Cobia

Rachycentron canadum

Contributor (2005): Donald L. Hammond
Revised and Edited (2013): Karl Brenkert, Justin Yost, and Matt Perkinson [SCDNR]

DESCRIPTION

Taxonomy and Basic Description

Cobia, *Rachycentron canadum (*Linnaeus, 1766) are the sole representative of the family Rachycentridae. Adults are characterized by having a depressed head with an elongate body and a lunate caudal fin. The mouth is terminal with a protruding lower jaw. The first dorsal fin is comprised of 7 to 9 short, stout isolated spines with the second dorsal fin long with anterior rays forming a raised lobe in adults. The anal fin is similar to the second dorsal and both are covered in thick skin. Adults are typically chocolate brown on their back and sides with a white to cream-colored belly with small embedded scales. Juvenile fish have a more rounded caudal fin with lateral white stripes that run the length of their body, fading as the fish grows older.

The South Carolina State Record Marine Gamefish Program, operated by the Marine Resources Division, recognizes a 42.0 kg (92.6 lbs.) Cobia caught offshore of Port Royal Sound in June 2009 as the largest Cobia caught in the state. Franks et al. (1999) reported a female Cobia taken from the Gulf of Mexico that measured 165 cm (63 in.) in fork length and weighed 62.2 kg (137 lbs.). The IGFA recognizes a 61.5 kg (135.6 lbs.) specimen caught off Australia as its all tackle record. Maximum recorded ages are 16 years in the Atlantic and 11 years in the Gulf of Mexico.

Sexual maturity for male Cobia in the South Atlantic appears to occur at a very small size. Because of the paucity of samples of Cobia smaller than 200 mm (7.9 in.) FL, it is not possible to determine the smallest size at which male Cobia reach sexual maturity, but this appears to occur well before they reach age one. Female Cobia appear to reach sexual maturity later than males. Results by SCDNR (unpublished) and Smith (1995) suggest that females typically reach sexual maturity between 2 and 3 years old, with 100% maturity for 3 year-old fish.

Status

Cobia are managed by the South Atlantic and Gulf of Mexico Fisheries Management Councils under the coastal migratory pelagics fisheries management plan (FMP). Amendment 18, effective January 2012, divided Cobia into a South Atlantic and Gulf migratory group and set an annual catch limit (ACL) for the South Atlantic at 1.571 million pounds. Based on the benchmark Cobia stock assessment conducted in 2012 (SEDAR 28), South Atlantic Cobia are not overfished and are not undergoing overfishing.

POPULATION SIZE AND DISTRIBUTION

The Cobia enjoys world-wide distribution, occurring in all tropical and subtropical seas except for the eastern Pacific (Shaffer and Nakamura 1989). The Marine Recreational Fisheries Statistical Survey (MRFSS), conducted by the National Marine Fisheries Service (NMFS), has recorded recreational Cobia landings from Texas to New York.

There is some evidence of at least 2 migratory groups in the Gulf of Mexico: a north/south migratory group that overwinters in southern Florida and moves west and north throughout the Gulf during the spring and summer; and an inshore/offshore migratory group that overwinters in deeper waters and moves into shallower coastal waters during spring and summer (Franks et al. 1991; Burns and Neidig 1992). Tagging studies in the Atlantic have shown a similar pattern as well with a seasonal northward movement of fish from Cape Canaveral to North Carolina and Virginia. Cobia may also be present in deep (>31 m or 100 ft.) live bottom areas in the winter off the East Coast, suggesting some east-west migration as well. In South Carolina, the vast majority (90%) of recaptures from fish tagged during annual spring aggregations in Port Royal and St. Helena sounds have occurred in those same estuaries in subsequent years, suggesting a high degree of site fidelity. Recent population genetics work indicates that inshore Cobia aggregations in South Carolina and the Chesapeake Bay represent distinct population segments that are genetically different from those found offshore of those locations along the East Coast (Darden et al. 2014).

While the SEDAR 28 stock assessment concluded that Cobia were not undergoing overfishing, it also reported that the total estimated abundance of South Atlantic Cobia has generally declined over the past decade and the stock is estimated to be at its lowest point since the institution of a 2 fish/person/day bag limit in 1990.

HABITAT AND NATURAL COMMUNITY REQUIRMENTS

Cobia normally occur singularly or in small pods. They commonly associate with any structure in the water (buoys, trash, shipwrecks, and artificial reefs) or large animals (sharks, turtles and stingrays) (Hammond et al. 1977; Shaffer and Nakamura 1989). They are opportunistic feeders, conducting most of their feeding near the bottom where they target crabs, shrimp, squid, and benthic fish (Smith 1995).

Cobia are asynchronous batch spawners with spawning reported for the Gulf stock from April to September (Burns et al. 1998) and peak spawning occurring in the Atlantic from May to July (Brown-Peterson et al. 2001; SCDNR, unpublished data). Spawning frequency for Atlantic Cobia has been estimated at 4-6 days by Hunter and Macewicz (2005), and the application of their histological techniques to data reported in Lefebvre and Denson (2012) produced an estimate of spawning frequency of 6.1 days in South Carolina. Spawning has been shown to occur in the mouth of bays and sounds (Joseph et al. 1964; Richards 1967; Smith 1995). In South Carolina, the presence of eggs and larvae and the collection of gravid females from within Port Royal and St. Helena Sounds suggest that spawning is occurring during these inshore aggregations (Lefebvre and Denson 2012). Based on gonadosomatic indices, peak spawning occurs in May, June, and July in South Carolina, North Carolina, and Virginia, respectively. Migration into these inshore spawning grounds appears to be closely related to temperature, with seasonal

appearances of Cobia aggregations beginning as water temperatures approach 20°C (68°F).

CHALLENGES

Their large size, strong fighting ability, and excellent culinary qualities make Cobia a very popular recreational species. In South Carolina, fishing pressure on inshore aggregations in the southern portion of the State has increased steadily in recent years. Uncertainty about population size and pressure on spawning grounds of a genetically distinct population segment during the spawning season are two challenges to maintaining a sustainable fishery for Cobia in South Carolina. Additionally, life history work conducted by SCDNR suggests that recruitment success varies strongly from year to year, and intermittent strong year classes may make up a large proportion of the population structure.

CONSERVATION ACCOMPLISHMENTS

The coastal migratory pelagics FMP, a joint effort by the South Atlantic and Gulf of Mexico Fishery Management Councils, established a 84 cm (33 in.) FL minimum size for Cobia in 1985 and added a 2 fish/person/day bag limit in 1990. In South Carolina, extensive life history and genetic sampling has led to a greater understanding of Cobia population genetics, age structure, and critical spawning habitat of concern. This research has identified critical spawning grounds and contributes important data to the SEDAR stock assessment process.

Additionally, the implementation of a cooperative angler fin clipping program and development of microsatellite markers for Cobia allows catch and release by recreational anglers to contribute non-lethal genetic samples to program biologists and become stakeholders in the research process.

CONSERVATION RECOMMENDATIONS

- Expand creel sampling in Beaufort County during April, May, and June to better capture catch and effort data on the inshore Cobia fishery.
- Expand the genetic sampling program throughout the Cobia’s range to increase understanding of its population structure, stock boundaries, and to identify additional genetically distinct population segments along the Atlantic Coast.
- Promote sustainable fishing practices by recreational anglers targeting seasonal Cobia aggregations in South Carolina, including catch and release and proper handling of undersized fish.
- Collect fecundity data on fish collected during tournaments and through carcass collection programs targeted at recreational anglers.

MEASURES OF SUCCESS

Measures of success will include an increased understanding of Cobia life history and genetic structure as well as stable or increasing population trends as determined by further sampling efforts.

LITERATURE CITED

Brown-Peterson, N.J., J.S. Franks, and K.M. Burns. 2001. Reproductive biology of Cobia, *Rachycentron canadum*, from coastal waters of the southern United States. Fishery Bulletin. 99:15-28.

Burns, K. M. and C. Neidig. 1992. Cobia, (*Rachycentron canadum*), amberjack (*Seriola drumerili*), and dolphin (*Corypheana hippurus*) migration and life history study off the southwest coast of Florida. Mote Mar. Lab. Tech. Rep. 267. 58 pp.

Burns, K.M., C. Neidig, J. Lotz and R. Overstreet. 1998. Cobia (*Rachycentron canadum*) stock assessment study in the Gulf of Mexico and in the south Atlantic. Mote Mar. Lab. Tech. Rep. 571. 108 pp.

Darden, T., M. Walker, K. Brenkert, J. Yost, and M. Denson. 2014. Population genetics of cobia (Rachycentron canadum): implications for fishery management along the coast of the southeastern United States. Fishery Bulletin 112:25-35.

Franks, J.S., M.H. Zuber and T.D. McIlwain. 1991. Trends in seasonal movements of Cobia, *Rachycentron canadum*, tagged and released in the northern Gulf of Mexico. J. Miss. Acad. Sci. 36(1):55.

Franks, J. S., J.R. Warren, and M. V. Buchanan. 1999. Age and growth of Cobia, *Rachycentron Canadum*, from the northeastern Gulf of Mexico. Fishery Bulletin. 97(3):459-471.

Hammond, D.L., D.O. Myatt and D.M. Cupka. 1977. Evaluation of midwater structures as a potential tool in the management of fisheries resources on South Carolina's artificial reefs. SC Mar. Res. Tech. Rep. No. 15. 19 pp.

Hunter, J.R., and B.J. Macewicz. 1985. Rates of atresia in the ovary of captive and wild northern anchovy, *Engraulis mordax*. Fishery Bulletin. 77:641-652.

Joseph, E.B., J.J. Norcross, and W.H. Massman. 1964. Spawning of the Cobia, *Rachycentron canadum*, in the Chesapeake Bay area, with observations of juvenile specimens. Chesapeake Science. 5:67-71.

Lefebvre, L.S. and M.R. Denson. 2012. Inshore spawning of Cobia (*Rachycentron canadum* in South Carolina. Fishery Bulletin. 110:397-412.

Richards, C.E. 1967. Age, growth and fecundity of the Cobia, *Rachycentron canadum*, from the Chesapeake Bay and adjacent Mid-Atlantic waters. Transactions of the American Fisheries Society. 96:343-350.

Schaffer, R.V. and E.L. Nakamura. 1989. Synopsis of biological data on the Cobia,

Rachycentron canadum (Pisces: Rachycentridae). FAO Fisheries Synopsis 153. NOAA technical report NMFS 82. 33 pp.

Smith, J.W. 1995. Life history of Cobia, *Rachycentron canadum* (Osteichthyes: Rachycentridae), in North Carolina waters. Brimleyana 23:1-23.