



# LUMCON

Your Coastal Classroom  
Activity Book



LUMCON is committed to increasing society's awareness of the environmental, economic and cultural value of Louisiana's coastal and marine environments by conducting research and education programs directly relevant to Louisiana's needs in marine science and serving as a facility for all Louisiana schools with interest in marine research and education.



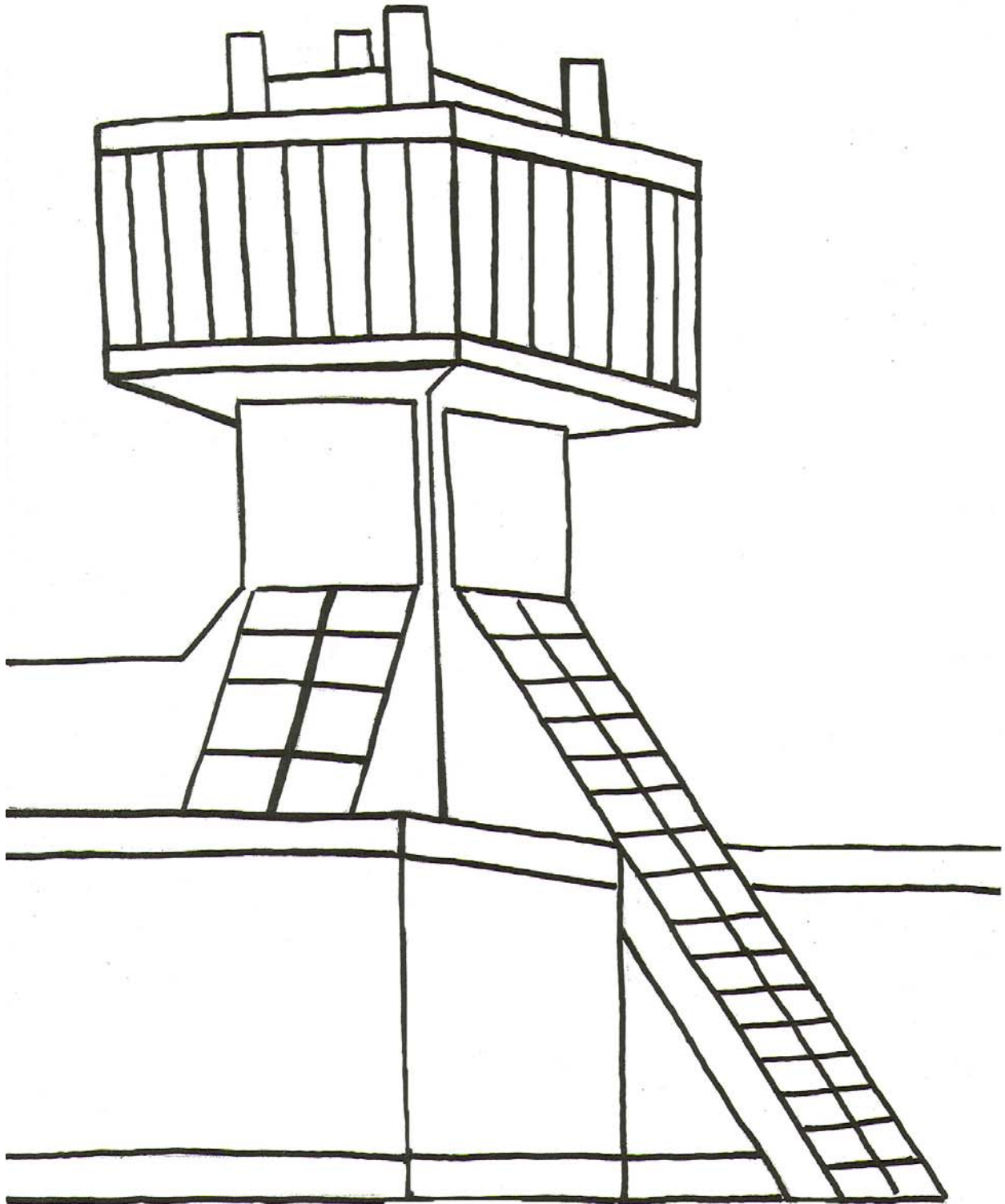
### Acknowledgements:

I would like to acknowledge the following people for their help in producing this book: The LUMCON Scientists for their input and suggestions for content; Mr. David Fox for his help in developing all the activities. Danielle Richardi for help with text; Wayne Simoneaux for the picture of LUMCON; and Ms. Lillie Wicher for the time she spent scanning all the images that made this book possible.

Thank you all.

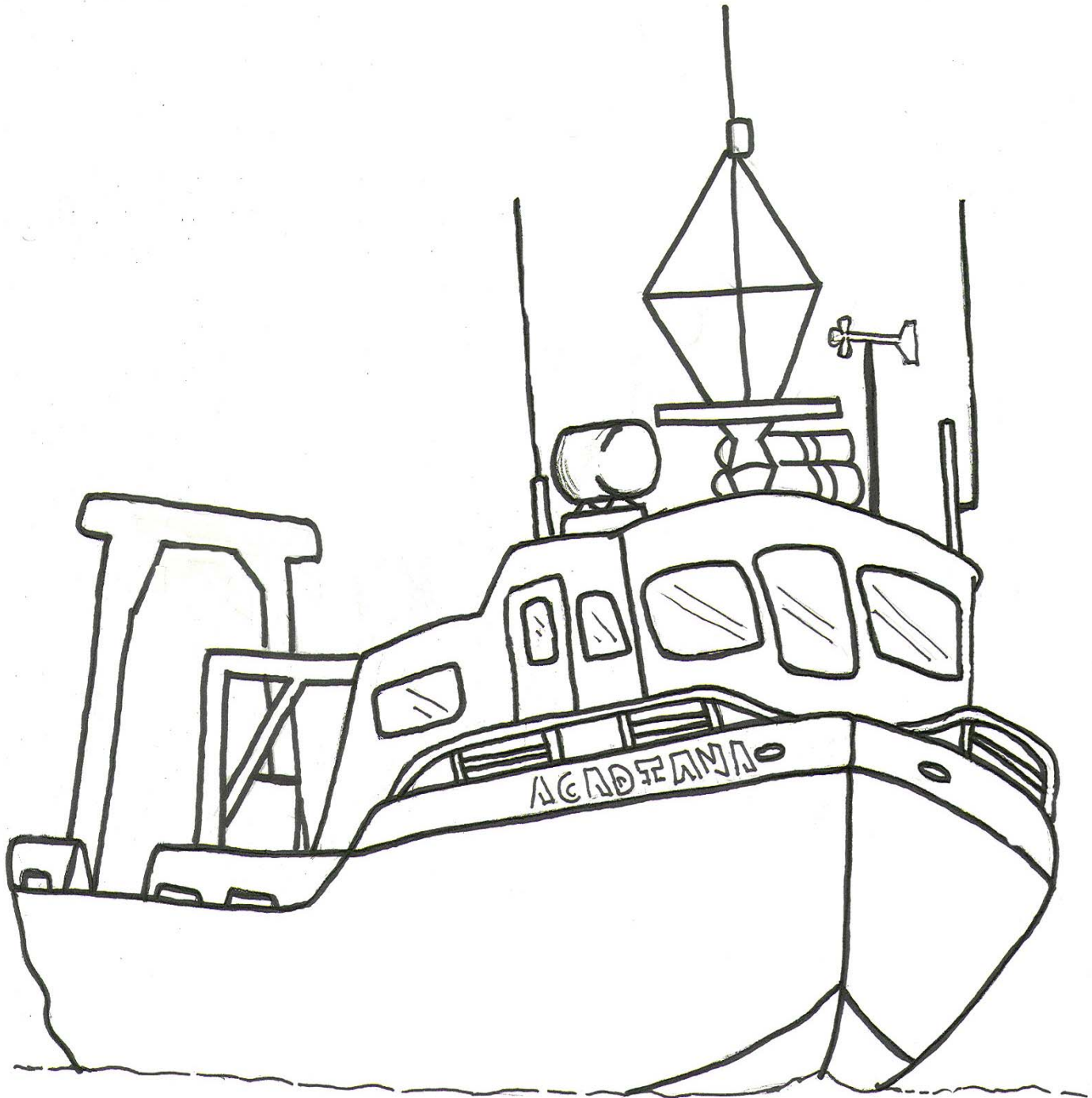
Jennifer "Murt" Conover

# LUMCON Tower



The most distinctive feature of the W.J. DeFelice Marine Center is the observation tower. The tower rises 65 feet above sea level. From the top it is possible to get a full view of the surrounding salt marshes and their rich diversity of plants, animals, and the human interaction with this wonderful environment.

## Research Vessel *Acadiana*



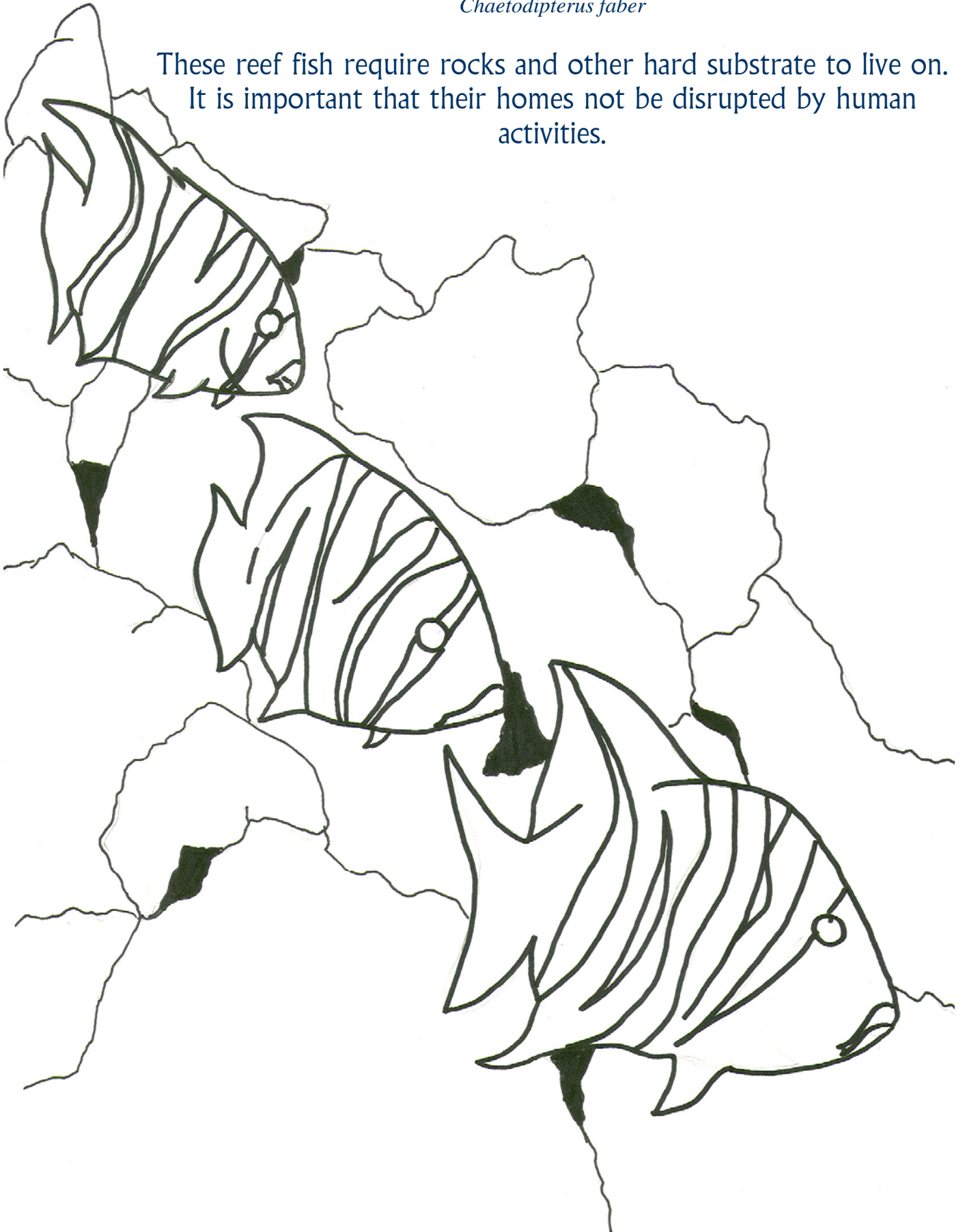
LUMCON owns and operates 2 research vessels and a fleet of small boats. The *R/V Pelican* is used by scientists from all over the world to do research in the Gulf of Mexico, Caribbean Sea and Western Atlantic Ocean. The *R/V Acadiana* is a smaller vessel used for short research cruises offshore, in the bays, rivers and estuaries of Coastal Louisiana.



# Atlantic Spadefish

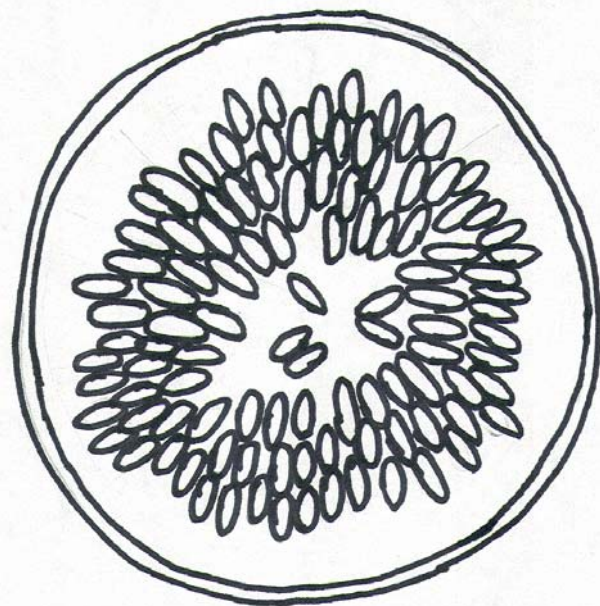
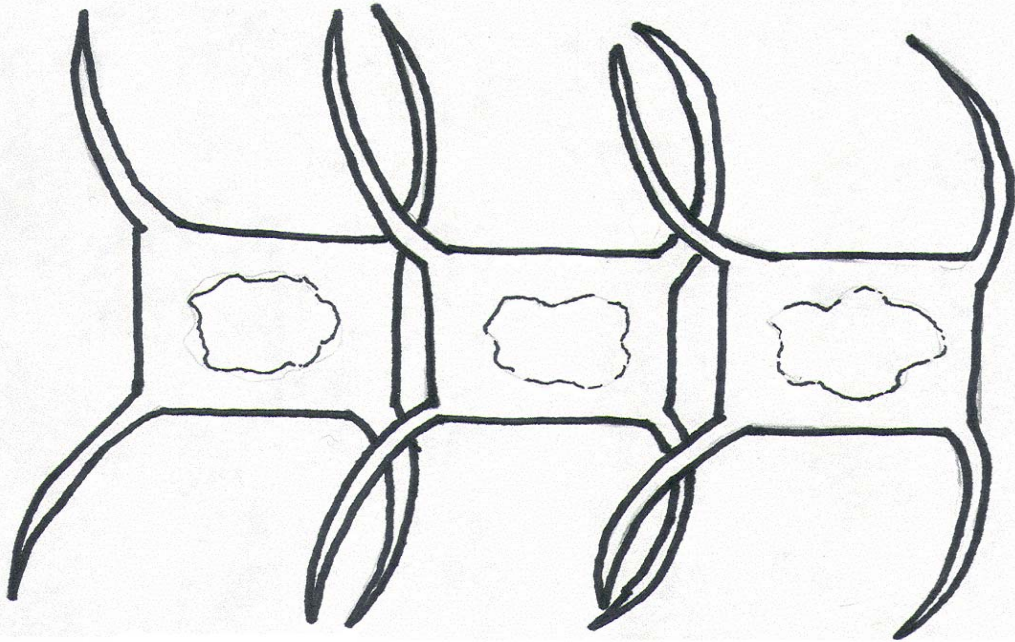
*Chaetodipterus faber*

These reef fish require rocks and other hard substrate to live on.  
It is important that their homes not be disrupted by human activities.



# Phytoplankton

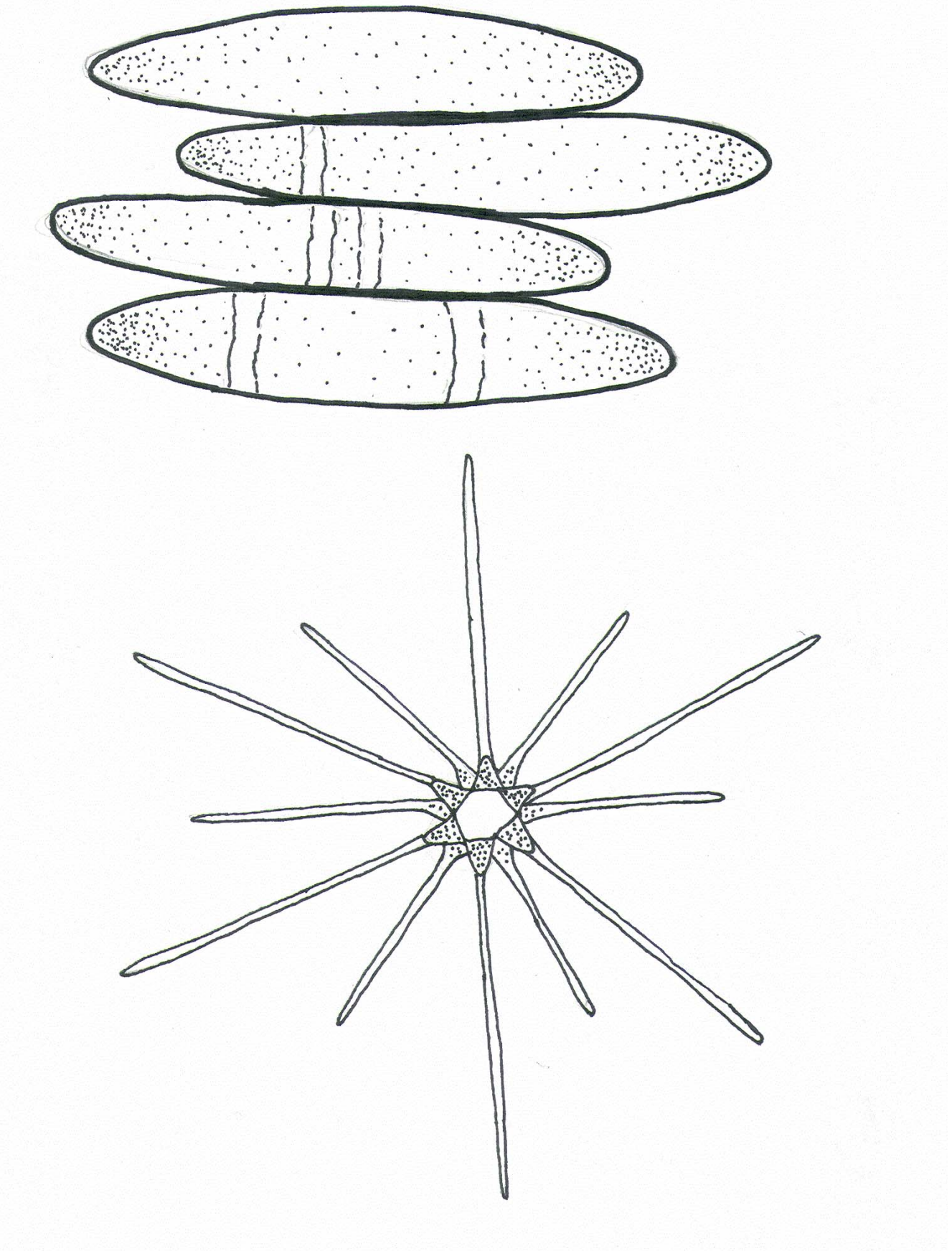
=





Microscopic plants, or plant-like animals, that live in the water. Phytoplankton can live in salt water or fresh water. They are able to make their own energy through photosynthesis, and are the first link in the food chain.

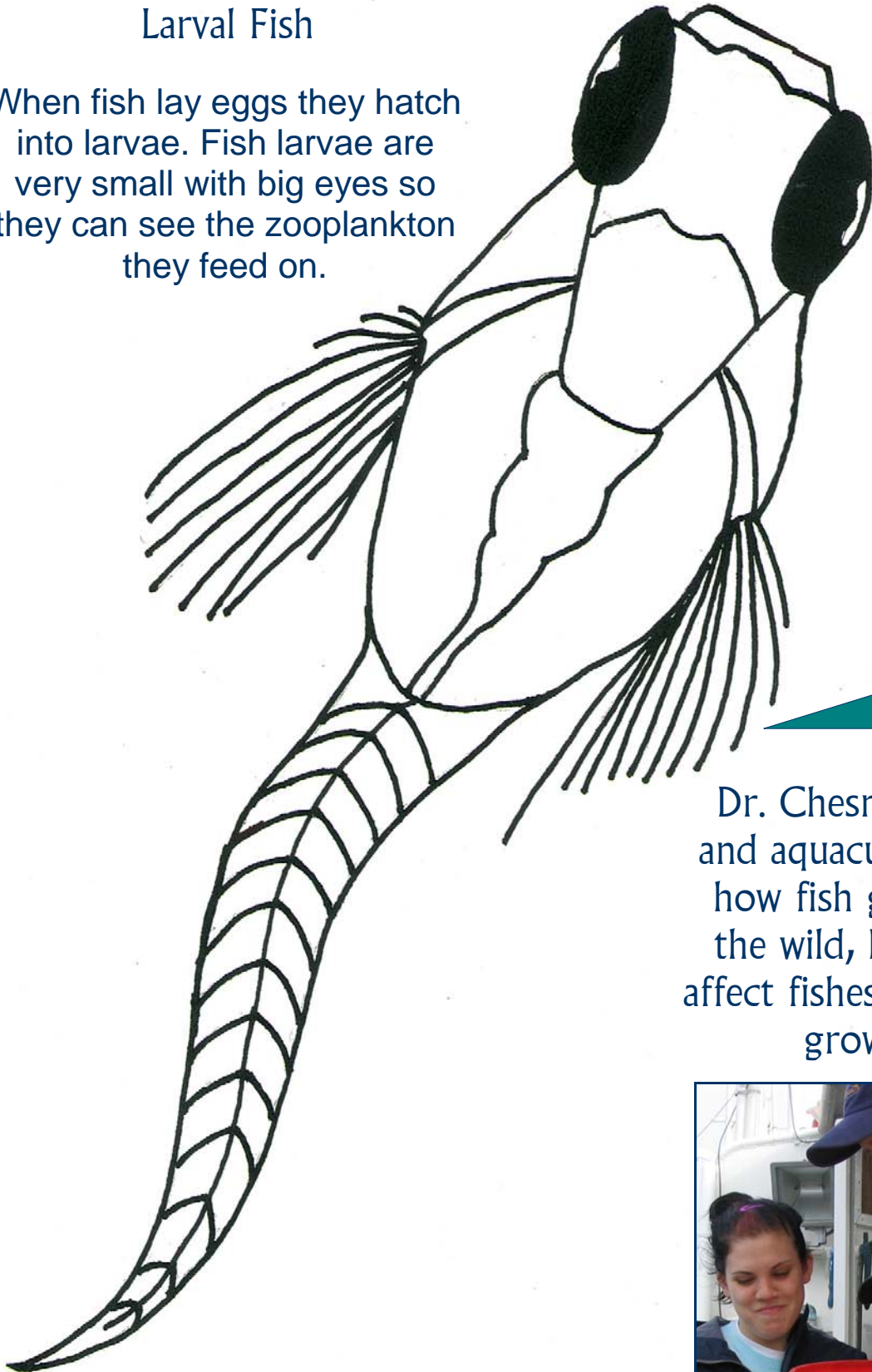
---



# Zooplankton =

## Larval Fish

When fish lay eggs they hatch into larvae. Fish larvae are very small with big eyes so they can see the zooplankton they feed on.



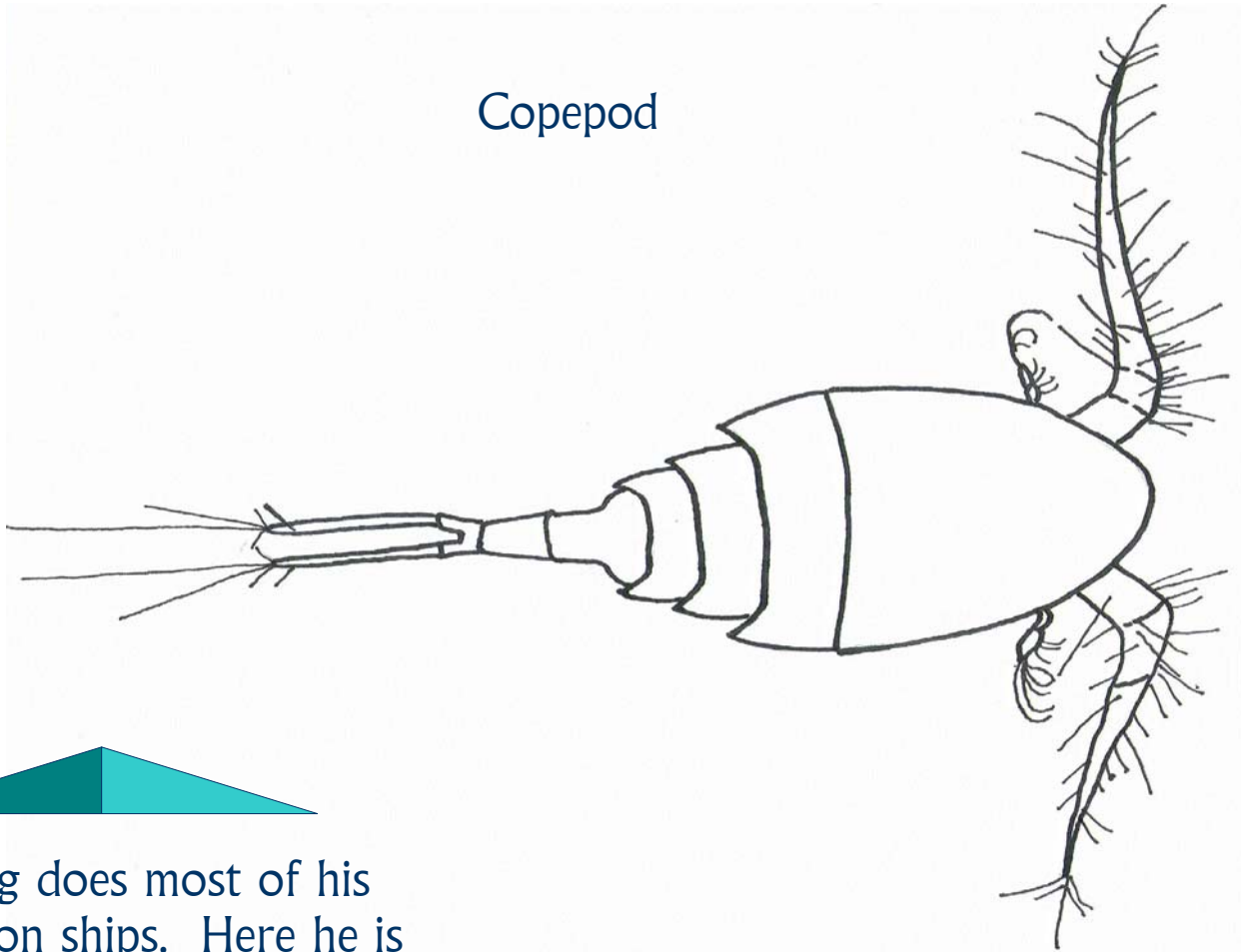
Dr. Chesney studies fisheries and aquaculture to understand how fish grow and survive in the wild, how man's activities affect fishes and to learn how to grow fish as food.





Microscopic animals that eat other plankton while floating freely within water currents. This group of plankton includes single-celled animals, jellyfish, a large variety of crustaceans, as well as larval and immature forms of larger animals such as mollusks, shrimp, crabs, and fishes.

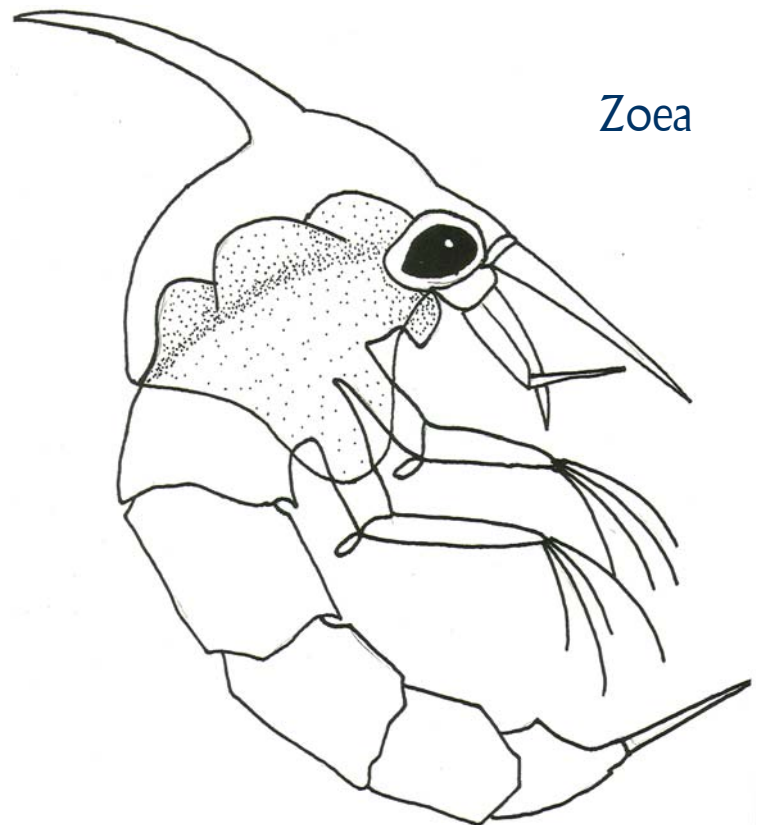
Copepod



Dr. Dagg does most of his research on ships. Here he is in the laboratory on the R/V *Pelican*, in the Gulf of Mexico.

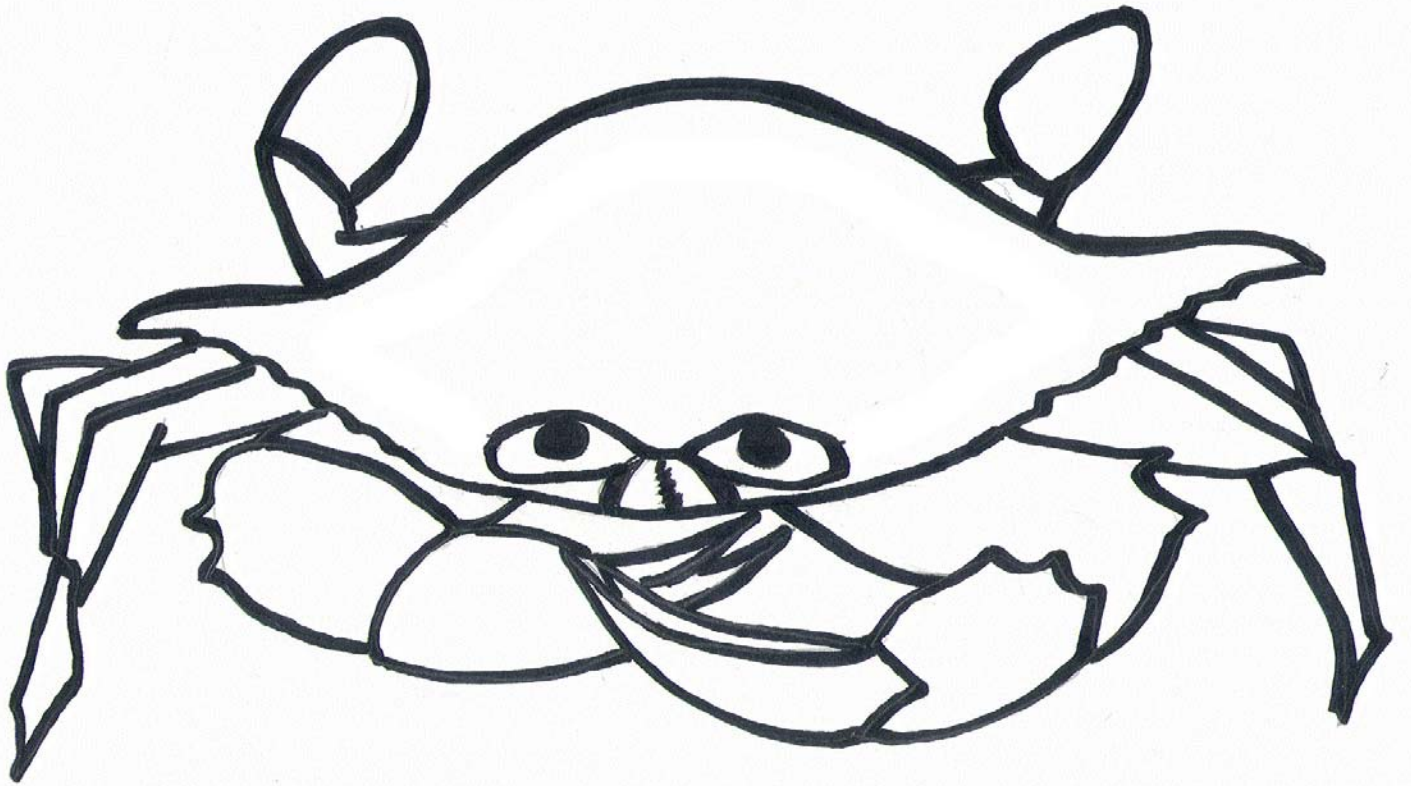


Zoea



# Blue Crab

*Callinectes sapidus*



# Grass Shrimp

*Palaemonetes pugio*



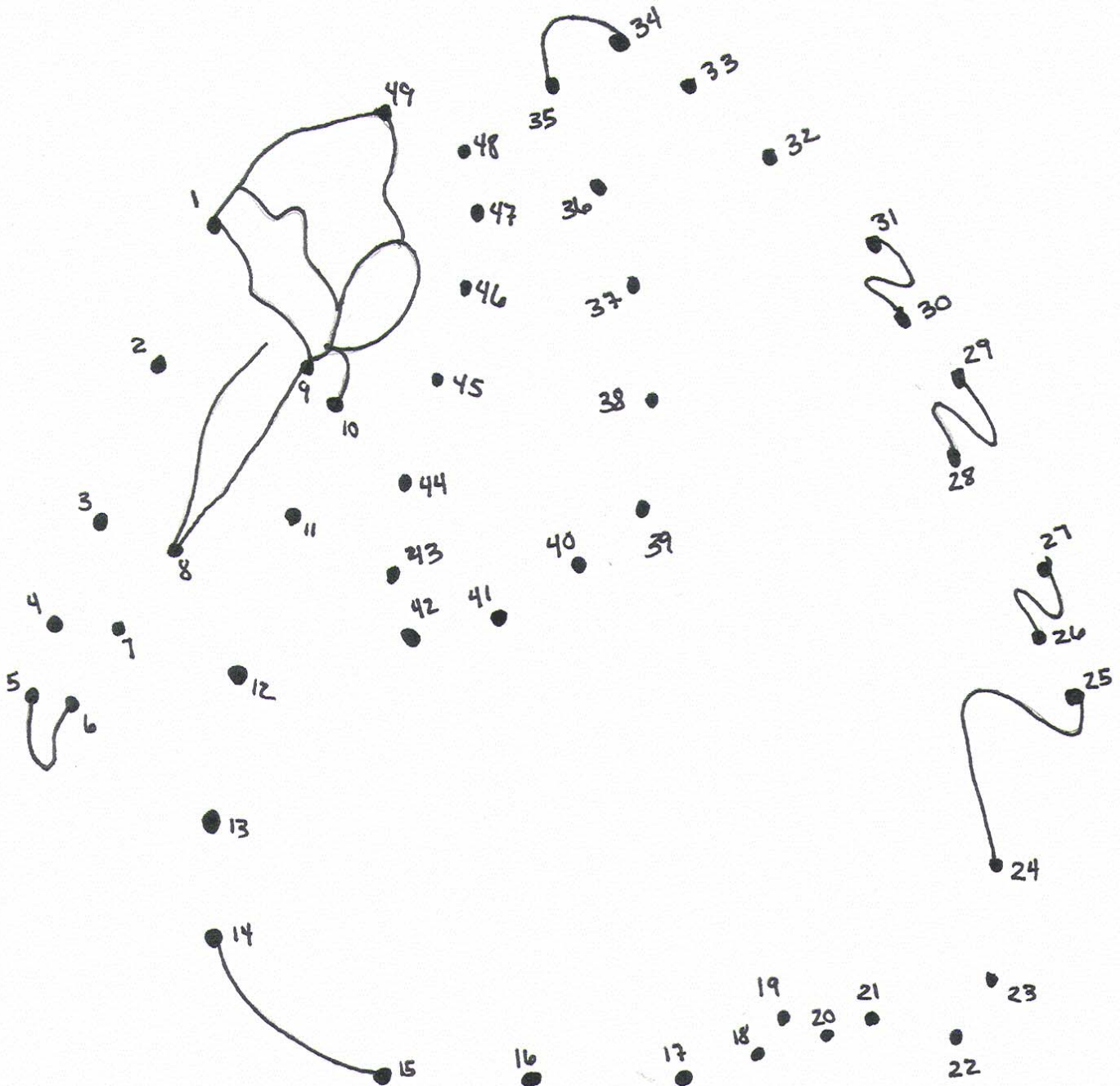
# Connect the Dots

Connect the dots starting with the number 1 and ending with number 49 to complete the animal shape.

Do you know what animal it is?

Here are some clues: This animal lives in the coastal areas of Louisiana, in fact it is the state bird of Louisiana. This animal has a pouch that can hold almost 3 gallons of water and fish. They use the pouch like a net to catch, not carry, the 4 pounds of fish an adult needs to eat everyday. During the 1960s this bird was extinct in the state of Louisiana, but is once again thriving on our coast.

Now can you guess what animal this is?



Answer: Brown Pelican  
*Pelecanus occidentalis*



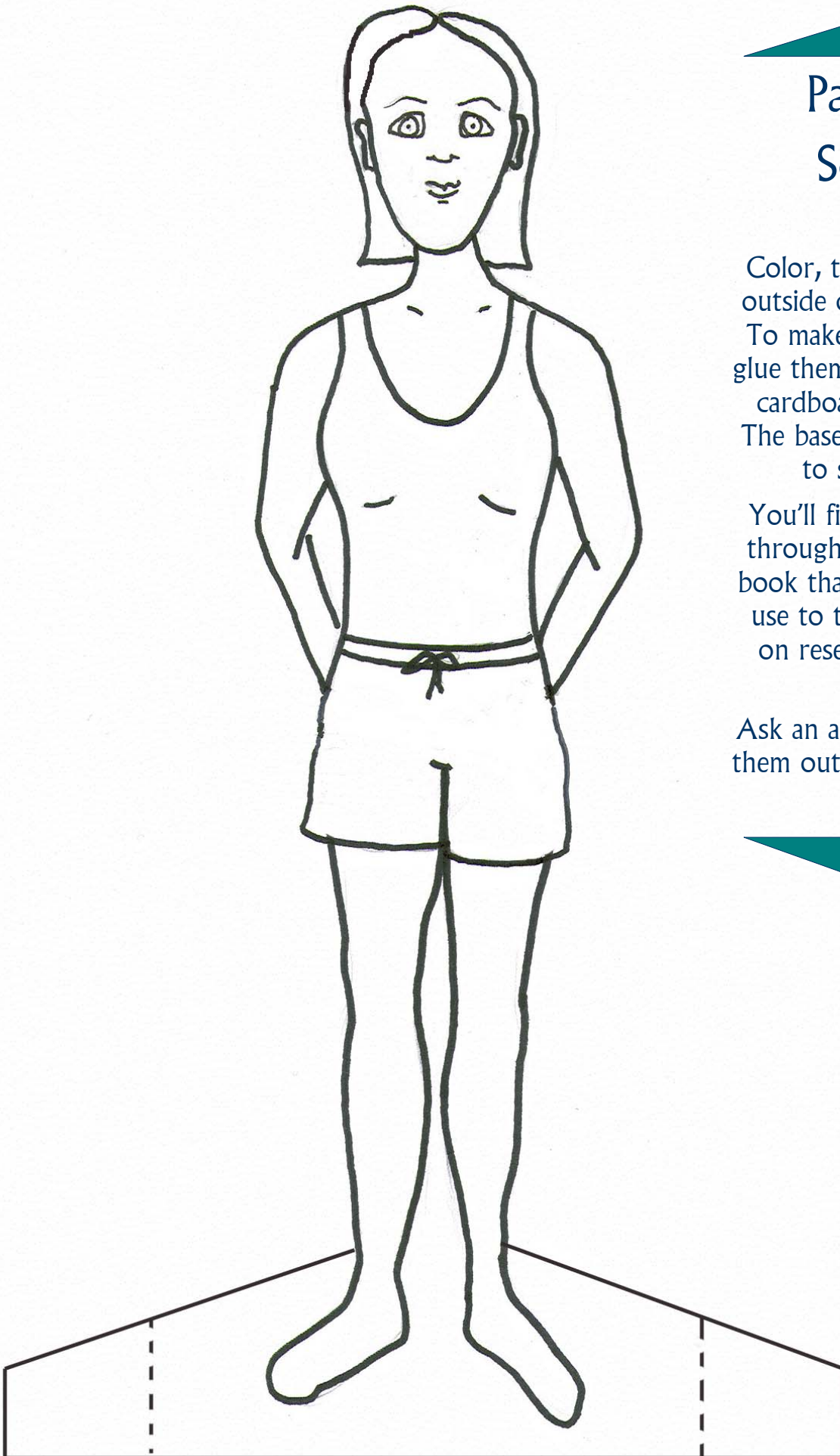


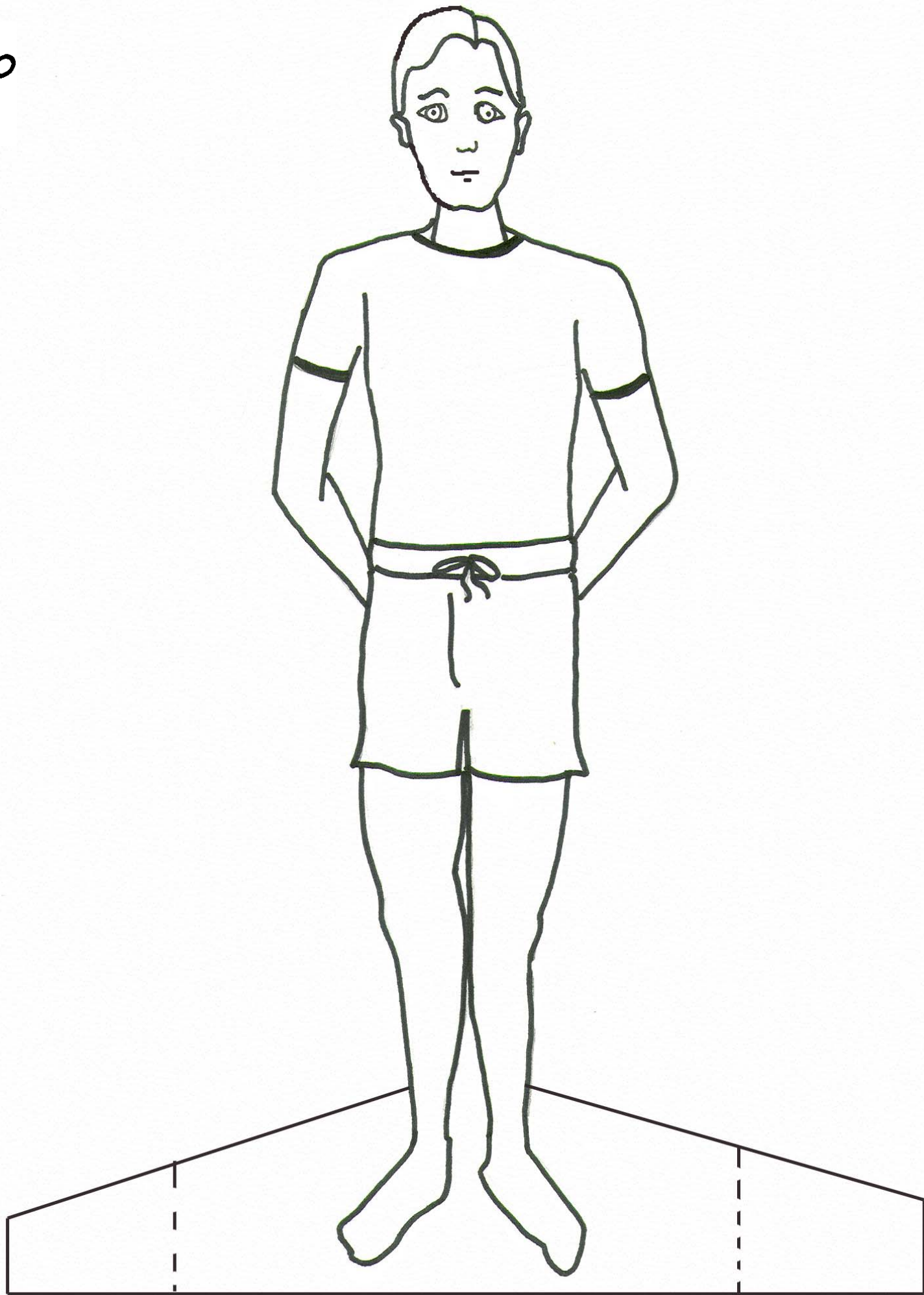
# Paper Doll Scientists

Color, then cut around the outside of these paper dolls. To make them more stable, glue them onto card stock or cardboard before cutting. The base can be folded back to stand them up.

You'll find different outfits throughout the rest of this book that you can color and use to take these scientists on research trips of your own.

Ask an adult to help you cut them out if it is too difficult.








# Crossword Puzzle

## Across

1. This animal lives in the estuary and can really pinch.
3. What we call something that is on the coast.
7. LUMCON has two of these, grass shrimp and fishes and crabs are often caught in them by school groups.
8. These animals use our marshes as a place to grow up and we use a trawl net to catch them.
11. This is a big storm that often causes lots of damage on the Louisiana coast.
14. A person that drives a boat is called this.
15. This is a huge body of water that is salty.
16. Fish use these parts of their bodies to get oxygen out of the water.
20. When there is too much water in an area.
21. Scientists do this to see how large or small something is.
22. People have arms and legs but fish have these to get where they want to go.
23. One of the things that we use to fish.
24. These plants are really big and cannot live in the salt marsh, chances are, you have them near your house.

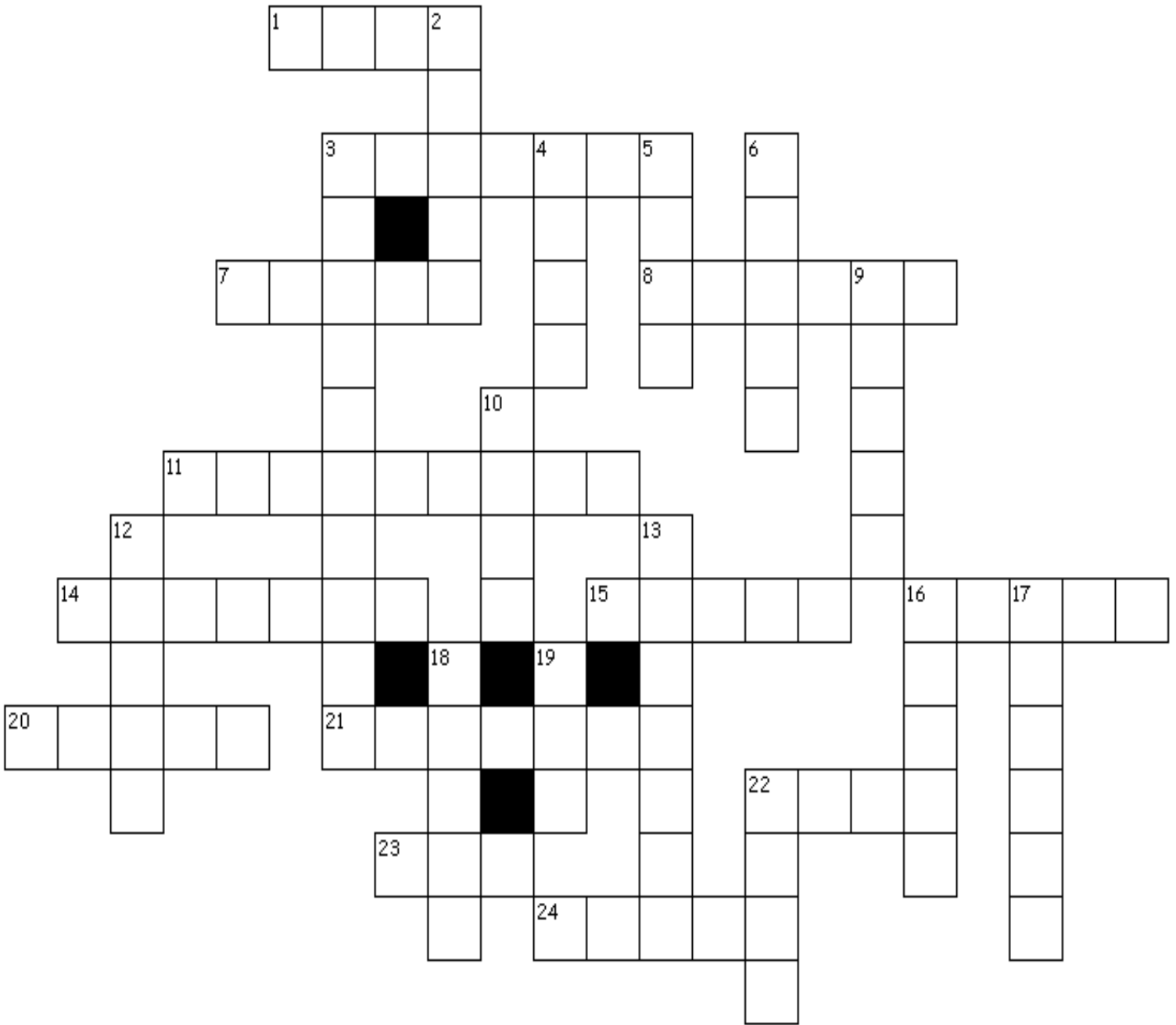
## Down

2. The things we use to move around on the water to fish or do research.
3. In the word LUMCON, the CON stands for this word (look at the logo on the front cover of this book if you need help).
4. This is the high and low water changes that happen every day along the Gulf Coast.
5. Land\_\_\_ is a big problem in southern Louisiana due to a mixture of natural and human-caused activities.
6. Animals that stop in the estuary when they fly north for the summer and south for the winter.
9. This type of salty wetland surrounds LUMCON.
10. Is what the water from the ocean has in it.
12. This is a body of water that flows towards the Gulf of Mexico through old channels of the Mississippi River.
13. A subject we learn about in school and what some of the people who work at LUMCON do for a living.
16. This type of plant can live in the salt marsh as well as in the fresh water marshes, you have a different kind in your yard.
17. People have built these along the rivers and bayous to try to keep out water when it floods.
18. This covers over 70% of the earth and can be salty or fresh.
19. Fiddler crabs and lots of other animals make holes in this wet dirt.
22. An animal that people like to catch that lives in the water of our estuary.



Answers:  
Across: 1. Crab, 3. Coastal, 7. Pond, 8. Shrimp, 11. Hurricanes, 14. Captain, 15. Ocean, 16. Gills, 20. Flood, 21. Measure, 22. Fins, 23. Net, 24. Trees  
Down: 2. Boats, 3. Consortium, 4. Tide, 5. Loss, 6. Birds, 9. Marsh, 10. Salt, 12. Bayou, 13. Science, 16. Grass, 17. Levees, 18. Water, 19. Mud, 22. Fish





# SCUBA

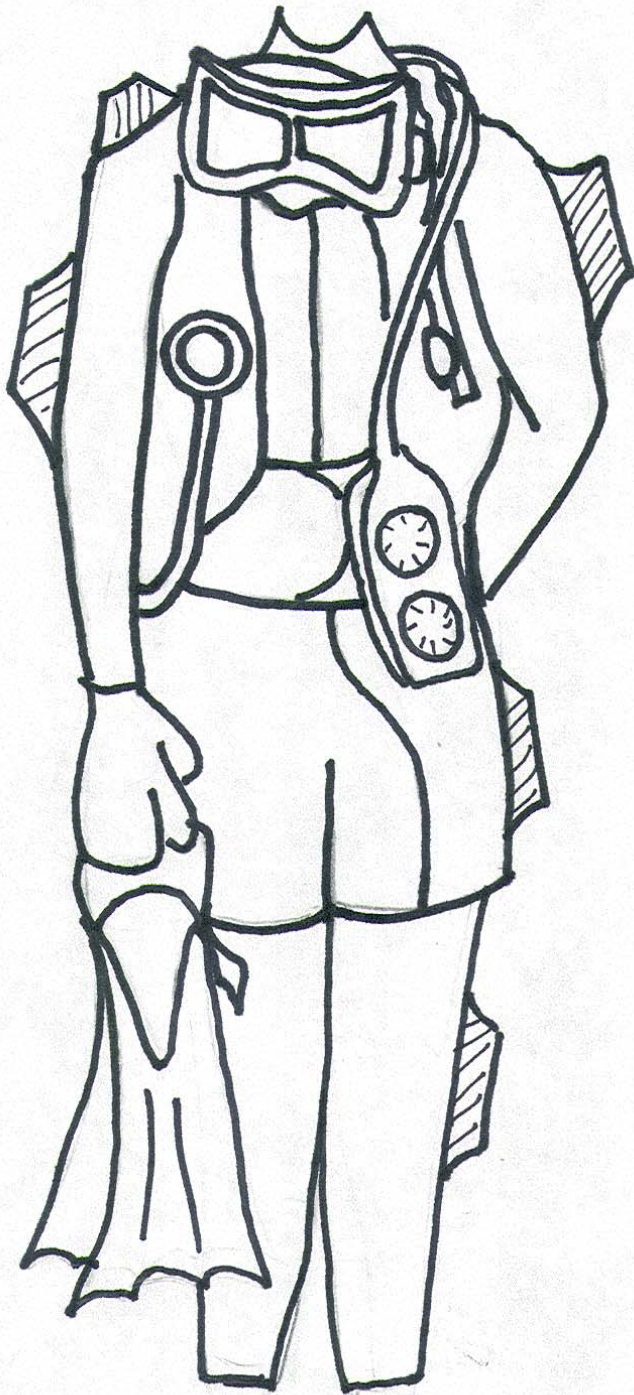
## Self Contained Underwater Breathing Apparatus

This gear allows scientists to take air underwater with them, since humans can't breathe water. By taking air with them, they can stay underwater for longer periods of time. With SCUBA gear people can really swim with the fishes.

Some LUMCON Scientists need to use SCUBA gear to do their research.



Dr. Nancy Rabalais and her team use SCUBA gear when they go to check some equipment she uses to collect water quality data in the Gulf of Mexico.

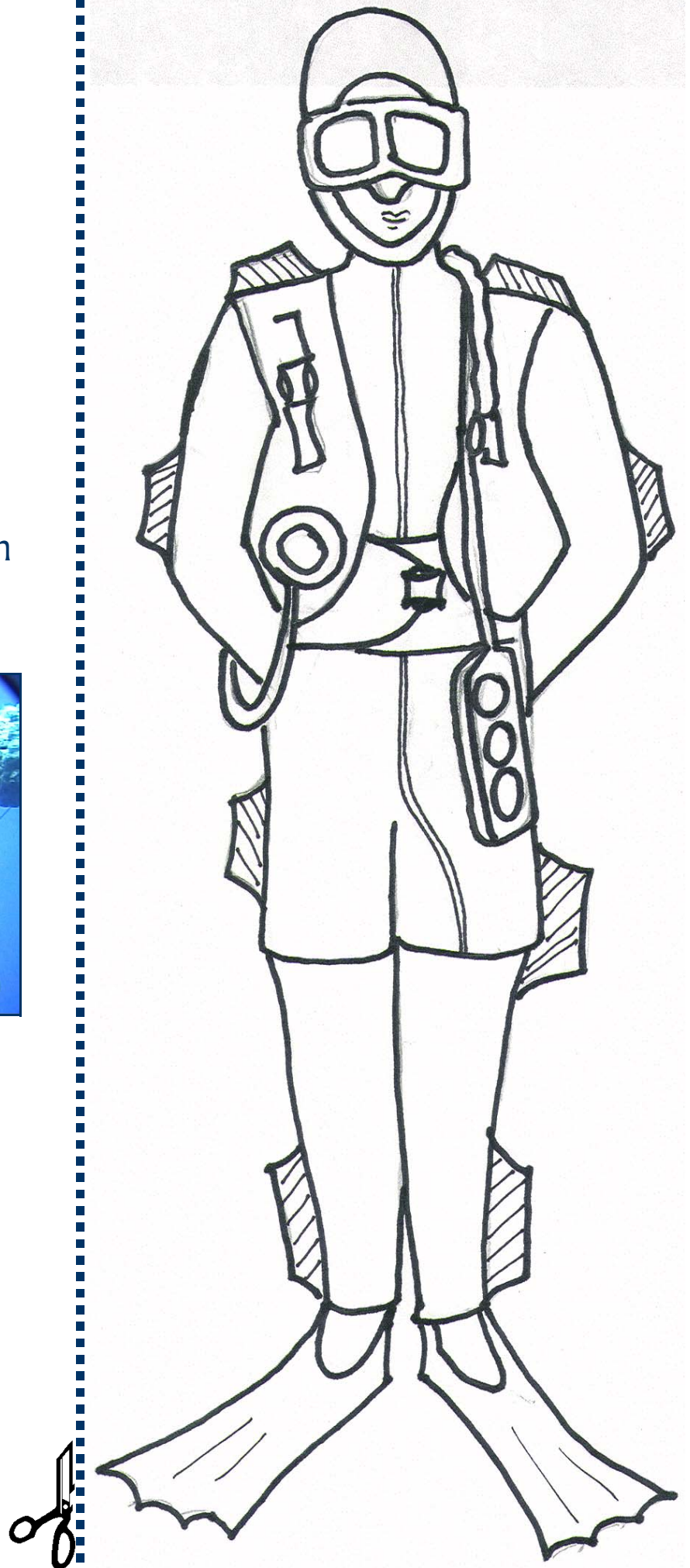


Color the outfit and cut around the outside. The tabs with the lines on them can be folded back to make the outfit stay on your scientist.





Dr. Paul Sammarco uses SCUBA gear to do his research on artificial reefs in the Gulf of Mexico.







# Word Find

Find the words or terms listed below in the puzzle. All the words will be up and down, side to side, or diagonal. Good Luck!

J B R P Q S F B S X S A H C L A M Z Q D T  
R V A C A D I A N A H X E A V F B C Y I R  
C A D Y Z B S N A K E P R E D A T O R N O  
W O D S O P H E I E L U M C O N B C B V U  
A K R F O U E T L W L I I D O T A E S A T  
T G E A P L S C U B A Y T I D E Y A Z S P  
E E P Q L C M I C R O S C O P E O N I I C  
R M E W A T E R D V N G R K G F U R O V R  
S A L I N I T Y R E B S A W R X B A G E A  
H H I T K B O A T S C R B A E E B I T S B  
E S C O T W A S W T C L G H D O S D D P U  
D C A W O Z S B P U O U A Y F B N Z O E A  
R S N E N S C M B A K E F S I A S H H C N  
W M A R S H I A U R R A L M S S P O O I O  
A K U I E R E O R Y I T O U H R T E C E X  
V F I S H R N U T R I A I D N I O S K S I  
E R E S D S C T E O E I W N H Y P O X I A  
N S P E I C E S T U A R Y E A R W U M E Y

Estuary  
Redfish  
Zooplankton  
Science  
Ocean  
Salinity  
RV Acadiana  
Hypoxia  
Bayou  
Classroom  
Anoxia  
SCUBA  
Pelican

Invasive Species  
Spartina  
Watershed  
Trout  
Snail  
LUMCON  
Hermit Crab  
Zoea  
Microscope  
Shell  
Water

Estuary  
Nutria  
Snake  
Mud  
Sand  
Coral  
Fishes  
Wave  
Boat  
Debris  
Tide

Shrimp  
Crab  
Species  
Predator  
Clam  
Fish  
Reef  
Tower  
Bayou  
Marsh  
Net

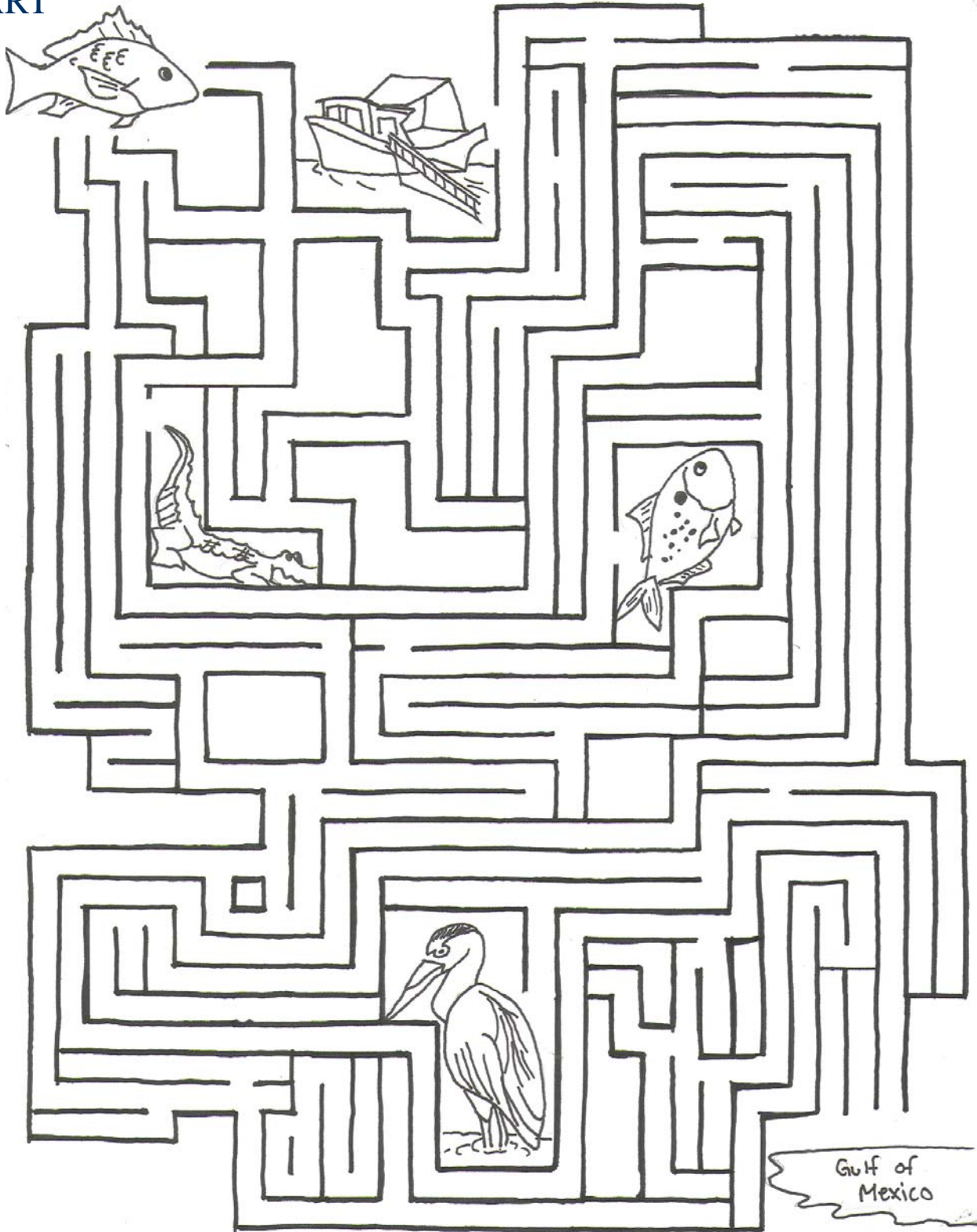


# Salt Marsh Maze

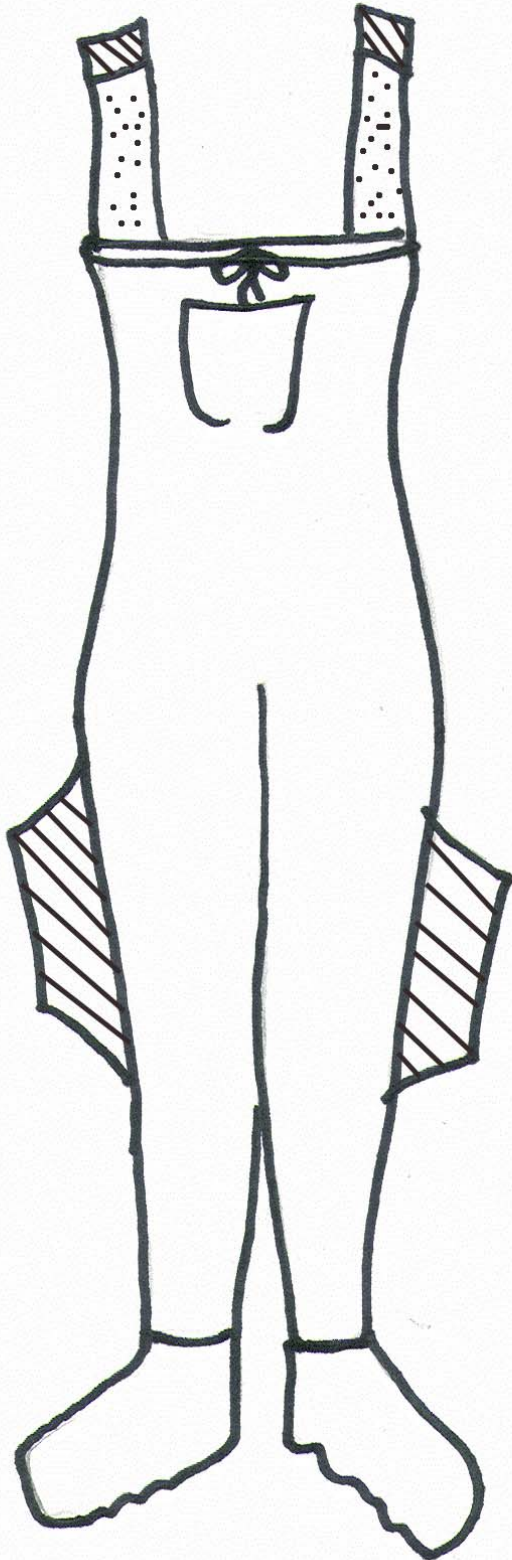
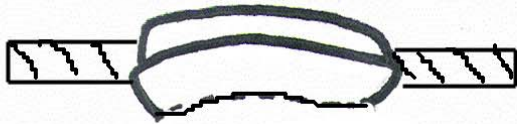
Salt Marshes are great places for baby animals to grow up. There is protection, shelter, and lots of food to eat. Some animals leave the Salt Marsh and go to live in deeper waters. Help this juvenile snapper find its way past all the predators and out to the Gulf of Mexico.

Good Luck!

START



FINISH



Working outside is a big part of being a scientist at LUMCON.

When scientists go to work outside they call it “field work”. It is always important for people to dress for the conditions they will be working in. Sometimes the LUMCON scientist must go and do their field work in areas where it is wet and muddy, and in the winter cold. This requires them to bring extra gear to help them stay warm and dry.

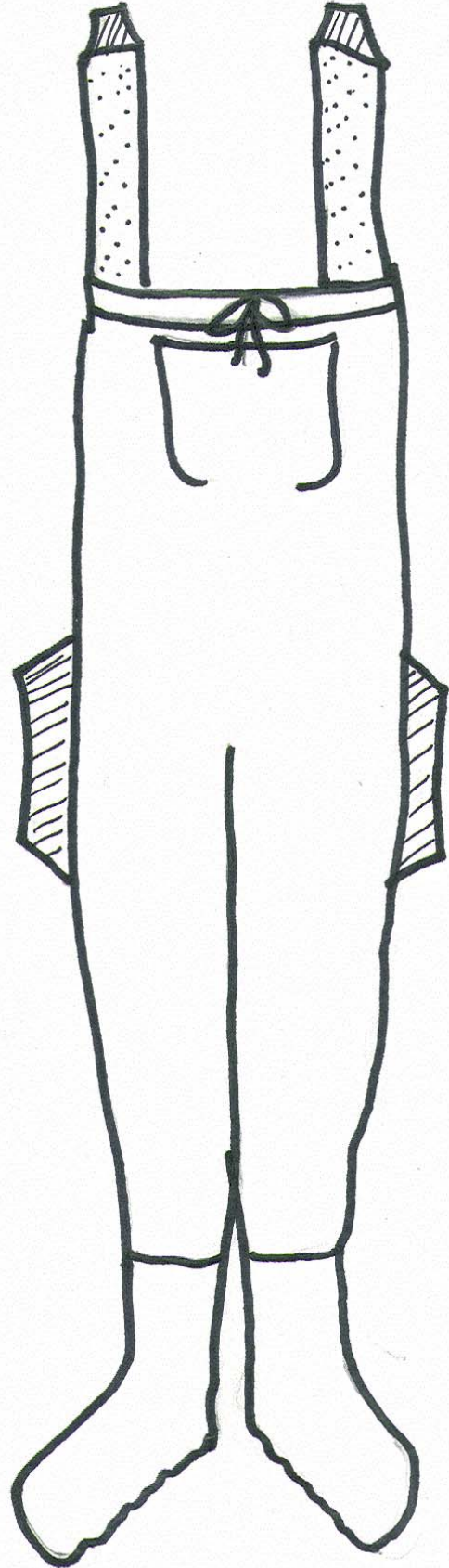
In some cases, waders are the extra gear scientists chose to bring. Waders are boots that extend to the hip or chest to keep the scientist wearing them dry and warm while they are in the water.

Use these wader outfits to dress your paper scientists for some field work. Be careful, these waders will not keep your paper scientists dry.



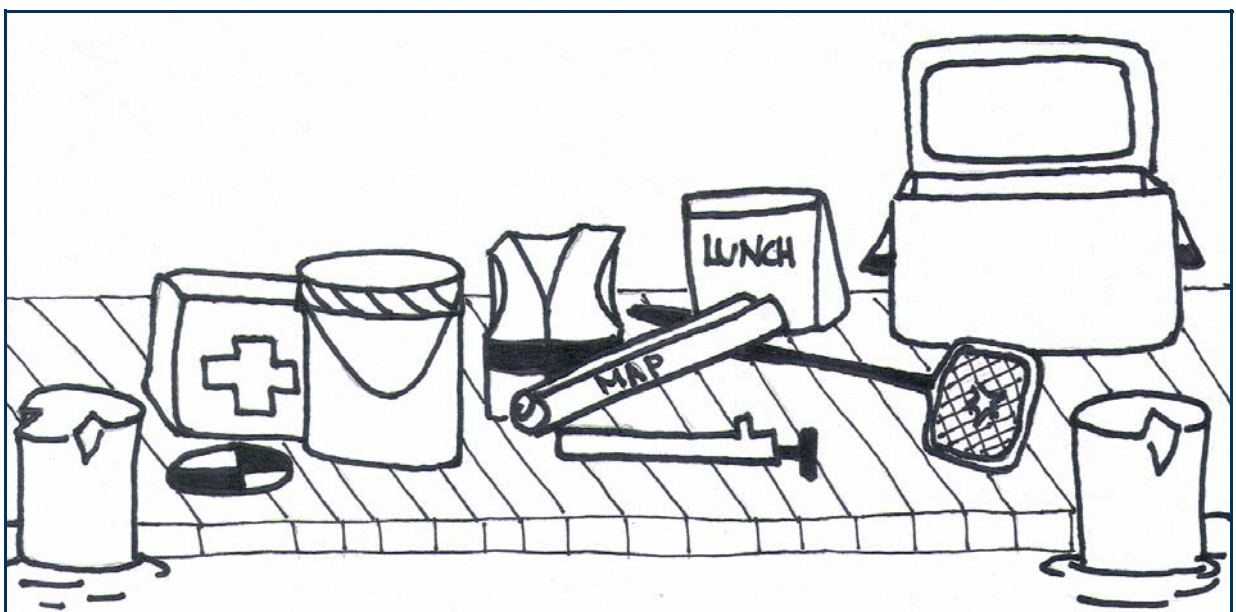
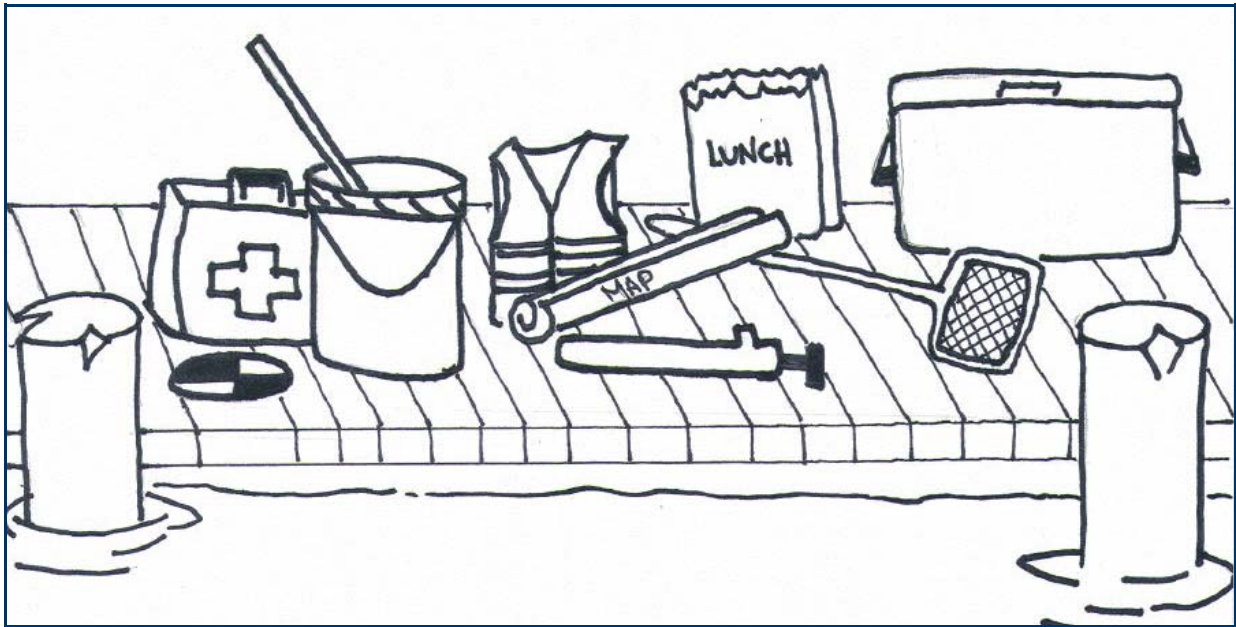


Dr. Finelli conducts research along the Louisiana coast in the summer and winter. In the winter he needs waders to get to his field sites.



# What's the Difference

Some of the LUMCON Scientists are getting ready to collect some data from the field. All the gear that they need is out on the dock. Can you spot the differences between these two pictures? There are nine (9) differences in all.



Answers: The strips on the lifejacket, the stick in the bucket, the lunch bag is closed, the net handle, the net has a hole in it, the water level is higher, the ice chest is open, the first aid kit has no handle, the disc is turned 90°.

# Animal Scramble


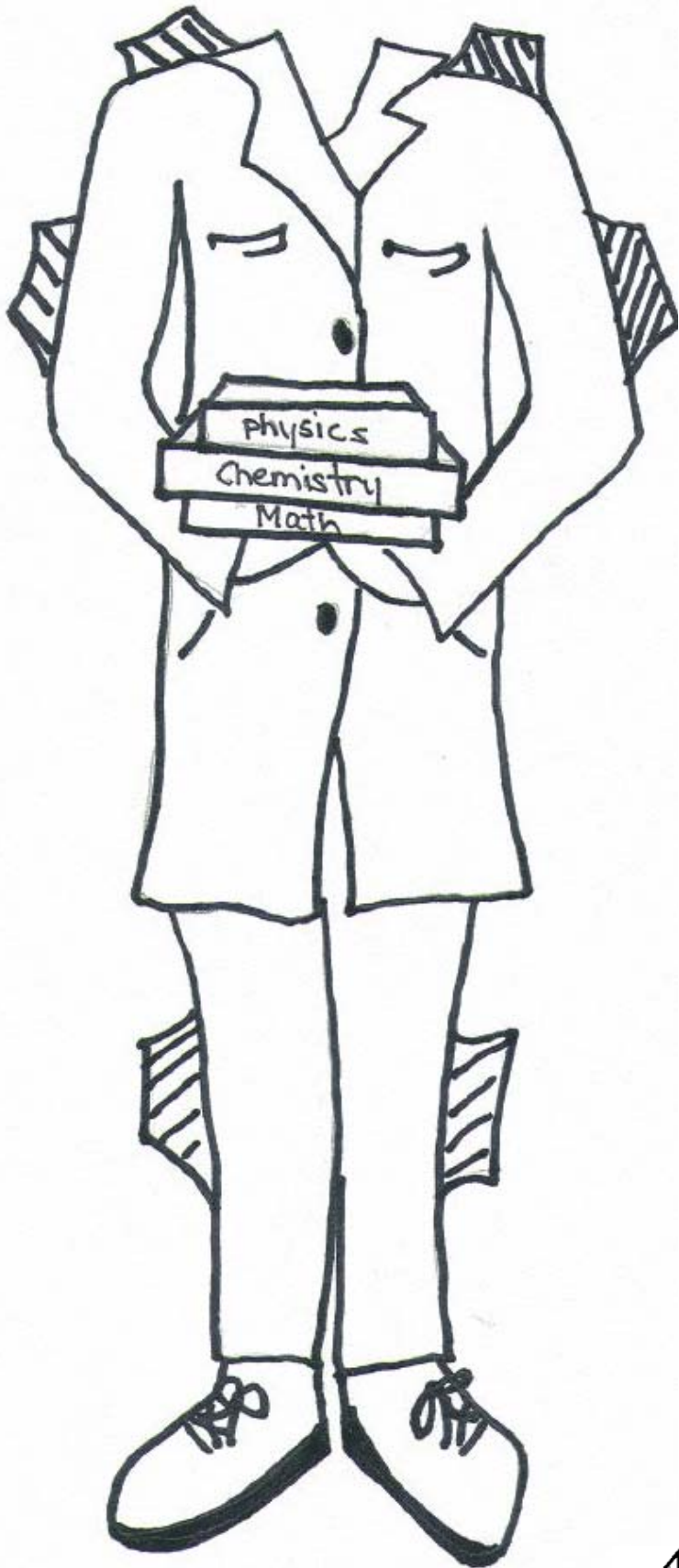
RIPHSM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFHI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
TBRABI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
RABC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
ROTSYE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
TAGLOILAR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LAIN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
GAULELS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
PICNEAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
ROULEDNF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BYRTELFUT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Unscramble each of the clue words.  
 Take the letters that appear in  boxes and  
 unscramble them for the final message.





Dr. Powell uses large water samplers called “GO-Flos” to collect uncontaminated samples in the ocean. He analyzes the samples in his laboratory for nutrients and trace metals.



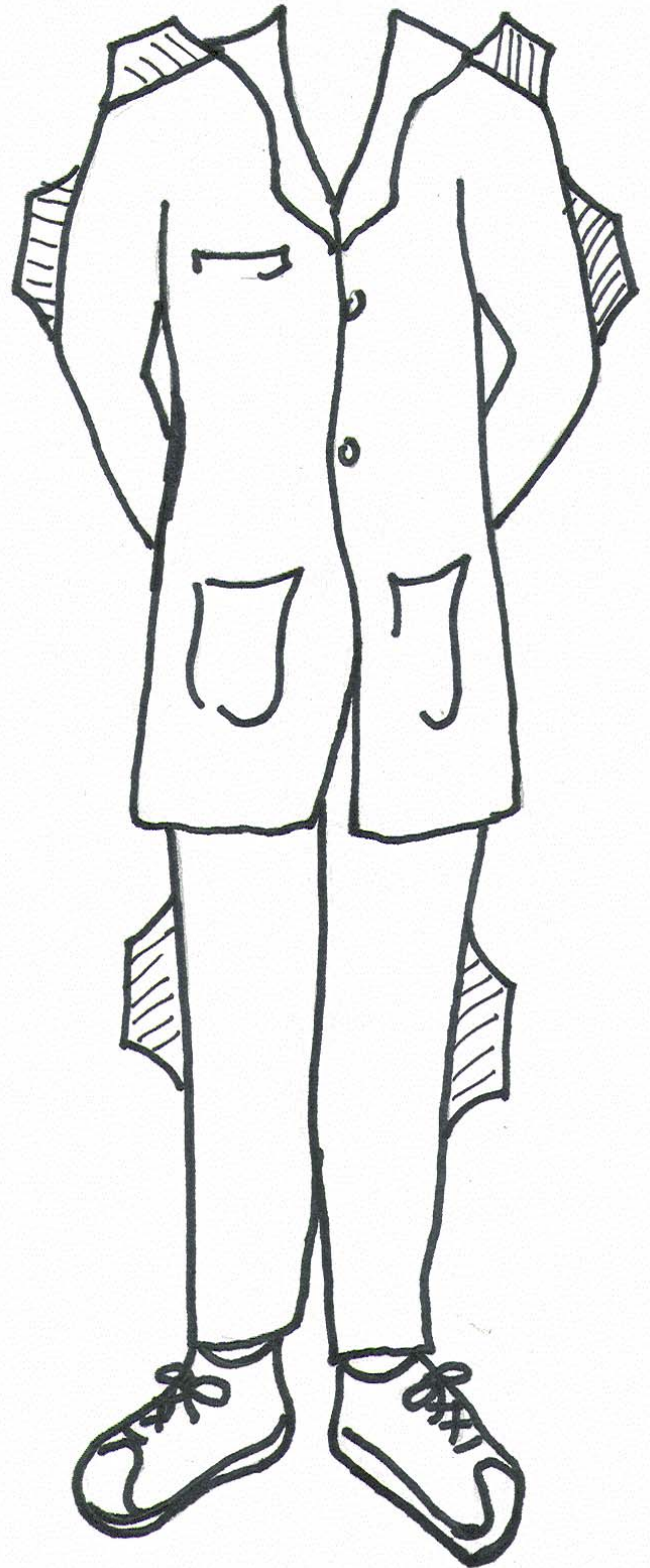
Being a LUMCON scientist is not all about getting to work outside. Some of the most important work they do takes place in their laboratories. Laboratories are where they can look at their samples through a microscope or analyze them using other instruments.

In their laboratories scientists have full control over what happens during an experiment. This can be very important when unexpected events (like flooding, or very high or low temperatures) could prevent them from getting the data they need to finish an experiment.

Just like being outside, a scientist must be safe inside the laboratory.

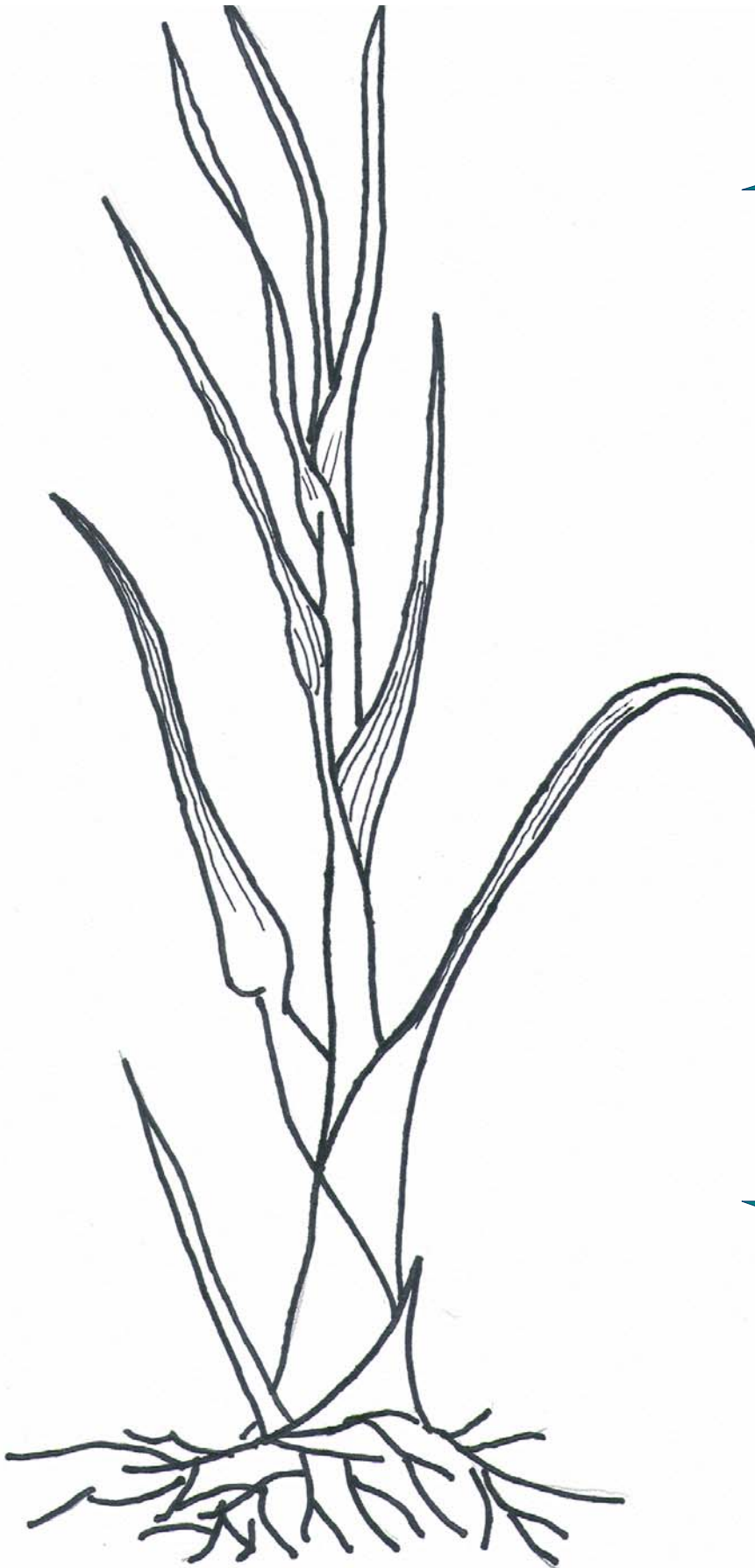
Sometimes this means they must protect their eyes with goggles or safety glasses, and their clothes with lab coats.

Use these lab coat outfits to protect your paper scientist while they do work in the lab.



# Salt Marsh Cordgrass

*Spartina alterniflora*

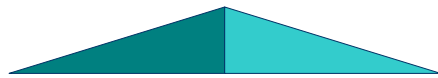
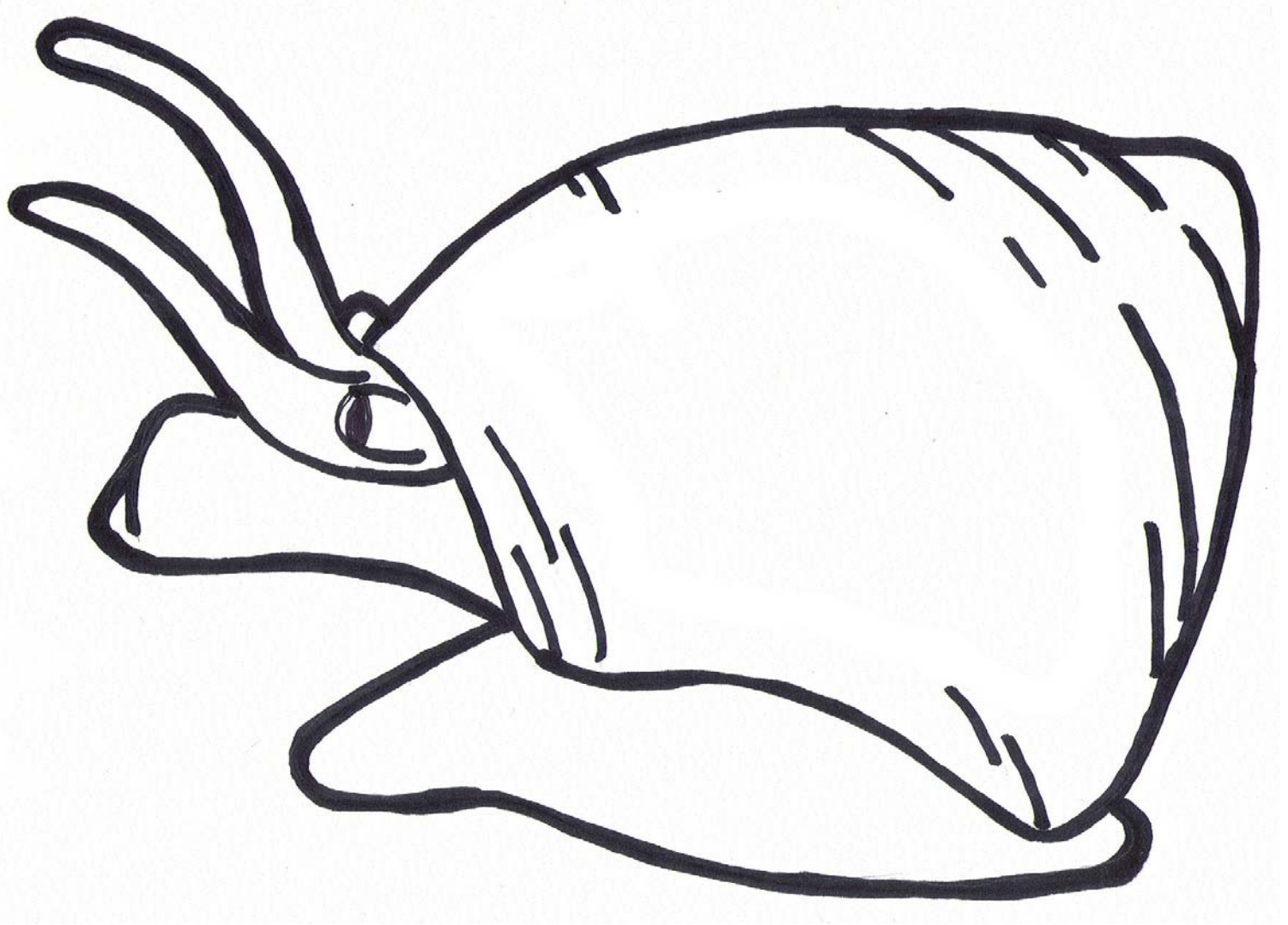


This kind of grass is abundant in the salt marshes that surround LUMCON. Cordgrass relies on the conditions found in salt marshes to survive. It requires full sunlight and well drained soils. Too much water can drown this plant. It is a hardy plant and is one of the few that can live in areas of high salt content (or salinity). These plants produce a mat of roots that trap the soil in the marsh. This is very important to having a healthy marsh. Without these plants all the soil would be washed away.



# Salt Marsh Periwinkle

*Littoraria irrorata*



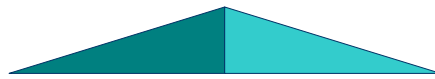
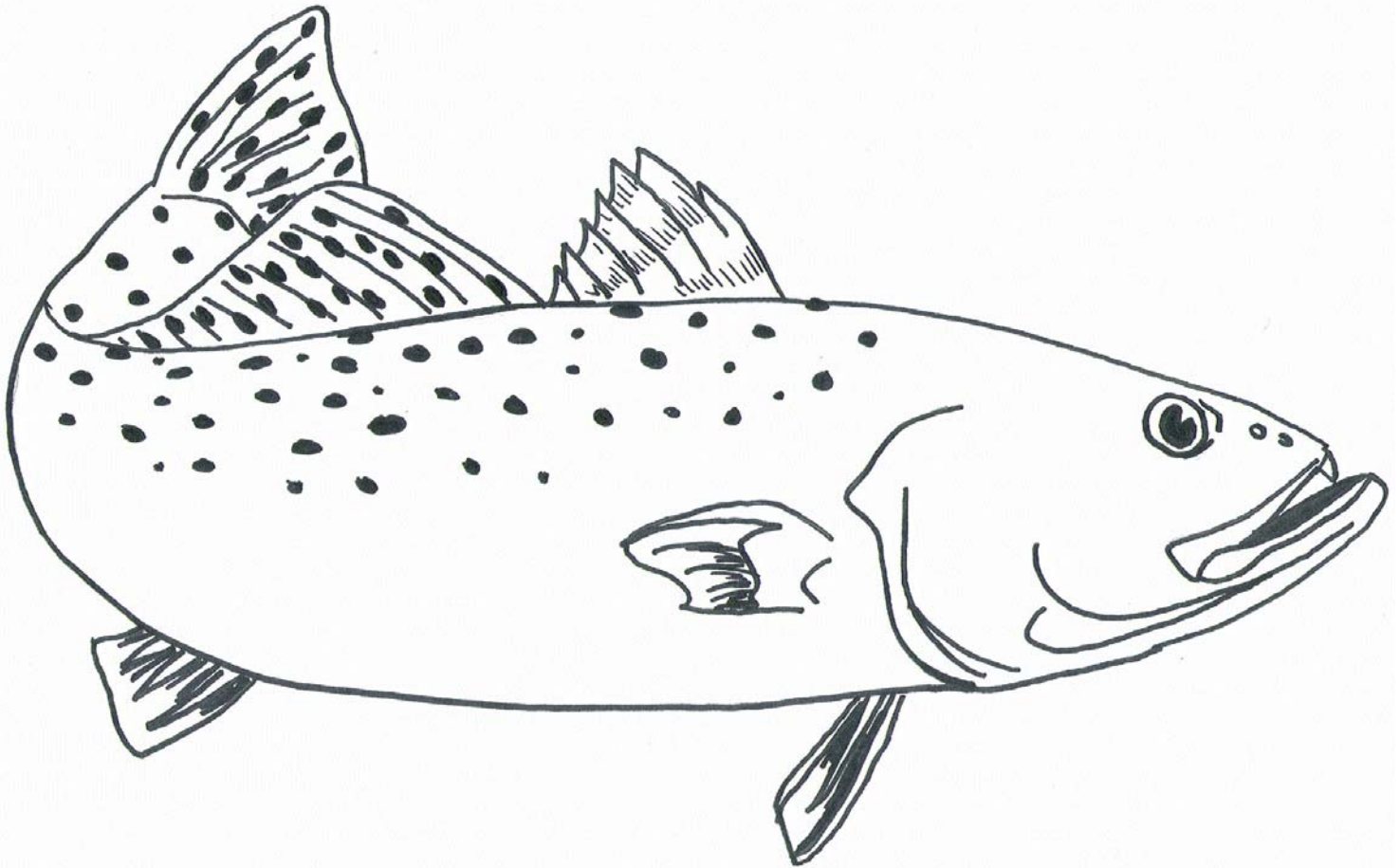
The salt marsh periwinkle is a snail that lives in the salt marsh on the leaves of the salt marsh cordgrass. Periwinkles cannot survive away from the salt marsh.

These snails depend on the presence of the cordgrass and spend their time grazing on fungus and the decaying leaves. They are often seen moving up and down the stalks of the cordgrass to avoid the rising water levels so they won't be eaten by predators that live there, like blue crabs and turtles.



# Speckled Trout

*Cynoscion nebulosus*



This very popular game fish is also known as spotted sea trout or specks. They are easy to identify by their spots, which are most abundant on their backs. They also have very dangerous large teeth located on the front of their upper jaw., that they use to catch their food.

This fish depends on the rich environment of the coastal salt marshes to grow up. Eggs are fertilized offshore in the spring, they are then carried by tidal currents into the salt marshes. There, a young fish can find enough to eat so that by summer they can be almost as big as an adult. As adults they will swim out further from shore in search of larger fishes and shellfish to eat. Without salt marshes, the number of these fish could certainly decline.



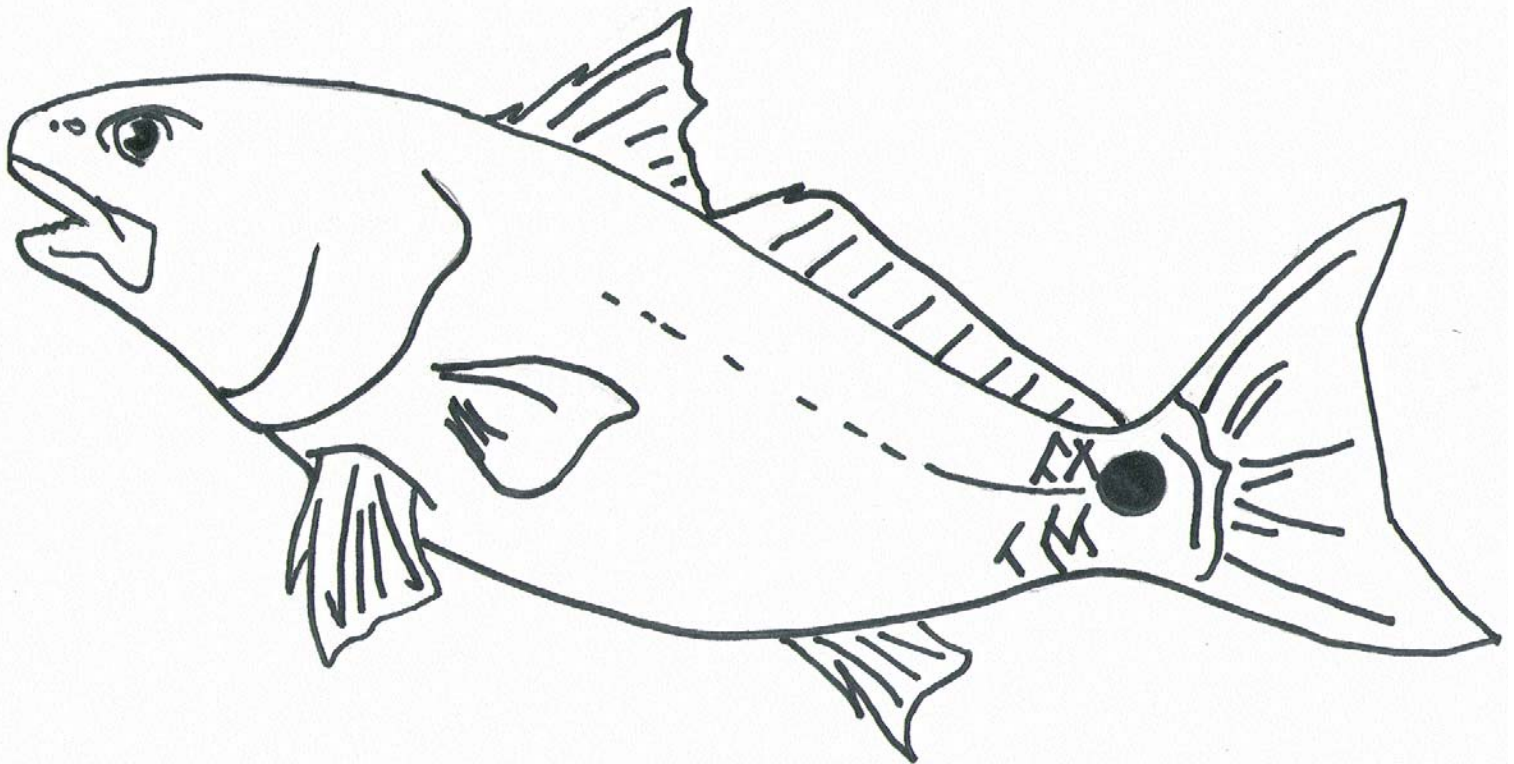
# Red Drum

*Sciaenops ocellatus*



The red drum is abundant in the western Atlantic Ocean from Massachusetts into the Gulf of Mexico. These fish like coastal areas, estuaries and surf zones. Although commonly found in salt water they can tolerate fresh water and have been found miles upstream.


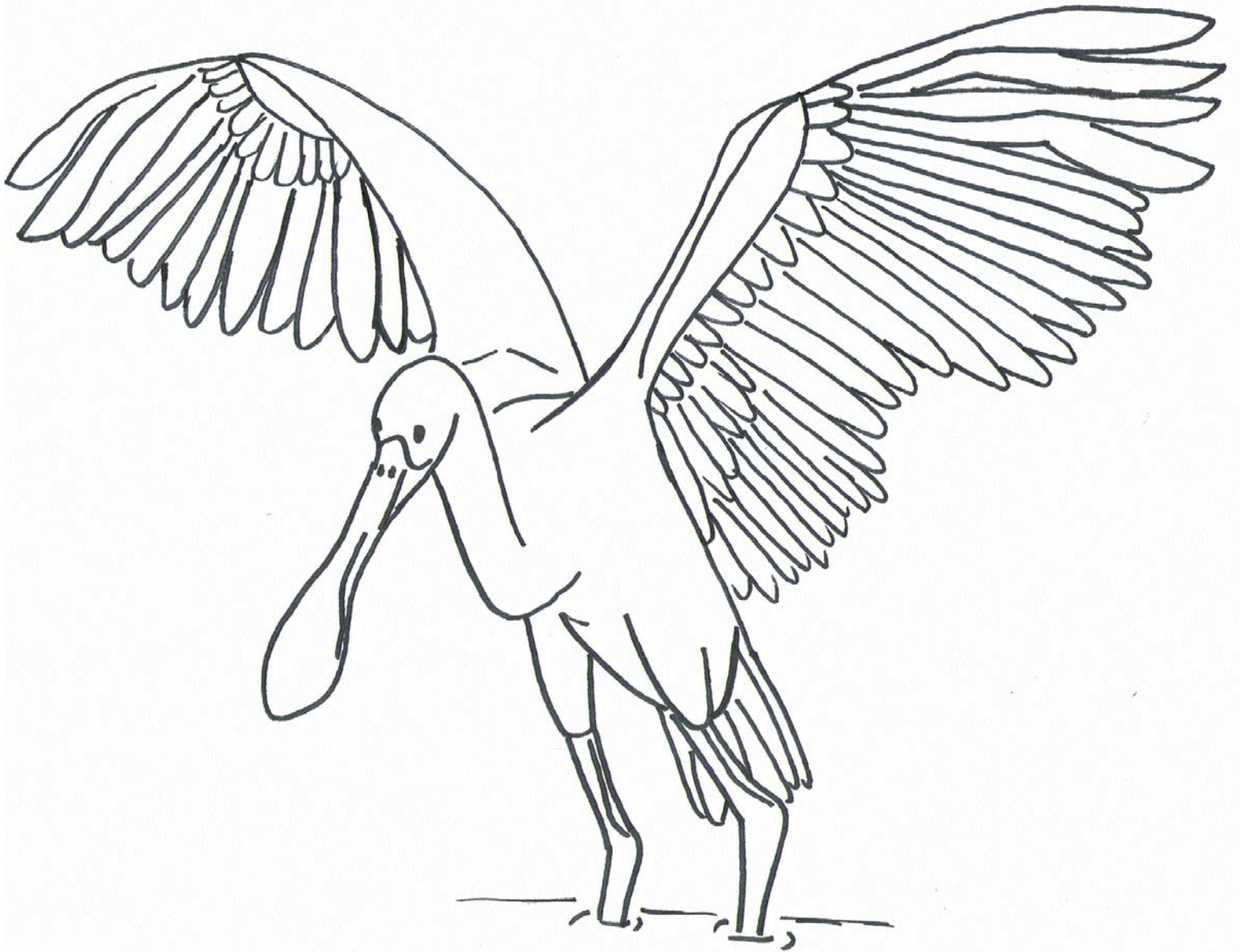
Red drum feed mostly on crabs, shrimp, mollusks and smaller fishes. This species is a prized game fish.






# Roseate Spoonbill

*Ajaia ajaja*



The roseate spoonbill is a beautiful bird often sighted at LUMCON that is common to the shallow waters of Louisiana's swamps, rivers, ponds, and marshes. These areas are abundant with the small fishes, plant material, insects, and small crustaceans that make up their diet.

These bright pink birds are often confused with flamingos by visitors. Unlike the flamingo, spoonbills have a distinctive spoon-shaped bill that they move back and forth through the water to feed.



# Diamondback Terrapin

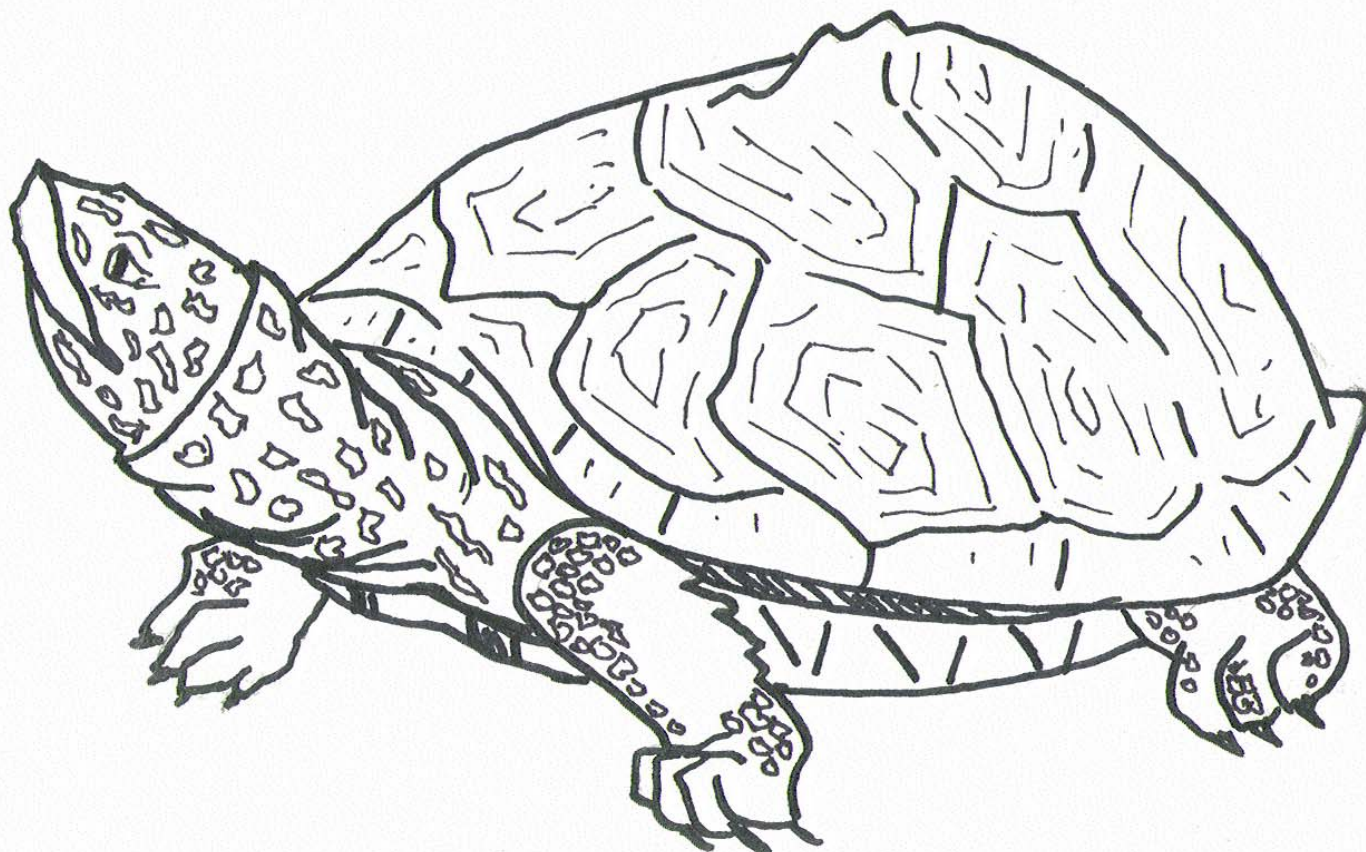
*Malaclemys terrapin*



These turtles are well known for their colorful shells and gray skin that has dark black spots. This is the only species of terrapin in the United States that never moves out of the brackish water environment of salt marshes.

The salt marsh periwinkle is a common prey species, but the fiddler crab is also a favorite. Besides the periwinkle and fiddler crab these turtle also eat fish and some insects. The Diamondback Terrapins spend most of their time in the water, and come out only to lay eggs and warm up on a sunny day.

In the late 1800s and early 1900s these turtles became an important ingredient in a very popular soup served at finer restaurants. As a result, the species was hunted until there were few left. Since then hunting this turtle has been outlawed, and their numbers have risen a little. Now there are other problems this turtle faces. Loss of habitat, highway deaths, pollution in the estuaries, and drowning in crab traps are just a few of those problems.



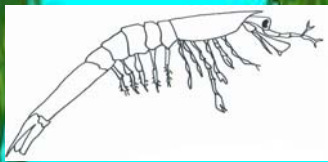


# Life Cycle of Shrimp

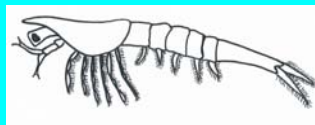
In one year a shrimp will complete this cycle. An adult shrimp lays eggs offshore in the spring or summer. The early stages are small zooplankton. They move into the estuary as a postlarva where they continue to grow into a juvenile. These juveniles start to move offshore into the ocean where they will become adults.

Images not to scale.

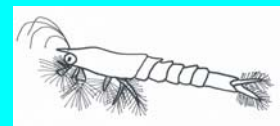
## Estuary



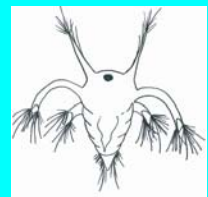
Postlarva



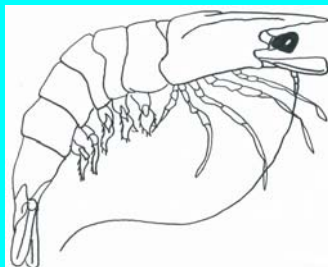
Protozoa



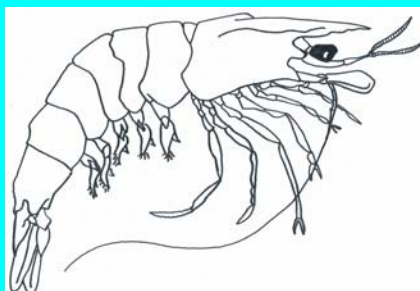
Mysis



Nauplius



Juvenile

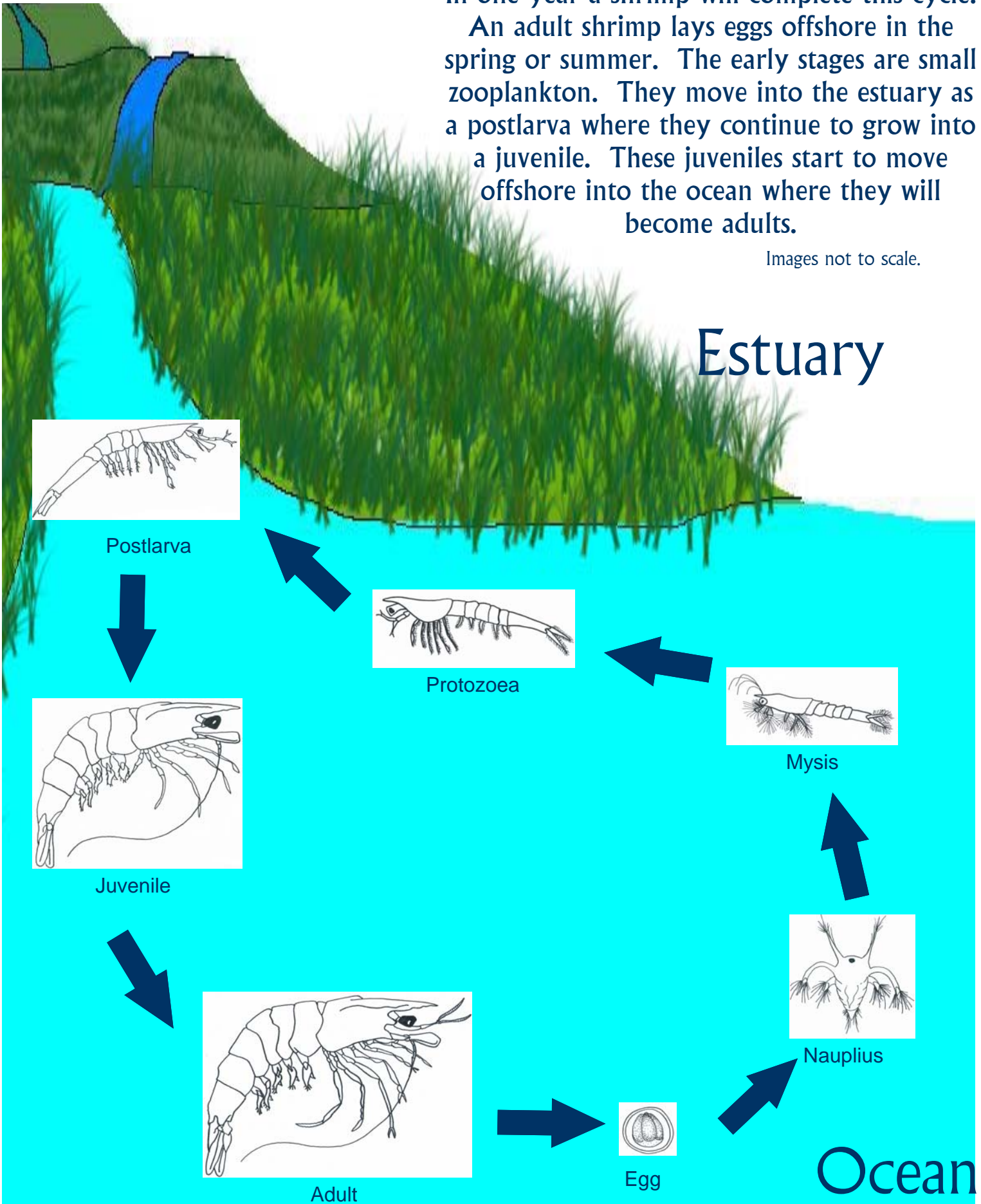


Adult



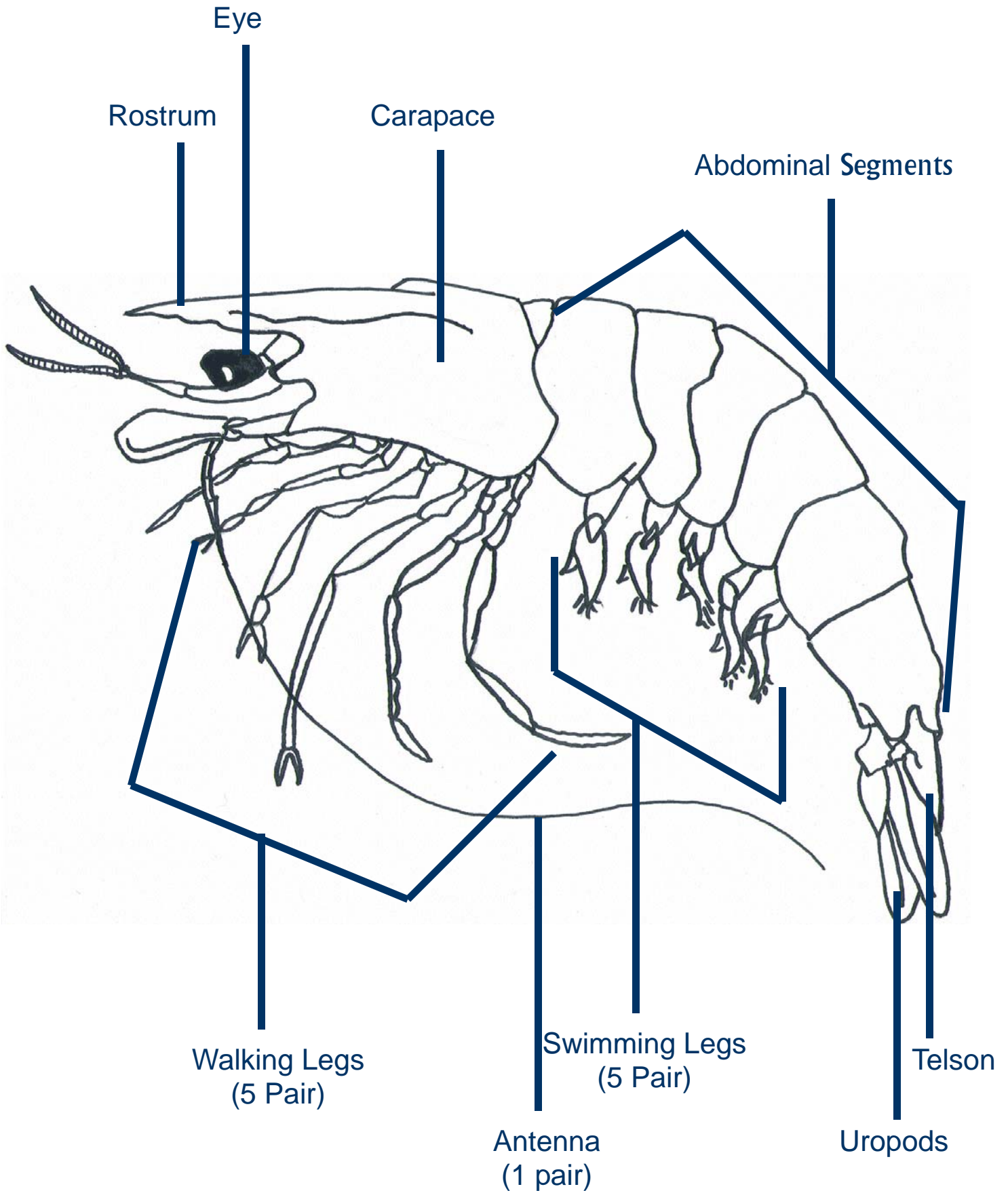
Egg

Ocean

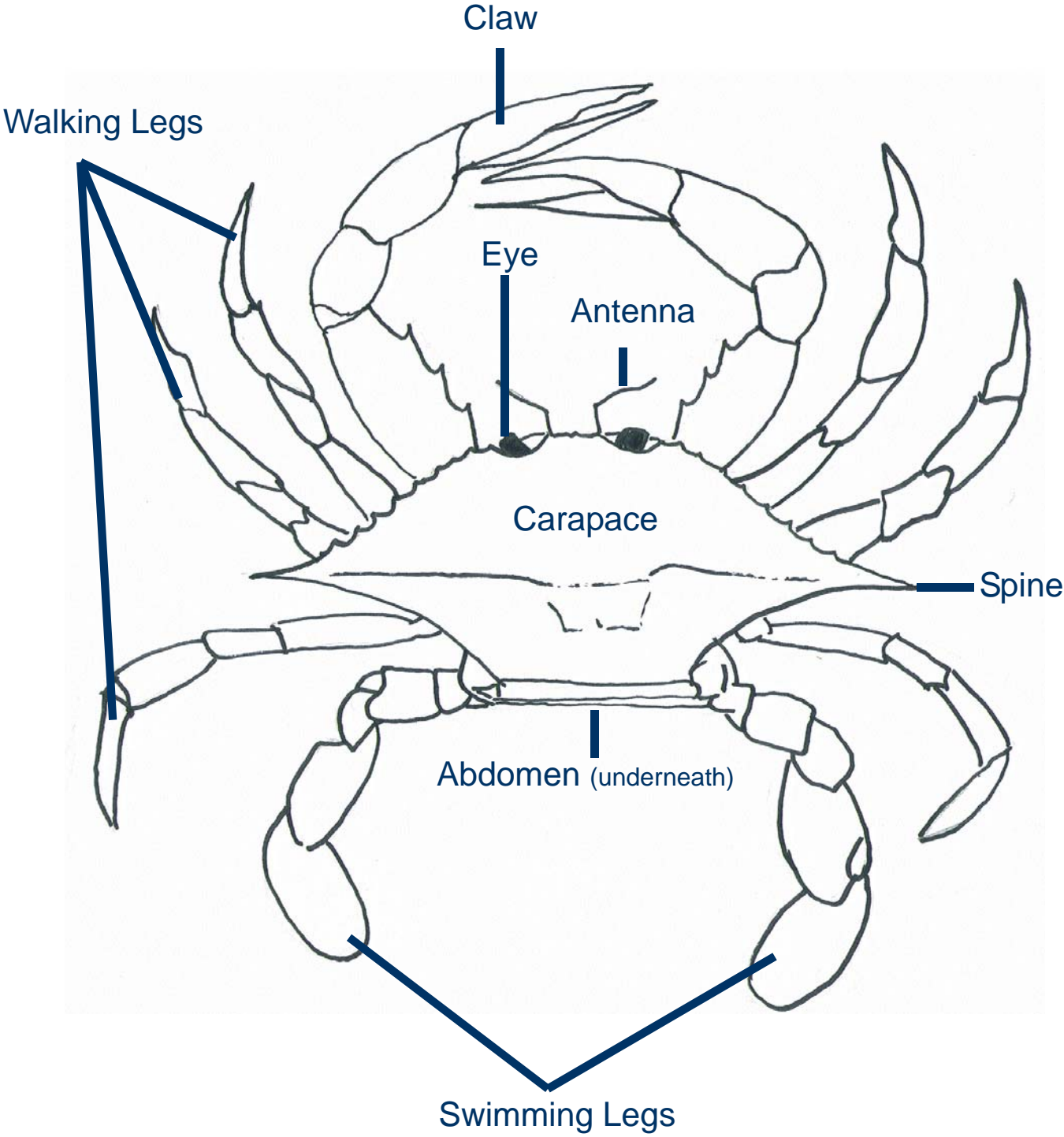




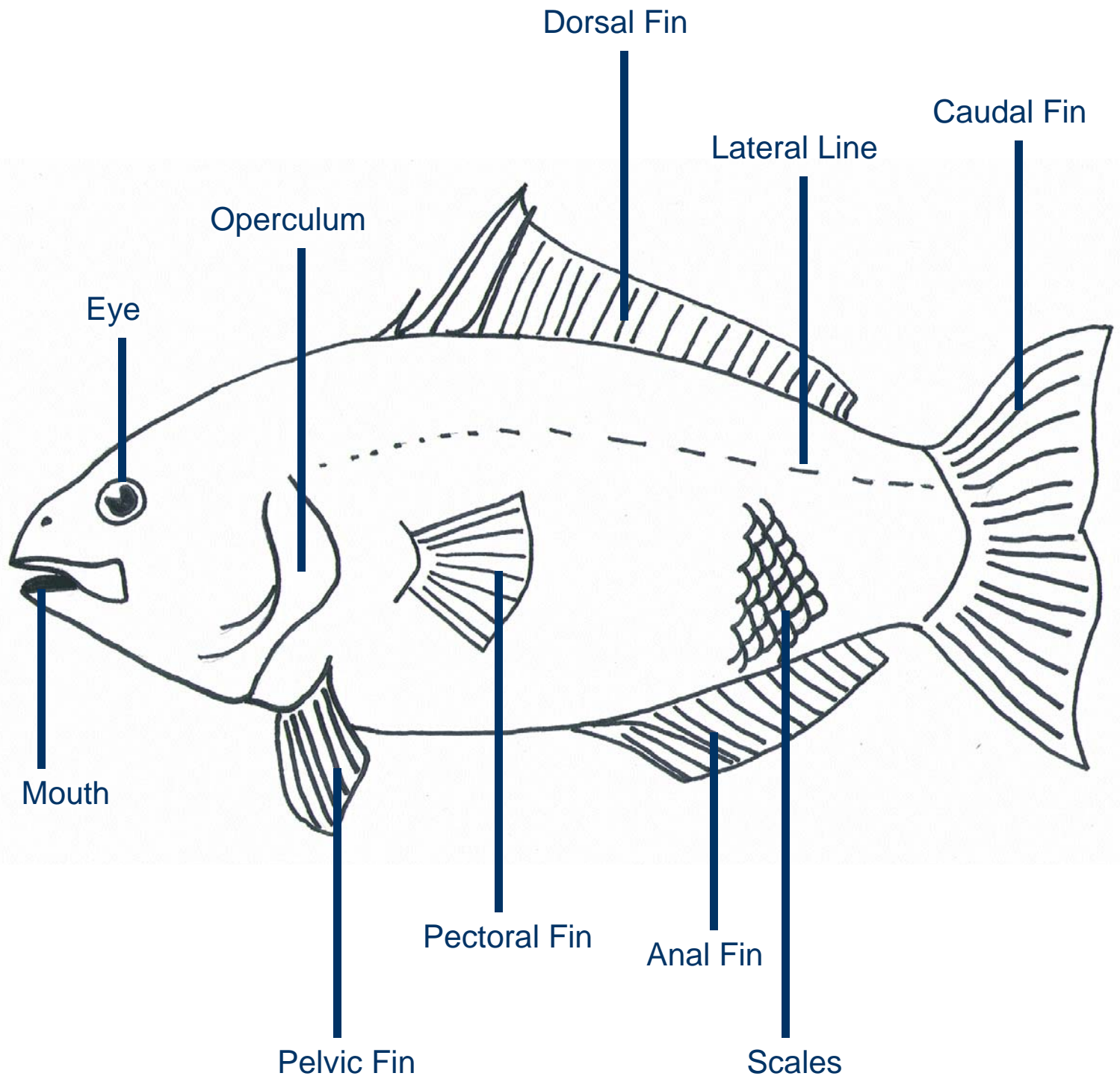
# External Anatomy of Shrimp



# External Anatomy of a Crab



# External Anatomy of a Fish





# Louisiana Universities Marine Consortium

8124 Hwy 56  
Chauvin, LA 70344

(985) 851-2800 ext: 0

[www.lumcon.edu](http://www.lumcon.edu)

