

# FOOD CHAINS & FOOD WEBS

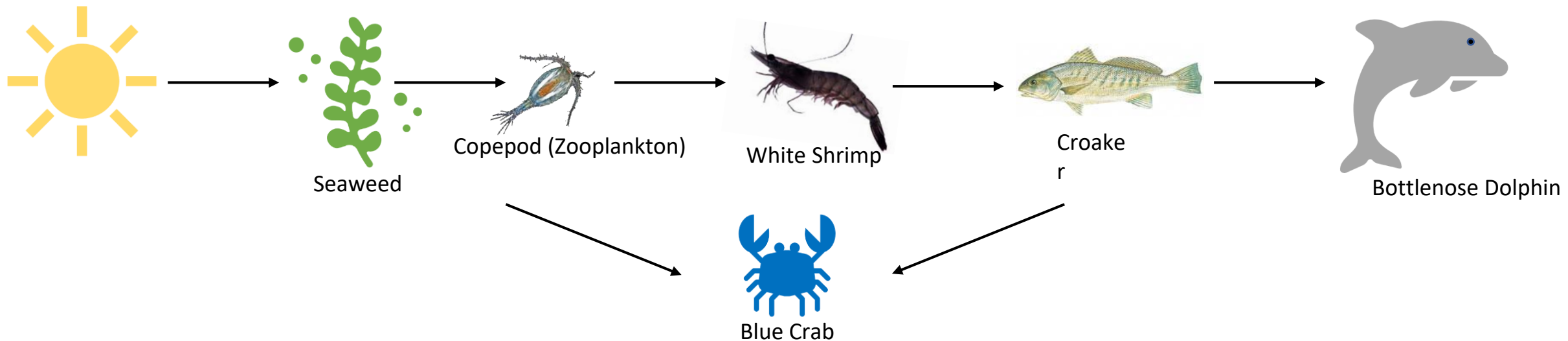
South Carolina Department of Natural Resources  
Grade level 6-12



# WHAT IS A FOOD CHAIN?

A food chain demonstrates how energy and nutrients flow through an ecosystem. Every living thing in the world needs food. This shows who eats who in the wild and where that energy comes from. Most food chains begin with the sun.

Marine food chain example:



# HOW DOES IT WORK?

The **sun** is the beginning of the food chain/web.

**Producers** are plants.

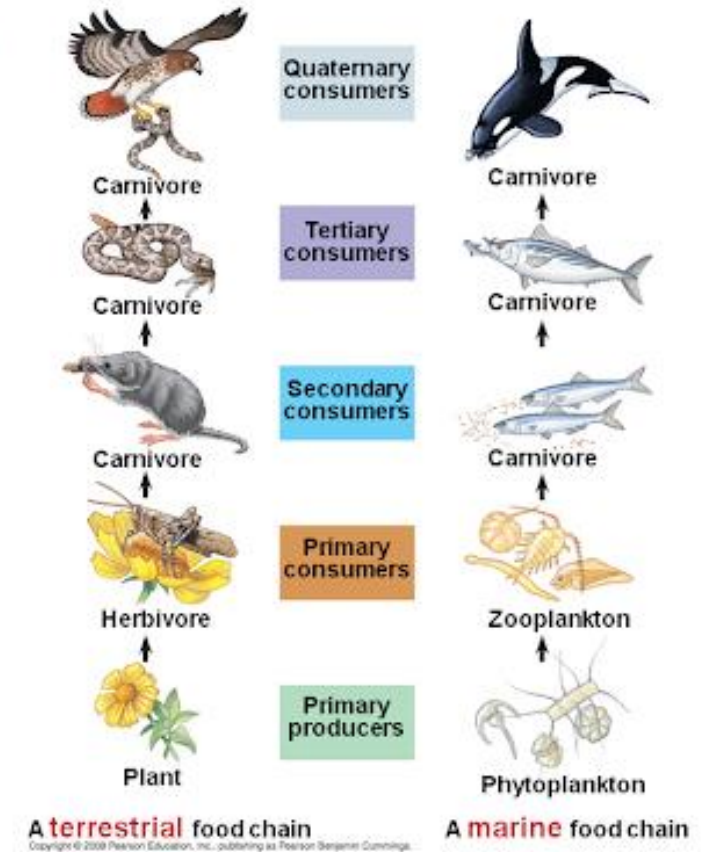
**Primary Consumers** are animals that have plants in their diet.

**Secondary Consumers** are animals that eat other animals.

**Apex Predator** are always at the top.

**Decomposers** make up the bottom and are the clean up crew.

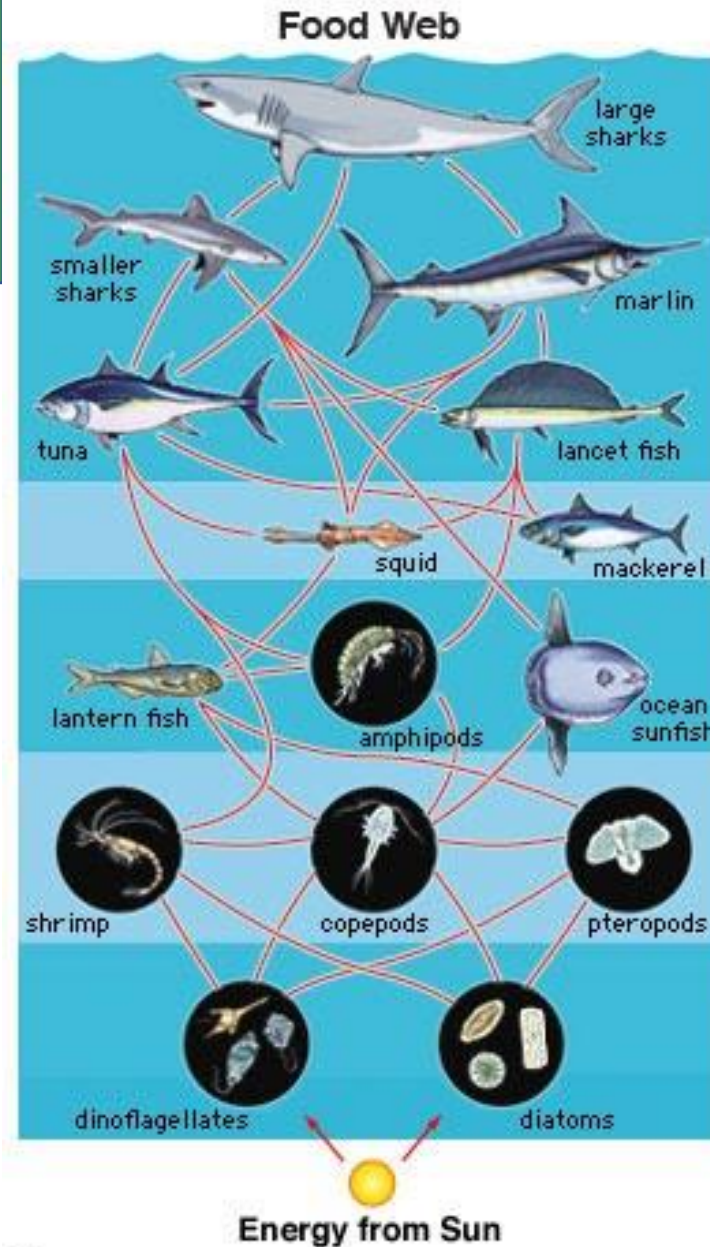
## Terrestrial and Marine Food Chains



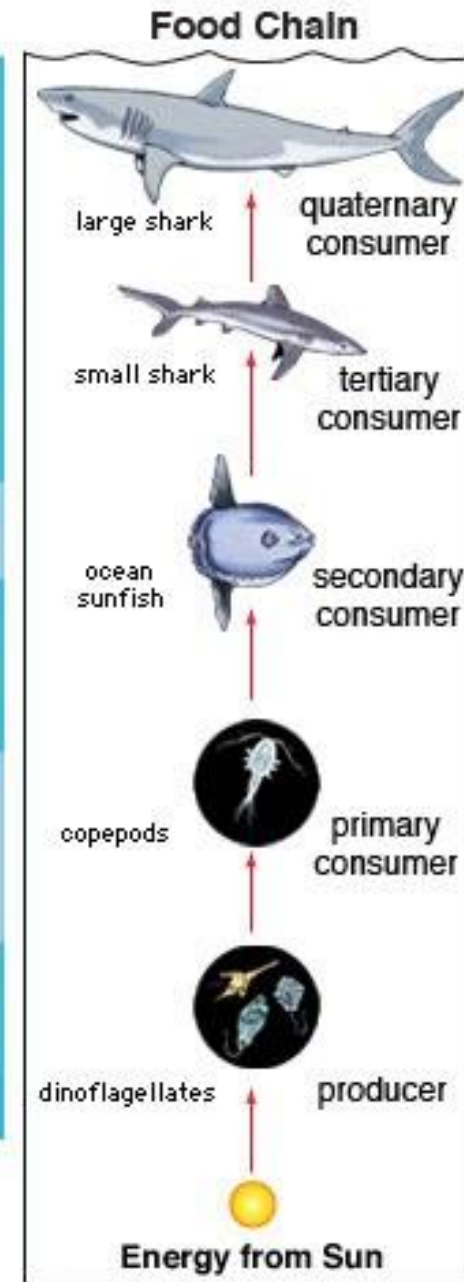
*\*Photosynthesis is the process where plants can get water through their roots, Carbon Dioxide through the air and light energy from the sun. All together, this process helps them make glucose (sugar) and oxygen!*

# WHAT IS A FOOD WEB?

A food web can be many possible food chains from one ecosystem. They demonstrate how food chains connect and interact.



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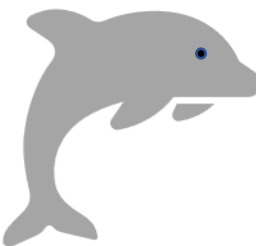


# DNR RESEARCH OF DIET COMPOSITION

How do we find out who eats what so we can make accurate food chains and food webs in our ecosystems here in South Carolina?

- DNR biologists must dissect different marine species and look at their stomach contents to find out what they ate, so we can learn more about them. In order to do that, they must look at multiple stomachs of one species to be able to see a trend and get an idea of what organisms they consume.
- In this food web, the bottlenose dolphin is the Apex Predator. From a study done between the years 2000 and 2006, biologists looked at the stomach contents of 136 dolphins who were found stranded on shore.
- In this study, they compared dolphins stomach contents along the SC coast and attained data of their most common diet.

*\*Pass out dolphin diet composition data sheets*



# USE THE BOTTLENOSE DOLPHIN DATA SHEET AND THE SCIENTIFIC NAMES/COMMON NAMES SHEETS TO ANSWER THESE QUESTIONS

- Which bony fishes in the dolphins' diet had the highest frequency?
- Which cephalopod in the dolphins' diet had the highest frequency?
- What were the highest frequency percentages for:
  - Weakfish
  - Atlantic Croaker
  - Southern Kingfish



BELOW ARE 3 SPECIES OF FREQUENT BONY FISH THAT WERE FOUND IN THE STOMACH CONTENTS OF THESE BOTTLENOSE DOLPHINS:

*Cynoscion regalis* (Weakfish)



*Micropogonius undulatus* (Atlantic Croaker)



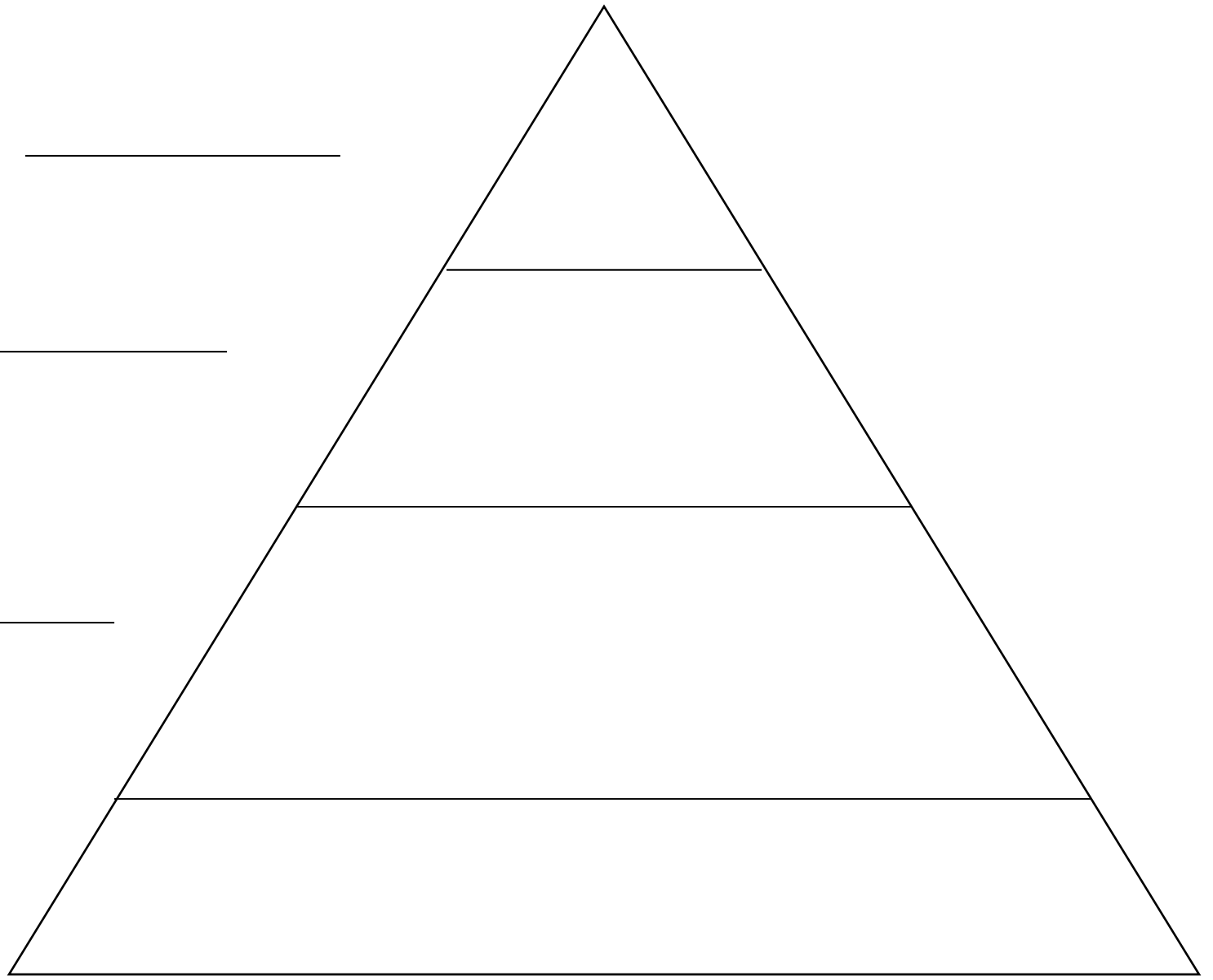
*Menticirrhus Americanus* (Southern Kingfish)



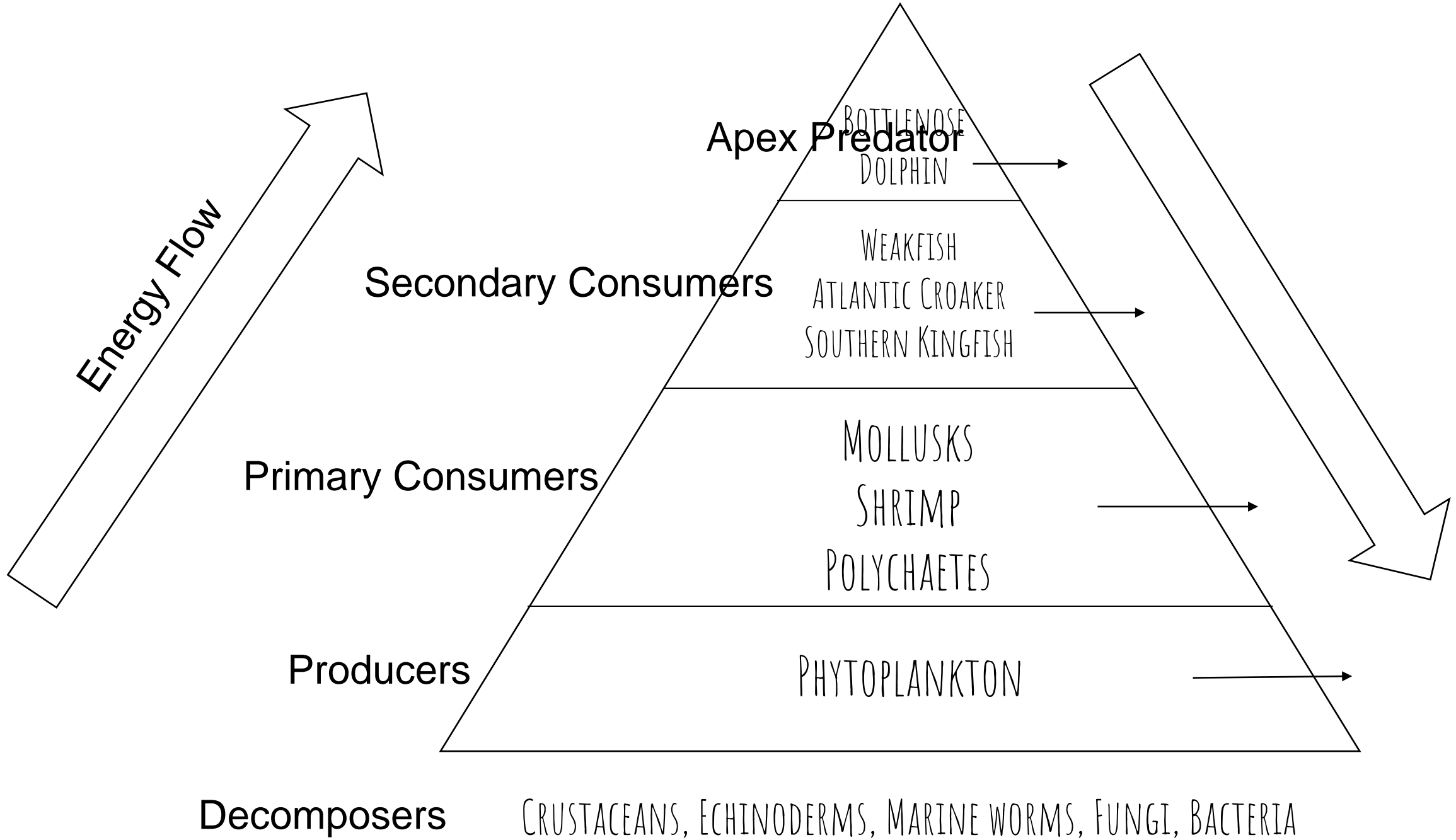
To continue to build a food pyramid, we would have to dig further and look at the stomach contents of these 3 species of fish.

*\*Pass out diet composition data sheets of these fish*

FILL THIS OUT AND LABEL THE LEVELS OF THIS FOOD PYRAMID INCLUDING ENERGY FLOW ARROWS. YOU CAN CHOOSE A RANDOM PRODUCER AND DECOMPOSER FROM THE OCEAN TO FILL THIS OUT.







Energy Flow

Apex Predator

BOTTLENOSE DOLPHIN

Secondary Consumers

WEAKFISH  
ATLANTIC CROAKER  
SOUTHERN KINGFISH

Primary Consumers

MOLLUSKS  
SHRIMP  
POLYCHAETES

Producers

PHYTOPLANKTON

Decomposers

CRUSTACEANS, ECHINODERMS, MARINE WORMS, FUNGI, BACTERIA

# DISCUSSION QUESTIONS

1. Write a few sentences describing the roles different organisms play in the estuary food pyramid.
2. Why is it important for biologists to continue to study the diet composition of different marine species and what can you learn by this type of research?
3. By looking at the bottlenose dolphin diet composition data, what observations can you make about them? List a few of their most common prey items they eat by looking at the highest frequency percentages (F) for all the dolphins.