on November 3rd. Mr. Wachob reviewed an Environmental Impact Statement prepared as part of the proposed relicensing of the Westinghouse nuclear fuel fabrication facility in Richland County (Region 3) and submitted comments to the SCDNR Office of Environmental Affairs.

December Report

Water Planning

Edisto River Basin Planning: Andy Wachob and Scott Harder attended an Edisto River Basin Council (RBC) meeting on December 15th. Priyanka More and Alex Pellett attended the meeting virtually. Mr. Harder and Mr. Wachob participated in a Planning Team meeting on December 3rd to review the previous meeting and prepare for the next meeting in December. Mr. Harder periodically coordinated with Planning Team members to prepare for the RBC meeting and set the agenda. The Planning Team includes representatives from Clemson University, CDM Smith, Inc, SCDNR, the South Carolina Department of Health and Environmental Control (SCDHEC) and the United States Geological Survey (USGS). Mr. Harder also periodically updated the Hydrology website regarding planning activities.

Broad River Basin Planning: Mr. Harder compiled River Basin Council applications and produced a map showing the geographical and categorical distribution of applicants in preparation for a Planning Process Advisory Committee in January. Mr. Harder met with a representative from the South Carolina Department of Commerce to discuss river basin planning activities and to inquire about potential economic development stakeholders in the Broad basin. Mr. Harder reached out to county economic developers and regional alliances in the Broad basin to solicit RBC applications for slots in the Industry and Economic Development interest category.

Mr. Harder, Mr. Wachob and Mr. Gellici participated in a panel briefing with procurement staff to discuss and score proposals regarding the solicitation of a Facilitator for the Broad RBC.

Pee Dee River Basin Planning: Mr. Harder coordinated with Clemson University and Coastal Carolina University on venues for two public meetings. With assistance from Mr. Pellett, Mr. Harder began preparing a contact list for surface and groundwater users in the basin in anticipation of sending out mailings to notify the users of the upcoming public meetings. Mr. Harder began preparing the necessary documentation for a Request for Proposals regarding the RBC Facilitator.

Ms. More submitted maps and a report to Mr. Harder characterizing historical water use in the basin. Ms. More used an R-package to develop the map and the water use summary document. The R-package offers a way to automate historical water user analyses and can be applied to other basins. The long-term goal is to generate water use summaries by basin on an annual basis.

Mr. Pellet participated in a Yadkin Pee Dee Water Management Group Advisory Committee meeting on December 7th.

Other: Mr. Harder hosted a meeting with the Surface Water Technical Advisory Committee (SWTAC) on December 2nd. Mr. Pellet, Mr. Gellici, and Ms. More also attended the meeting. The flow-ecology study led by Clemson University and The Nature Conservancy (TNC) was presented to the SWTAC, and the study was approved by the SWTAC for application in river basin planning. Mr. Harder prepared a technical memorandum to distribute to the PPAC that documented the recommendations of the SWTAC. Ms. More and Mr. Pellet provide meeting notes for Mr. Harder who prepared a summary that documented the proceedings of the SWTAC meeting.

Mr. Harder met with Clemson University and TNC to discuss a proposal for Clemson to provide technical support to future RBCs regarding the application of the recently completed flow-ecology relationships study.

Surface Water Program

Water-Demand Projections: Mr. Pellett continued preparing draft water-demand projections for the Broad basin which incorporates data through 2020.

Drought Monitoring: Ms. More continued to prepare weekly drought status updates for streamflow, lake levels and groundwater levels for publication on the State drought website. She also prepared monthly drought status maps and drought summaries for the Climate Office's monthly hydrologic conditions summary product.

Ms. More prepared hydrologic information summarizing surface and groundwater conditions in the State and presented the information at the December 9th State Drought Committee meeting. Ms. More prepared a statement for the press release regarding drought conditions in the State.

Ms. More began developing a R-script to update monthly groundwater level percentiles for existing and future telemetry sites in the groundwater monitoring network. The script will become part of a larger R-Package, droughtstat, that focuses on drought related work including the extraction of recent data for updating the monthly drought status maps.

Outreach and Other Work

Mr. Harder attended an LWC staff meeting on December 1 to discuss file storage needs related to the upcoming office relocation. Mr. Harder also participated in a SCDHEC Surface Water Stakeholder meeting on December 14th. Mr. Harder completed a 4-hr driver's training course on December 7th.

Mr. Pellet reviewed Dominion Energy's Draft Parr Operations Compliance Plan and provided feedback to the Environmental Office. Mr. Pellet also researched water use associated with bitcoin mining in response to a request from the Environmental Office.

Groundwater Program

Groundwater Modeling

Mr. Harder, Mr. Gellici, and Mr. Wachob met with the USGS, SCDHEC, and CDM Smith on December 8th to discuss the status of the groundwater modeling work being done for the Edisto basin water planning project. The USGS explained they think the reason the model is not matching historical pumping rates may be an issue with the model's Multi-Node Well (MNW) package, which automatically determines from which aquifers a well pumps and how much water is pumped from each aquifer. The USGS recommended use of the older Wells (WEL) package and manually assigning aquifers and pumping rates to those wells that seemed to be problematic. Because this problem delayed modeling the various water-use scenarios, it was agreed that no groundwater model results would be shown at the December Edisto RBC meeting.

Mr. Pellet continued working with water-use data for the groundwater model, converting monthly withdrawal rates to annual rates, reformatting withdrawal data to streamline its input into the model, and improving the methodology for calculating current water use based on data from recent years.

Mr. Harder, Mr. Gellici, Mr. Wachob, and Mr. Pellett met with the USGS, SCDHEC, and CDM Smith on December 17th for an update on the groundwater modeling work. Andrea Hughes (SCDHEC) identified 22 wells in the model that still had problems with either water use or aquifer designations. Alex Pellet explained how he computed the "average" current water use values, which will be used for the model years 2020 through 2070. It was agreed that some wells used to dewater mines should be removed from the model because they should not have much impact on conditions in deeper aquifers but seem to cause problems with the groundwater model. The USGS indicated that they would probably have model results from only two scenarios ready to present at the January Edisto RBC meeting.

Groundwater Monitoring Network

Josh Williams began training Sam Jennings, who started working for SCDNR this month, on the procedures for downloading and processing groundwater-level data from the SCDNR monitoring network. Mr. Williams and Mr. Jennings downloaded water-level data and made manual measurements from 30 wells in Aiken, Florence, Lexington, Marion, Richland, and Sumter Counties (Regions 2, 3, and 4) and processed recently uploaded water-level data from 38 wells. Brooke Czwartacki downloaded water-level and conductivity data collected from 13 network wells in Charleston, Colleton, and Georgetown Counties (Region 4) and completed processing data from about half those wells. Mr. Harder downloaded water-level data from 13 network wells in Cherokee, Greenville, Laurens, and Saluda Counties (Regions 1 and 3).

Mrs. Czwartacki, with assistance from Mr. Gellici, completed and submitted a final technical report required as part of the Round 4 funding grant received from the USGS National Groundwater Monitoring Network program.

Mr. Harder worked with the USGS to identify a well in the SCDNR network that the USGS could equip with real-time monitoring equipment as a replacement for a shallow well in Dalzell (Sumter County, Region 3) that the USGS no longer monitors. The replacement well would ideally show varying climate patterns in its water-level data and would be included in the South Carolina Groundwater Drought Monitoring Network.

Potentiometric Mapping

Collection of groundwater-level data for the 2021 potentiometric maps of the Floridan and Gordon aquifers continued this month. Mrs. Czwartacki measured water levels in 9 wells in Charleston County (Region 4); Mr. Gellici measured a total of 19 wells in Aiken, Bamberg, Barnwell, Beaufort, Colleton, Dorchester, and Orangeburg Counties (Regions 3 and 4); Mr. Gellici and Priyanka More measured 10 wells in Hampton County (Region 4); Mr. Wachob measured 20 wells in Colleton and Dorchester Counties (Region 4); and Mr. Williams and Mr. Jennings measured 2 wells in Jasper County (Region 4). Most of the water-level measurements planned for this project have been completed.

Geophysical Logging

Mr. Williams and Mr. Jennings collected a suite of geophysical logs from a new well being drilled at the American Materials sand mine in Lexington County (Region 3).

Outreach and Other Work

Hydrology staff provided hydrologic and water-well information or other technical assistance to 4 groundwater customers. Mr. Wachob participated in SCDHEC's third meeting of the Santee-Lynches Capacity Use Area stakeholder workgroup on December 1st. Mrs. Czwartacki gave a presentation "Hydrology of Coastal South Carolina" as part of the MRD Coastal Outreach Webinar Series on December 2nd and attended the MRD Conference on December 8th, which highlighted the work of staff at SCDNR's Fort Johnson facility. Mrs. Czwartacki participated in a meeting on December 3rd to plan for the 2022 South Carolina Water Resources Conference hosted by Clemson University. Mrs. Czwartacki met with Molly Kneese of the SCDNR's Samworth WMA (Georgetown County, Region 4) to discuss technical issues related to streamflow monitoring of the Waccamaw River at that property.

FLOOD MITIGATION

November Report

All of the Flood Mitigation Program staff continue to assisting communities with post disaster requirements pertaining to the October 2015 flood event, Hurricane Matthew, Hurricane Irma, Hurricane Florence, Hurricane Dorian, February 2020 flood event, April 2020 tornado outbreak, May 2020 riot damage, May 2020 flooding, Hurricane Isaias, Hurricane Sally, and the February 2021 flooding. The staff responded to 35 technical assistance requests. Laura closed 1 CAV and 2 CAC-T, followed up on open CAV and CACs and conducted 2 CAC-Ts. She also reviewed 6 ordinances for upcoming CAVs. Laura is studying for the CFM exam, reviewing Guidance for Conducting Community Assistance Contacts and Community Assistance Visits manual, updated the local Floodplain Managers contact list, scanning/filing annexations, LOMAs and LOMRs, and conducted the registration for 2 classes. She is also sending out notifications on Gov Delivery: Silver Jackets Monthly Webinar Series, virtual trainings, and the call for abstracts for the SCAHM Conference. Jessica provided assistance regarding the FMA grant program regarding scope of work changes, questions from sub-applicants and fielded questions from potential new applicants. Jessica attended the FEMA Region IV RST meeting for the Lower Savannah and Upper Broad watersheds (11/1), State Monthly Mitigation Call (11/8) and Monthly FEMA mitigation coordination call (11/10). She also attended training on Risk Rating 2.0 (11/3), FEMA EHP (11/10) and CTP training – QR3 (11/30). Jessica conducted training on the Flood Mapping Process training (11/30). Maria and Jessica conducted the Lower Savannah Watershed Discovery Meeting (11/9), the Upper Broad Watershed Discovery Meeting (11/12) and the Georgetown County revised preliminary map update meeting (11/30). Maria conducted the FEMA Region IV RST meeting for the Lower Savannah and Upper Broad watersheds (11/1). Maria attended HUD grants training (11/16-11/18) and the SCAHM Board Meeting (11/12). Maria presented on inundation mapping to the SC Office of Resiliency (11/10). Maria attended and participated in TMAC meetings (11/10) and submitted a final report to SCDOT on the inundation mapping project (11/23). Maria is also working on the HMGP grant that is building the SC Flood IMPACT website. Maria is the Co-Chair of the Association of State Floodplain Managers Mapping and Engineering Policy Committee. She is also serving on the FEMA Technical Mapping Advisory Council. Maria Laura and Jessica conducted interviews for the open Program Coordinator I position (11/22).

Handouts and Presentations