

Claude & Clawdette's Estuary Adventure

The Barataria-Terrebonne National Estuary Program's
Children's Activity Booklet



Claude & Clawdette's Estuary Adventure

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In Memory of
Michael W. St. Pierre

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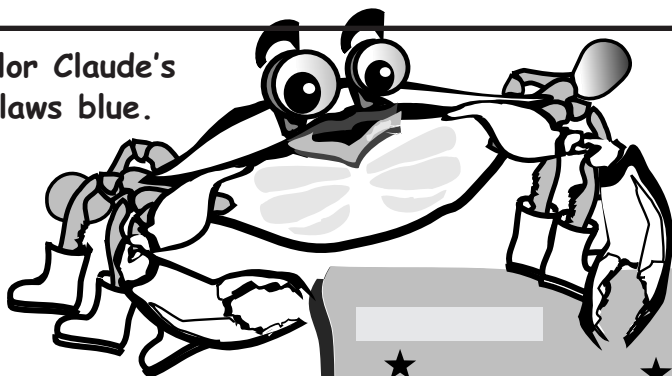
This public document was published at a total cost of \$ _____. XXXX copies of this published in this first printing at a cost of \$ _____. The total cost of all printings of this document, including reprints is \$ _____. This document was published by the Barataria-Terrebonne National Estuary Program, Nicholls State University Campus, P.O. Box 2663, Thibodaux, LA 70310, to provide the public with environmental information under the authority of LA. R.S. 30:2011. This material was printed in accordance with standards for printing by state agencies established pursuant to LA. R.S. 43:31.

Welcome to Louisiana, Cher!!!

We are Claude and Clawdette. Our jobs are to represent the Barataria-Terrebonne National Estuary and educate people about this dynamic ecosystem and area.

"I'm Claude. I'm a male crab with blue claws, and I've lived in the estuary for many years. Let me tell you what an estuary is. An estuary is a coastal area where saltwater from the ocean mixes with fresh water from rivers and bayous."

Color Claude's claws blue.



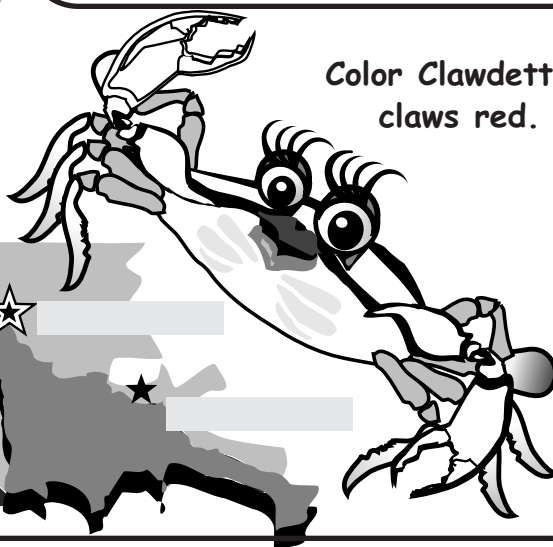
"The region of Louisiana that makes up the Barataria-Terrebonne National Estuary is shown shaded on the lower right."



As you can see, most of southeast Louisiana makes up the Barataria-Terrebonne National Estuary."

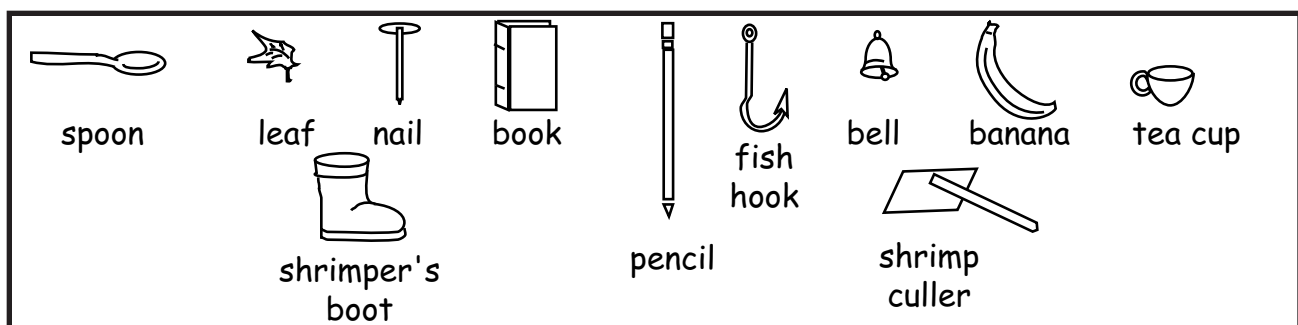
"Look down! I'm Clawdette. I'm a female crab with red claws. Claude is my best friend, and we grew up together in this estuary. So, now that you know what an estuary is, I hope you're curious about what types of things live in this estuary. This wetland habitat is an area that is home to many different animals such as alligators, birds, nutria, frogs, turtles, and fish. But these are only a few of the animals that live in the estuary. You will explore many more things about the estuary in our activity book."

Color Clawdette's claws red.



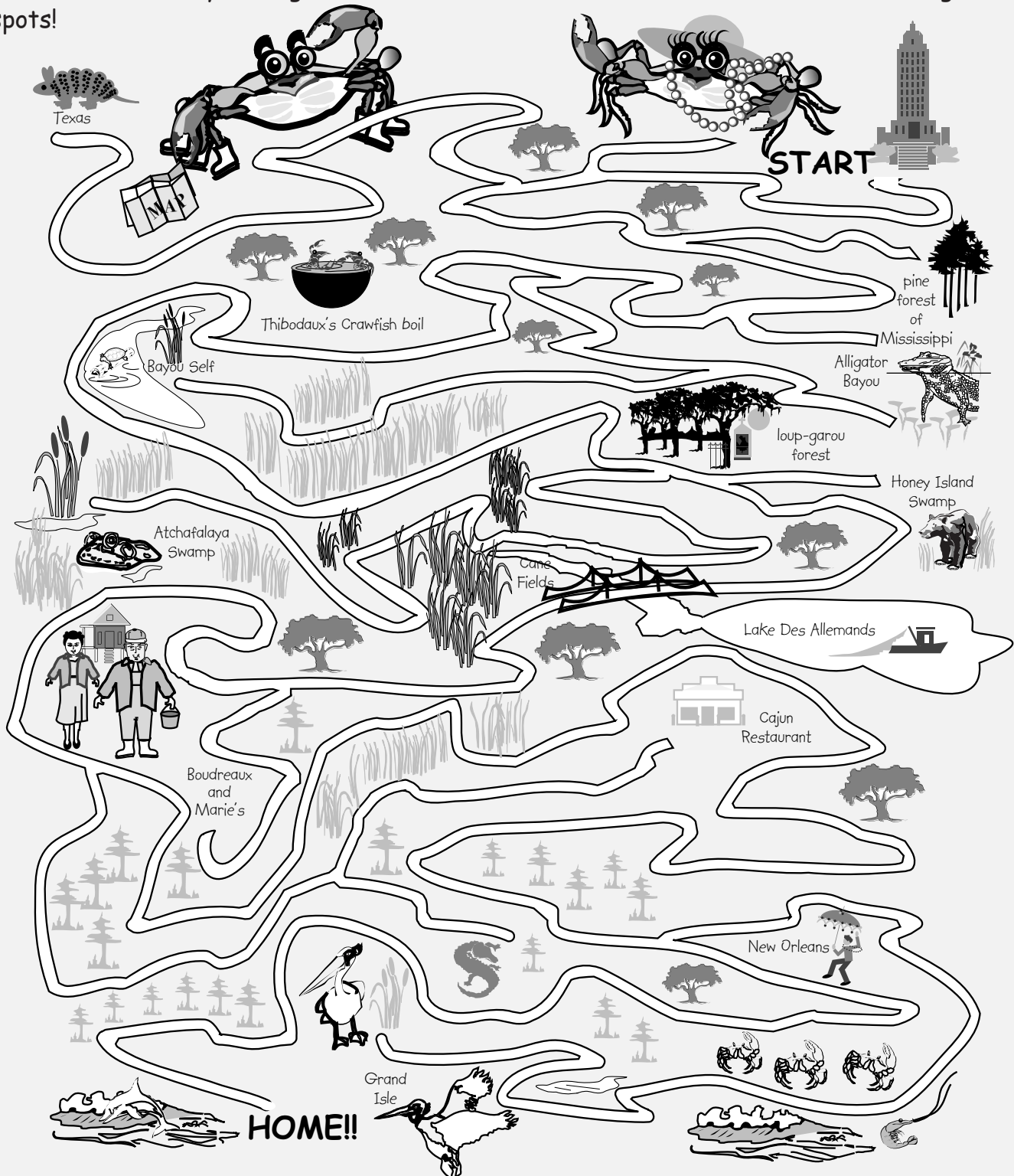
That's right! The estuary is very important to Louisiana. It protects the coastline from damage in hurricanes! It is home to many species of animals and plants. It provides people with resources such as oil, gas, fisheries, and serves as an inlet for the navigation industry. Our activity book will teach you a little about the Barataria-Terrebonne National Estuary and the animals and plants and people that live here! **Label the major cities the people of Louisiana live in. We hope that you enjoy the adventures we have created for you in our book! (Cities: Baton Rouge, New Orleans, Shreveport, Lake Charles, Lafayette, Monroe, Alexandria)**

Can You Find the Hidden Pictures?



Claude and Clawdette need your help!

Claude and Clawdette need your help to get home!! They went to visit Baton Rouge, but forgot how to get back to their home in the Barataria-Terrebonne National Estuary. Help them find their way through the maze to return to their home! Watch for the danger spots!



Claude and Clawdette's Word Find

Claude and Clawdette have hidden words that describe our estuary in the table below. Check out the estuary word bank for hints to find the words. Words on the puzzle read forward, backward, up, down and diagonally in both directions. Find all the estuary words.

Can you find all the words?

Claude and Clawdette think you can!!



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

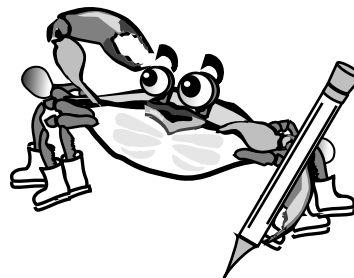
Estuary
Word
Bank:

Alligator
Armadillos
Cajuns
Crabs
Cypress
Dragonfly
Eagle
Egret
Estuary
Fish
Hurricane
Nutria
Oysters
Pelican
Raccoon
Redfish
Shrimp
Snake
Swamp
Trap

In the space below, list any other words you may have found in the puzzle above!

Crossword Puzzle

You may choose to use the clues in the word bank to help you solve the crossword puzzle.

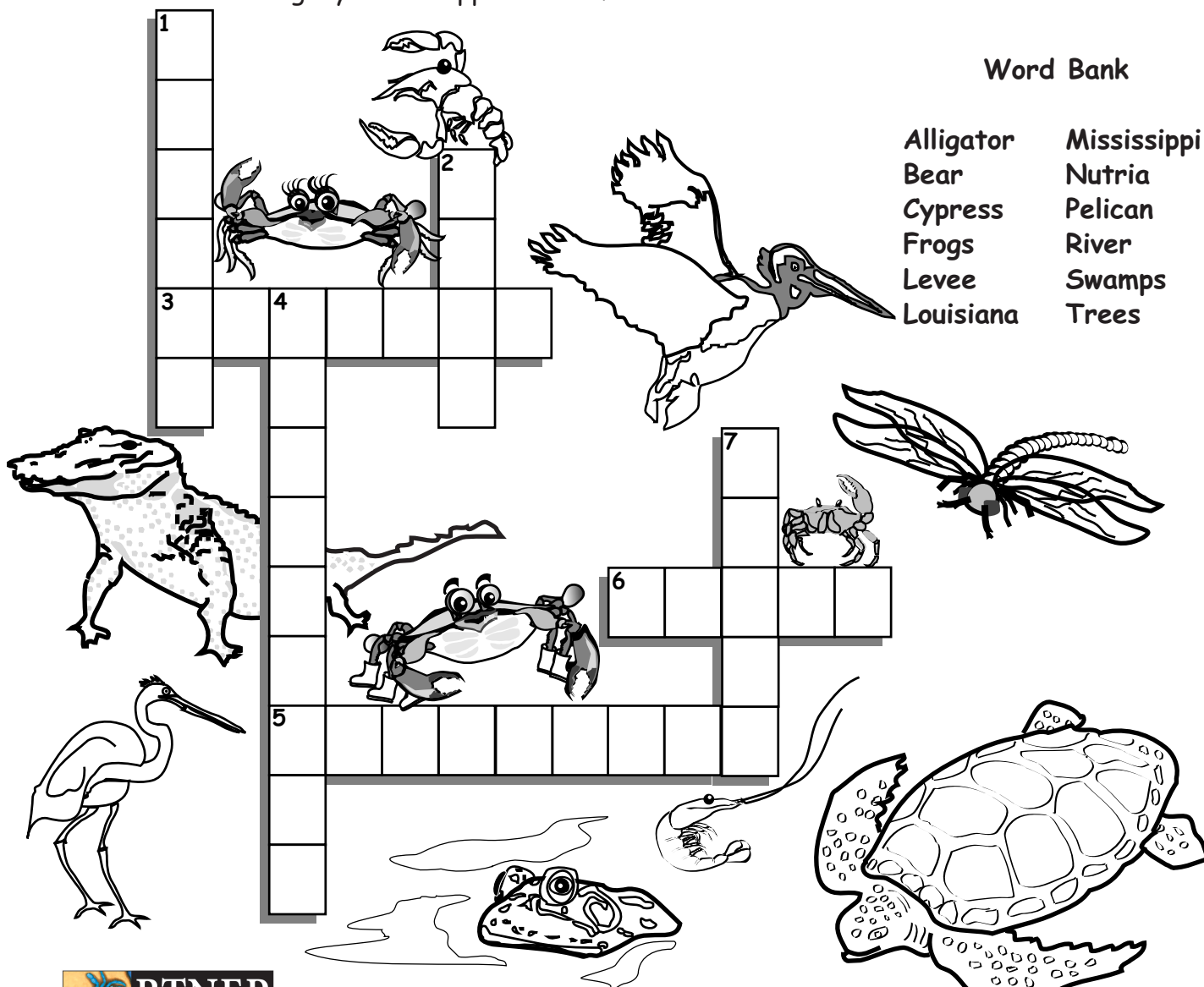


CLUES:

1. Down: The Barataria-Terrebonne Estuary is composed of many ___?___ with beautiful cypress trees.
2. Down: This black mammal hibernates in Louisiana. It is on the threatened species list.
3. Across: The Louisiana State Bird is the ___?___.
4. Down: The state that contains the Barataria-Terrebonne Estuary is ___?___.
5. Across: A native reptile that lives in the clue from 1. Down.
- 6 Across: A man-made structure along the rivers that controls the flow of water in the river.
7. Down: The mighty Mississippi is one of these.

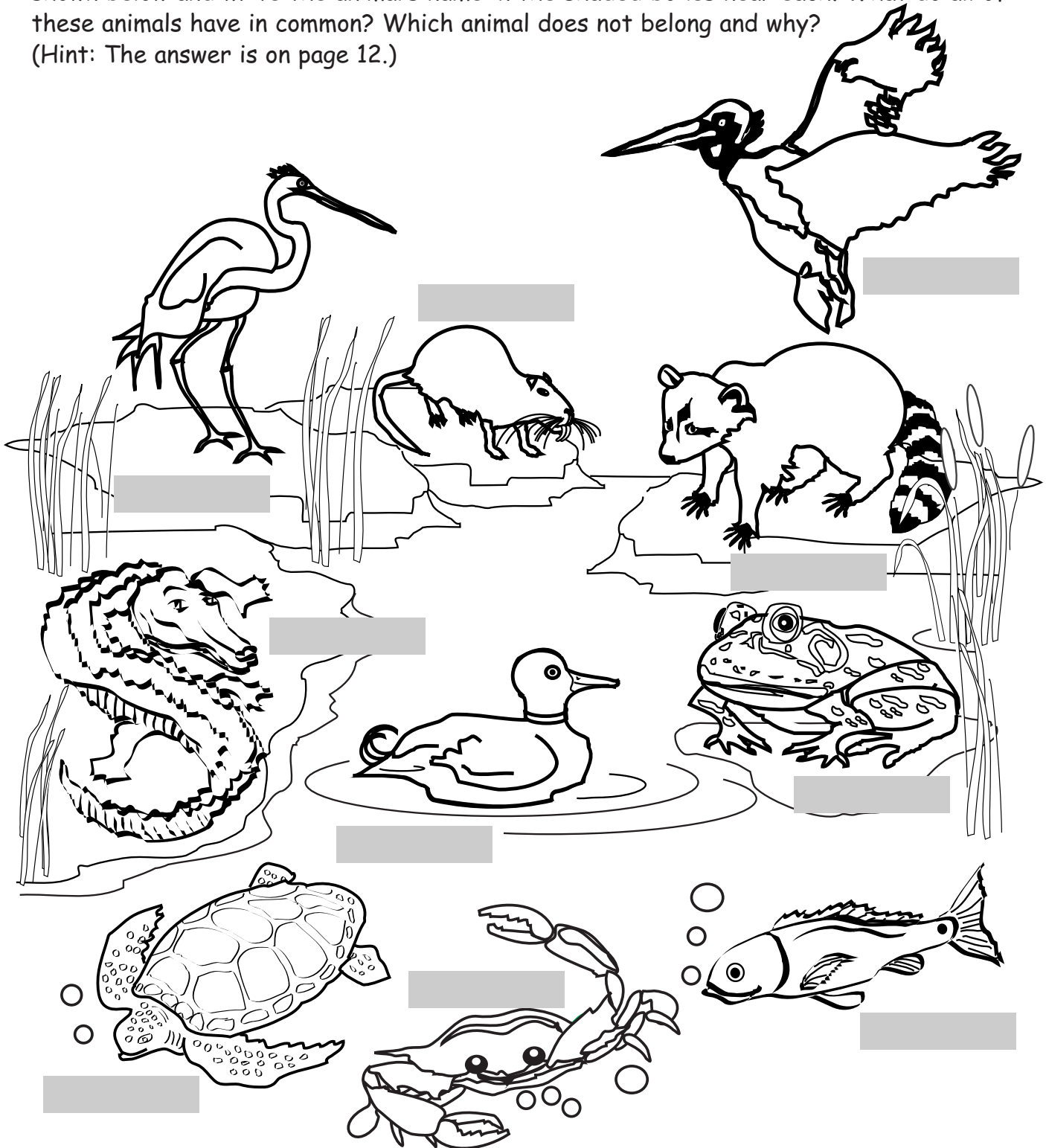
Word Bank

Alligator	Mississippi
Bear	Nutria
Cypress	Pelican
Frogs	River
Levee	Swamps
Louisiana	Trees



Coloring Page

An estuary provides habitats for many different animals. Color the estuary animals shown below and write the animal's name in the shaded boxes near each. What do all of these animals have in common? Which animal does not belong and why? (Hint: The answer is on page 12.)



Animal Names: Alligator, Crab, Duck, Egret, Frog, Pelican, Raccoon, Redfish, Turtle, Nutria

Swamp Scramble

Claude and Clawdette have scrambled words related to the Barataria-Terrebonne National Estuary. Unscramble the words in the blanks to the right of each word.

Word:

Unscramble the Words Here:

LEPCANI
SYPCRES
LALGRTOIA
TRNUAI
ISSIMISPSPII
VLEEE
GFRO
YABUO
YRETUSA
GProuIE

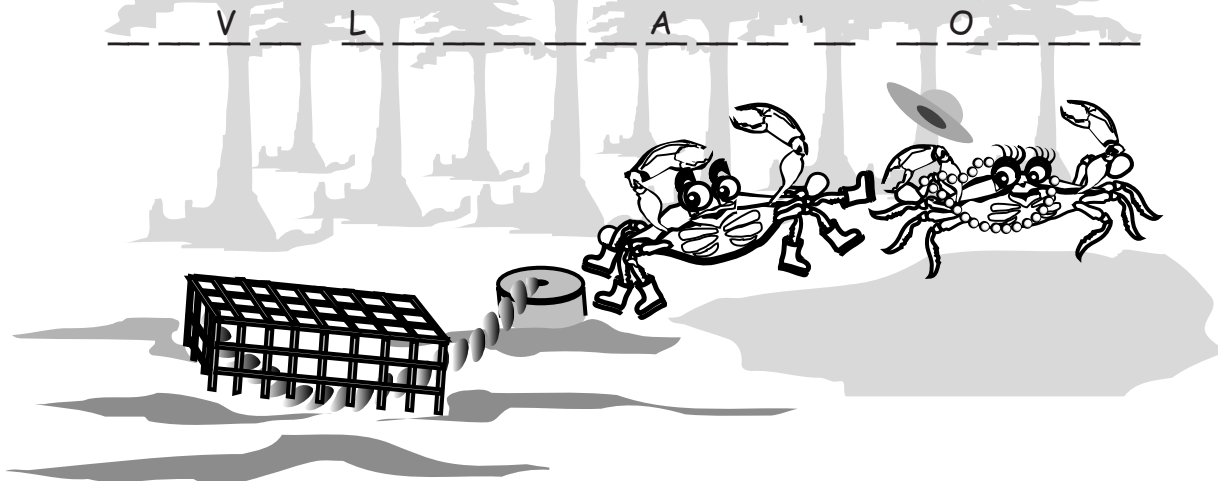


Word Bank:

Alligator, Bayou, Cypress, Estuary, Frog, Levee, Mississippi, Nutria, Pelican, Pirogue

Now, unscramble the shaded letters above to reveal the message below. Some letters are already placed for you.

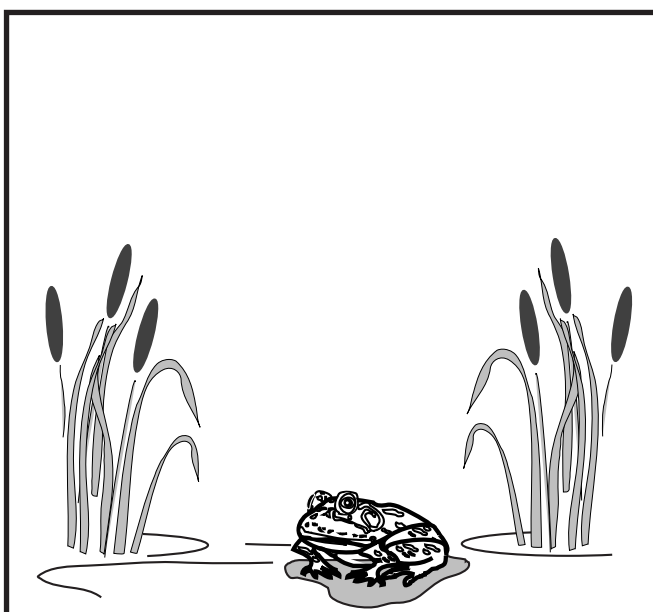
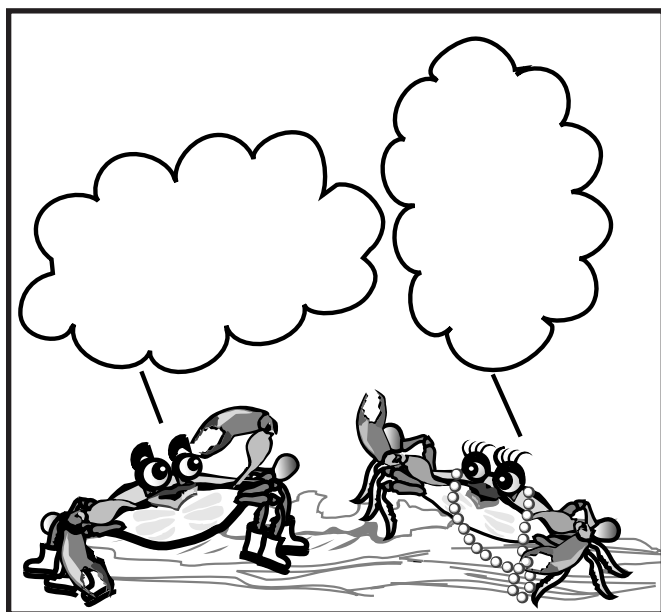
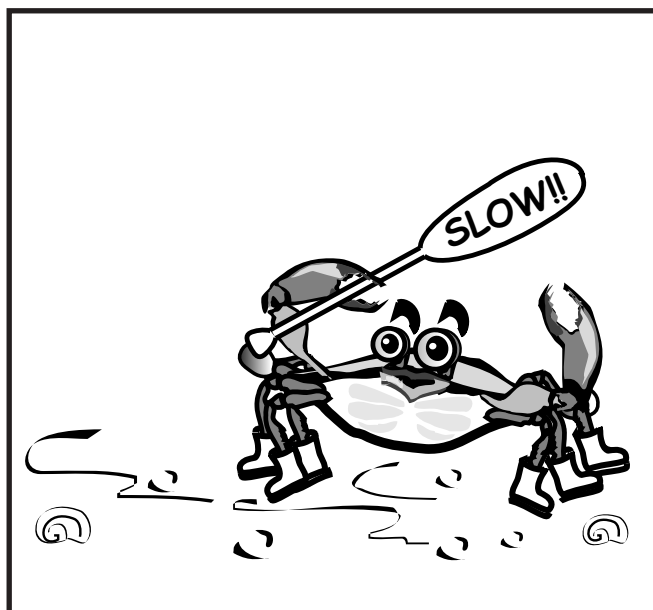
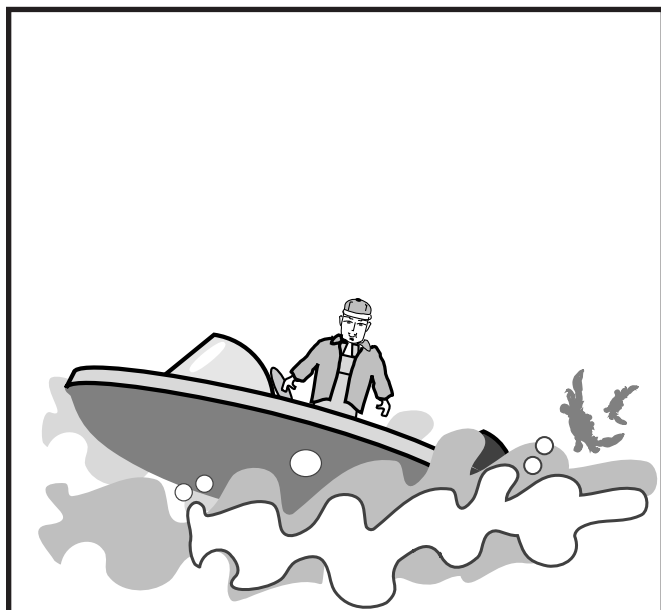
HINT: How do we make sure that all of Louisiana's estuary animals have a home near the Gulf of Mexico?



Fragile Marsh Story

Claude and Clawdette were sitting in the marshes of Louisiana one day. It was a "no-wake" zone near the bayou. While they were sitting there, they saw a boat approaching them. Claude said "That's Mr. Boudreaux in his boat, and he's going too fast." Clawdette agreed with him, saying "Boats that go too fast can damage the fragile coastal wetlands because they make big waves."

In the boxes below, finish the story between Claude and Clawdette. Draw in anything else you would like in the boxes. Don't forget to fill in the conversation bubbles!



Wetlands as Water Purifiers

You can make your own filter and use it to clean a sample of dirty water.

SAFETY NOTE: It is very important that you **DO NOT** drink this water, as it may still have things in it that are unhealthy. This experiment just shows you how water can be separated from the other materials in solution.

MATERIALS: 2 coffee filters, 20oz. heavy plastic cup, nail, sand, gravel, zip-top bag, charcoal briquettes (unused), clear bowl (approx. 1 quart or larger) & some muddy ditch water.

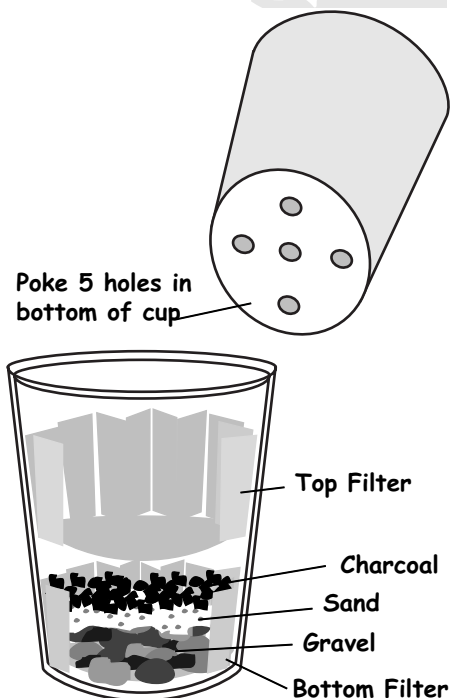
PROCEDURE:

1. Using the nail, poke five holes into the bottom of the cup. Have an adult help you with this.
2. Put a coffee filter into the bottom of the cup.
3. Pour about 2 cm of gravel into the bottom but over the filter.
4. Cover the pebbles with about 5 cm of sand.
5. Put 1-2 charcoal briquettes into the zip-top bag and then crush them as fine as you can get them. Pour this onto the top of the sand.
CAUTION: Crushed charcoal can become quite dusty. Do not breathe in the dust.
6. Put the other coffee filter on top of the charcoal.

Once the filter has been put together, collect some muddy water from a ditch or waterway. Gently, pour the muddy water into the filter, being careful not to overfill. Look at the water that comes out of the bottom of the cup into the bowl.

QUESTIONS:

1. Describe what you observed in this experiment. Write a paragraph telling your best friend about your experiment and your observations.
2. Explain why we should not pollute our water supply.
3. Why is pollution bad for the animals and plants of the estuary?
4. What are some things you can do to help prevent water pollution in our estuary?



Swamp Sleuth

Crack the code below to figure out how to help to save Louisiana's Coastline. There are three messages below.

A = 5	B = 12	C = 26	D = 21	E = 1	F = 6	G = 13	H = 2
I = 22	J = 18	K = 9	L = 10	M = 23	N = 3	O = 8	P = 15
Q = 20	R = 7	S = 24	T = 4	U = 11	V = 14	W = 17	X = 25
Y = 19	Z = 16						

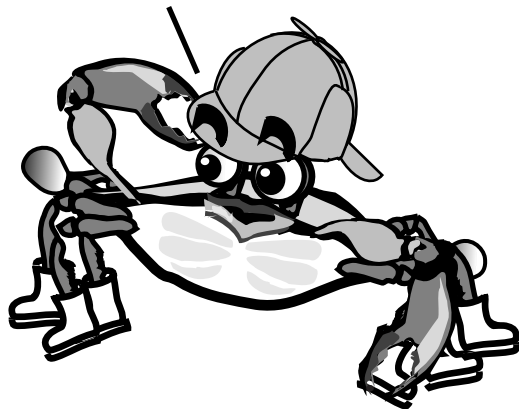
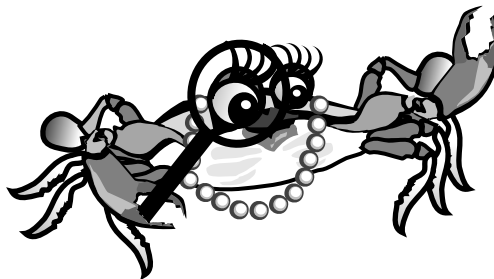
2 1 10 15 15 7 8 4 1 26 4 5 3 21 15 7 1 24 1 7 14 1

,

10 8 11 22 24 22 5 3 5 24

26 8 5 24 4 5 10 17 1 4 10 5 3 21 24 !

Interesting, my dear Clawdette!



9 1 1 15 17 5 4 1 7 26 10 1 5 3 5 3 21 2 1 5 10 4 2 19 .

7 1 24 15 1 26 4 4 2 1 1 24 4 11 5 7 19 1 3 14 22 7 8 3 23 1 3 4 .

Estuary Invaders

Claude and Clawdette meet up with their friend from the estuary, Sally Shrimp. Sally is telling them that the people who live in our estuary have put in several animals and plants that are not native to our area. It has resulted in a dangerous situation for their survival. These creatures are called **exotic** and may become **invasive**.

Can you tell me what exotic species have been put into our estuary?

Sure I can! I'll pick 3 of the most common examples. **Alligatorweed, Water Hyacinth, and Nutria.**

You're right, Sally!

Nutria are large rodents that live near water. Nutria were released to Louisiana's coastline originally for the fur trapping industry. However, not many people trap anymore, so the population

Color the nutria brown.



has grown rapidly. The problem with nutria is that it is a very hungry animal that eats the roots of our native plants, causing coastal land loss. A nutria can eat 25% of its body weight each day. There is a coast-wide nutria control program.

Alligatorweed is originally from Argentina, and it has become a major pest. It grows in shallow marsh ponds and on the edges of bayous and sheltered lakes, as well as on the wetland surface. Alligatorweed infestations block rivers, canals, and ditches across the South, often causing severe flooding.

Color the alligator weed green.



The **Water Hyacinth** is a plant that forms floating mats. It is native to South America and is now a serious pest in the southern United States. It was first brought to Louisiana because of its beautiful purple flowers. The first account of its introduction is from the Cotton Centennial Exposition at New Orleans in 1884. The plant was originally grown in ponds at homes around New Orleans and eventually escaped from there to the marshes and bayous of Louisiana. Water hyacinth mats may double in size within two weeks. The plants remove oxygen from water.

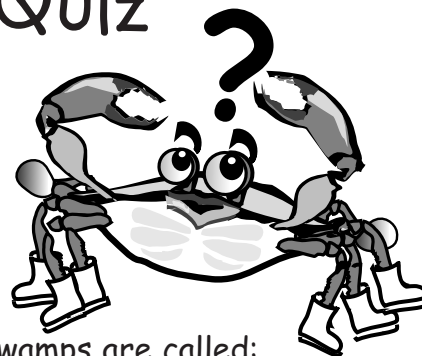
Color the flowers purple.



To learn more about exotic or invasive species, visit the website: www.invasive.btnep.org

Claude's Estuary Quiz

Claude wants to know how much you've learned about the Barataria-Terrebonne National Estuary. Choose wisely!!
Circle your answer.



1. The types of trees that grow in Louisiana's freshwater swamps are called:
a) Great Oak Trees b) Cypress Trees
c) Poplar Trees d) Christmas Trees
2. Which of these animals is **NOT** native to Louisiana's estuaries and swamps?
a) Nutria b) Alligator
c) Crab d) Snake
3. The Louisiana Estuary System supports which of these outdoor recreational sports?
a) Fishing b) Hunting
c) Trapping d) It supports all of these.
4. Which of these plants is **NOT** native to Louisiana AND can harm our wetlands?
a) Water Hyacinth b) Marsh Grass
c) Cat Tail d) Magnolia Tree
5. Which of these is **NOT** a way Southeast Louisiana residents make money from the estuary?
a) The Oil and Gas Industry b) Fishing, Trapping, and Hunting
c) Navigation and Boating d) Making Cars

FACT: Since 1932, the Louisiana estuary has lost over 656 square miles of wetlands and barrier islands. The losses are caused by forces of nature and activities of people.

FACT: Louisiana loses nearly a football field of wetland (on average) every 40 minutes!!

FACT: Louisiana is one of America's largest and most productive estuaries. Freshwater drains from the land into lakes, bays, and bayous and meets the salty tides of the Gulf of Mexico.

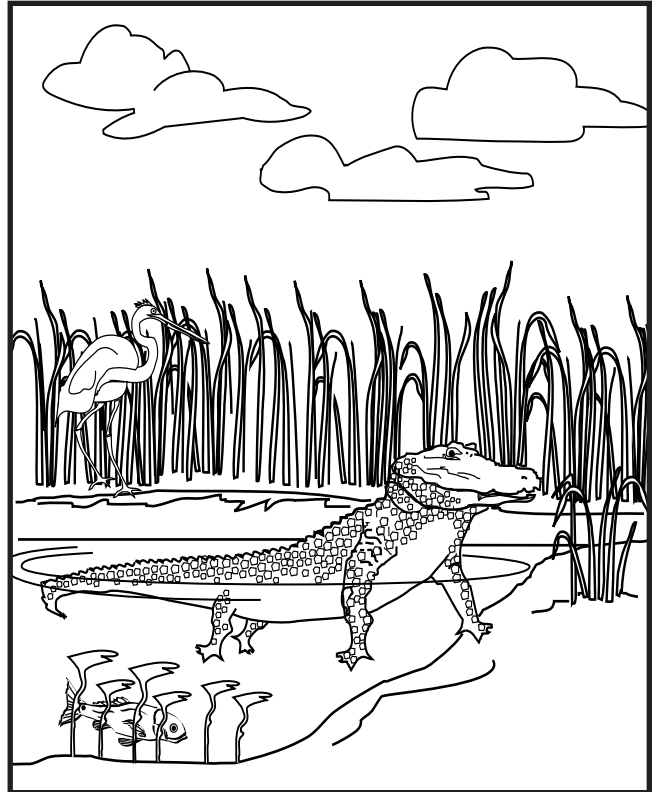


FACT: As land is lost, salt water from the Gulf of Mexico moves deep into the estuary's freshwater areas through a process called saltwater intrusion causing harm to animals and plants.

FACT: Barataria-Terrebonne's four-million-acre estuarine system provides nearly \$1 billion a year in commercial seafood fishing, sport fishing, and hunting.

Eagle Eye Challenge

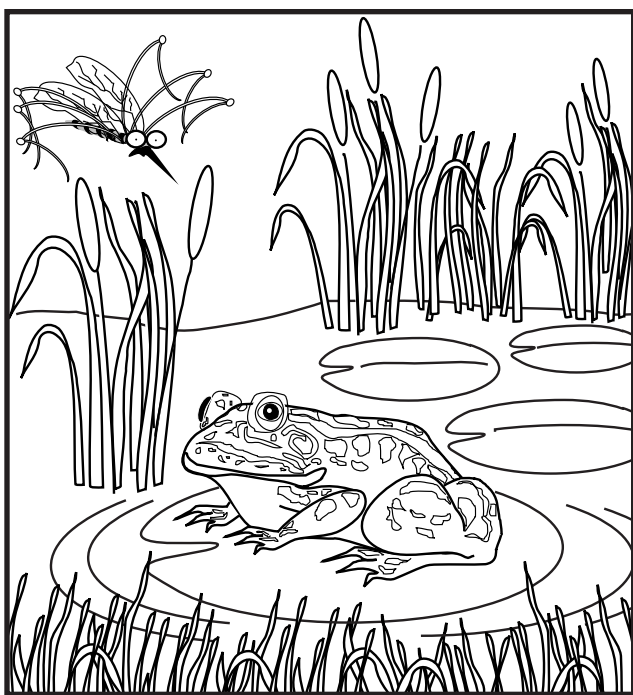
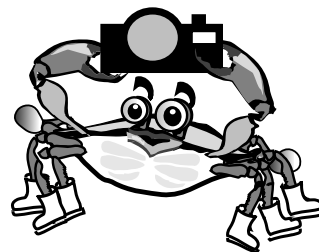
Claude and Clawdette want to know how good your eyes and observation skills are. Can you spot the differences between the two pictures of Mr. Al E. Gator? Circle the differences between the two and then on the lines below the pictures, explain the differences. There are eight differences between the pictures. Good Luck!



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Habitat Happenings

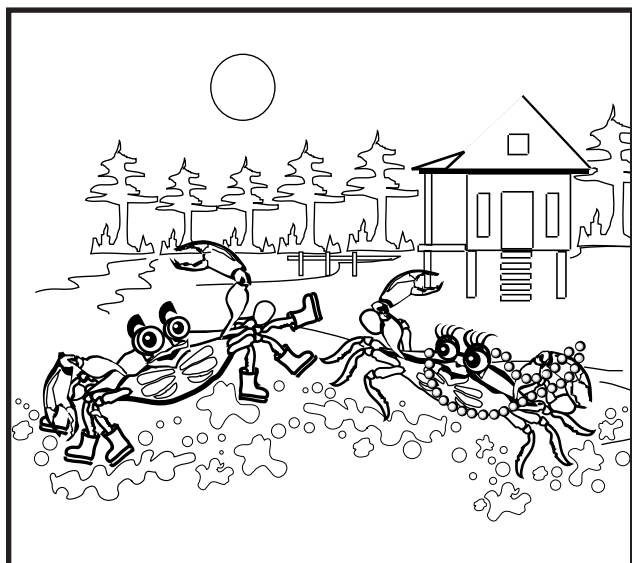
Claude has taken pictures of his estuary friends. But, the film was black and white. Help him out by coloring in the pictures. Below each picture is a description of a habitat happening.



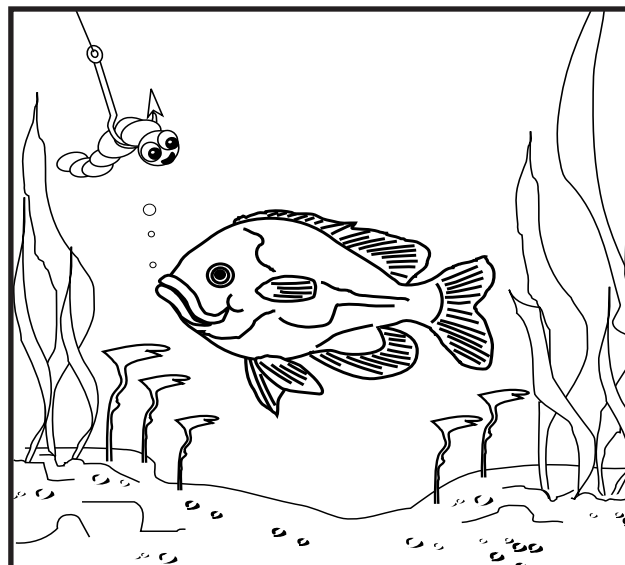
Freddie the Fabulous Frog waits for his next meal.



Sal the Seagull & Frankie the Fiddler Crab say good evening.



Claude & Clawdette go Cajun dancing in this self-portrait.



Perry the Playful Perch tricks the fisherman.

Edible Estuary

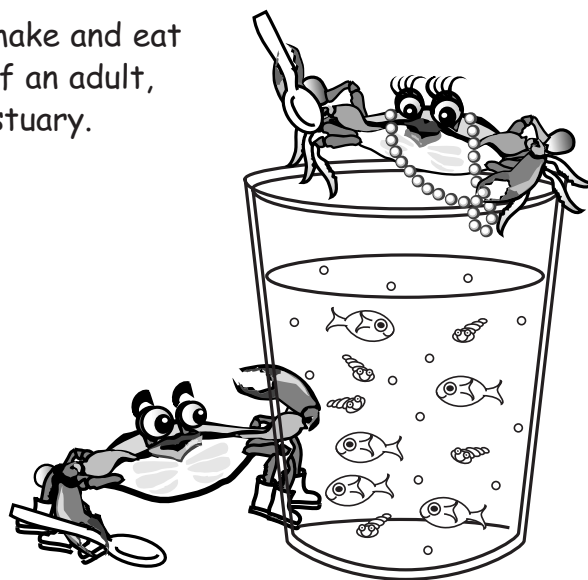
Claude and Clawdette have found a fun way to make and eat your own home-made "estuary". With the help of an adult, follow the directions below to make your own estuary.

Ingredients:

- 1 package berry blue gelatin
- 1 cup boiling water
- 2 cups ice cubes
- gummy fish and/or worms

Directions:

1. Dissolve blue gelatin in the boiling water. Prepare as package directions indicate.
2. Add ice cubes, stirring until gelatin thickens. This will take about 3-5 minutes.
3. Remove any un-melted ice and spoon gelatin into clear-sided bowls or cups or into one big bowl. The gelatin should be slightly thickened.
4. Poke gummy fish and/or worms into each dish of slightly thickened gelatin. Create your own "estuary ecosystem."
5. Refrigerate at least 30 minutes to allow it time to set.
6. Have fun and eat your own home-made estuary.



If you are unable to find the berry blue flavor, use a store brand plain gelatin and add blue food coloring and/or flavoring to suit your taste. Another alternative would be to add a couple of drops of blue food coloring to lemon or lime gelatin to obtain the color green.

Estuary Quick Facts

- In 1991, wetland-related tourism activities such as hunting, fishing, bird-watching and photography added approximately \$59 billion to the United States' economy.
- An acre of wetland can store 1 - 1.5 million gallons of flood water.
- Up to one-half of North American bird species nest or feed in wetlands.
- Although wetlands keep only about 5 percent of the land surface in the United States, they are home to 31 percent of our plant species.

Adapted From: http://www.epa.gov/owow/wetlands/pdf/fun_val_pr.pdf

Resources Page

Use these links to learn more about Louisiana wetlands or just to have fun.

<http://www.btnep.org>

The Barataria-Terrebonne National Estuary Program Web Page

<http://www.lacoast.gov>

Louisiana's Coast Web Page

<http://www.laseagrant.org/>

Louisiana Sea Grant Web Page

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

LSU Agricultural Center Web Page

http://www.leeric.lsu.edu/le/special/bara_terre3.htm

Facts about the Louisiana Estuary system

<http://biology.usgs.gov/s+t/SNT/noframe/gc138.htm>

Facts about Coastal Louisiana

<http://invasive.btnep.org>

Images of invasive species

<http://www.wlf.louisiana.gov/>

Louisiana Department of Wildlife
and Fisheries Web Page

<http://www.geocities.com/timtam50k/>

Nutria-Ray.jpg

Nutria Pictures

<http://www.wisegorilla.com/images/seacreatures>

/seacreatures.html

Sea Creatures Images

<http://www.photo.net/photo/pcd4336/corkscrew-swamp-alligator-70.tcl>

Picture of Alligator

<http://www.ucls.uchicago.edu/students/projects/ChicagoWater/filter.html>

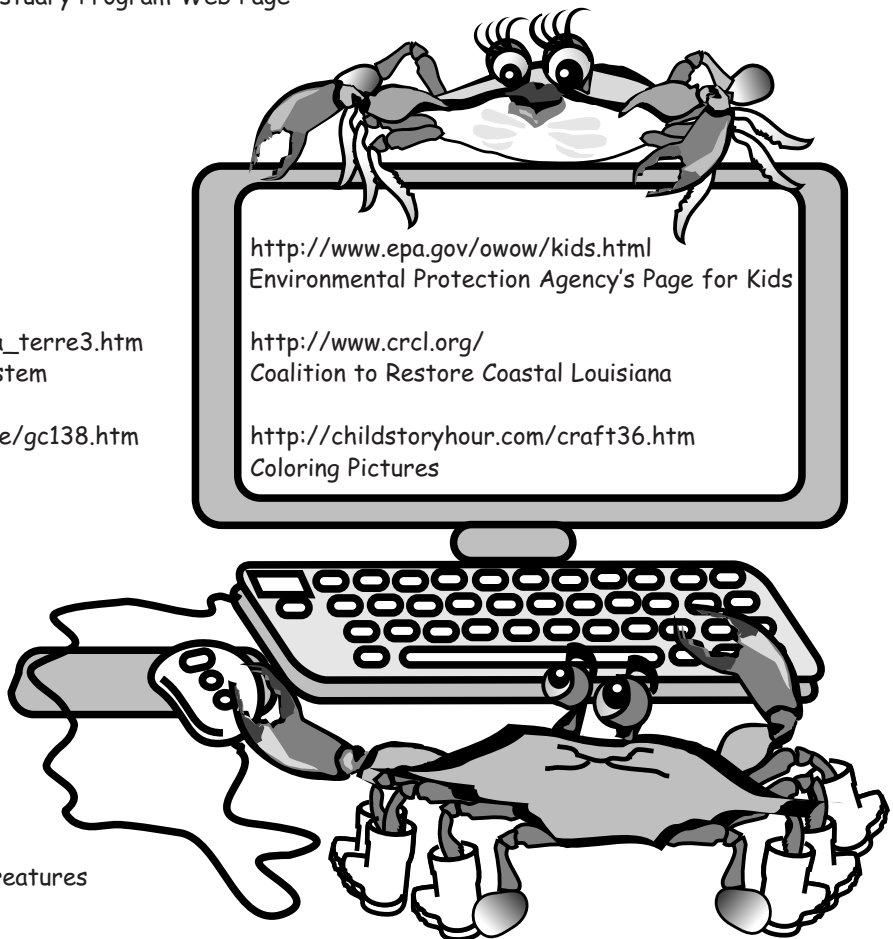
Learn to make your own water filter

http://www.leeric.lsu.edu/educat/lessons/erosion/coast_e2.htm

Coastal Erosion on LEERIC at LSU

http://www.myfreecolouringpages.com/free_coloring_pages.htm

Coloring Pictures



Claude & Clawdette

hope that you have enjoyed this booklet.
Remember to treat our wetlands with care!

"In the end, we will conserve only what we love,
we will love only what we understand,
and, we will understand only what we are taught."

Quote from:
Baba Dioum, Senegalese Conservationist

Environmental Education
is for EVERYONE!

www.btnep.org



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"I'm Claude. I'm a male crab with blue claws, and I've lived in the estuary for many years. Let me tell you what an estuary is. An estuary is a coastal area where saltwater from the ocean mixes with fresh water from rivers and bayous."

Color Claude's claws blue.



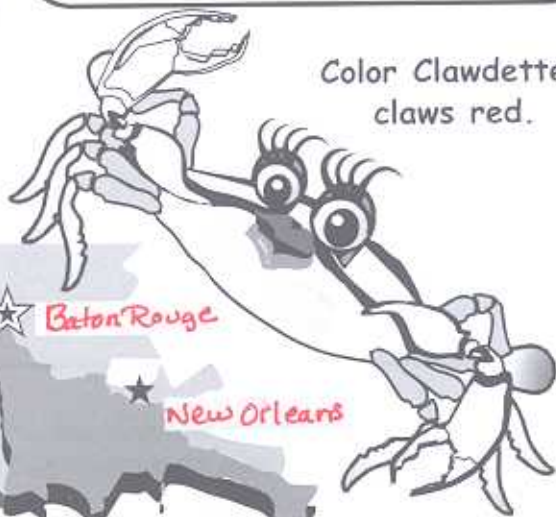
"The region of Louisiana that makes up the Barataria-Terrebonne National Estuary is shown shaded on the lower right."



As you can see, most of southeast Louisiana makes up the Barataria-Terrebonne National Estuary."

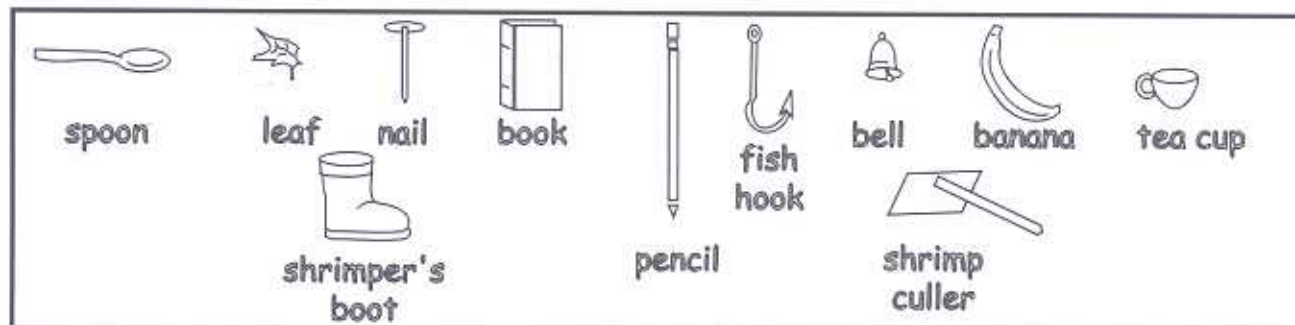


Color Clawdette's claws red.



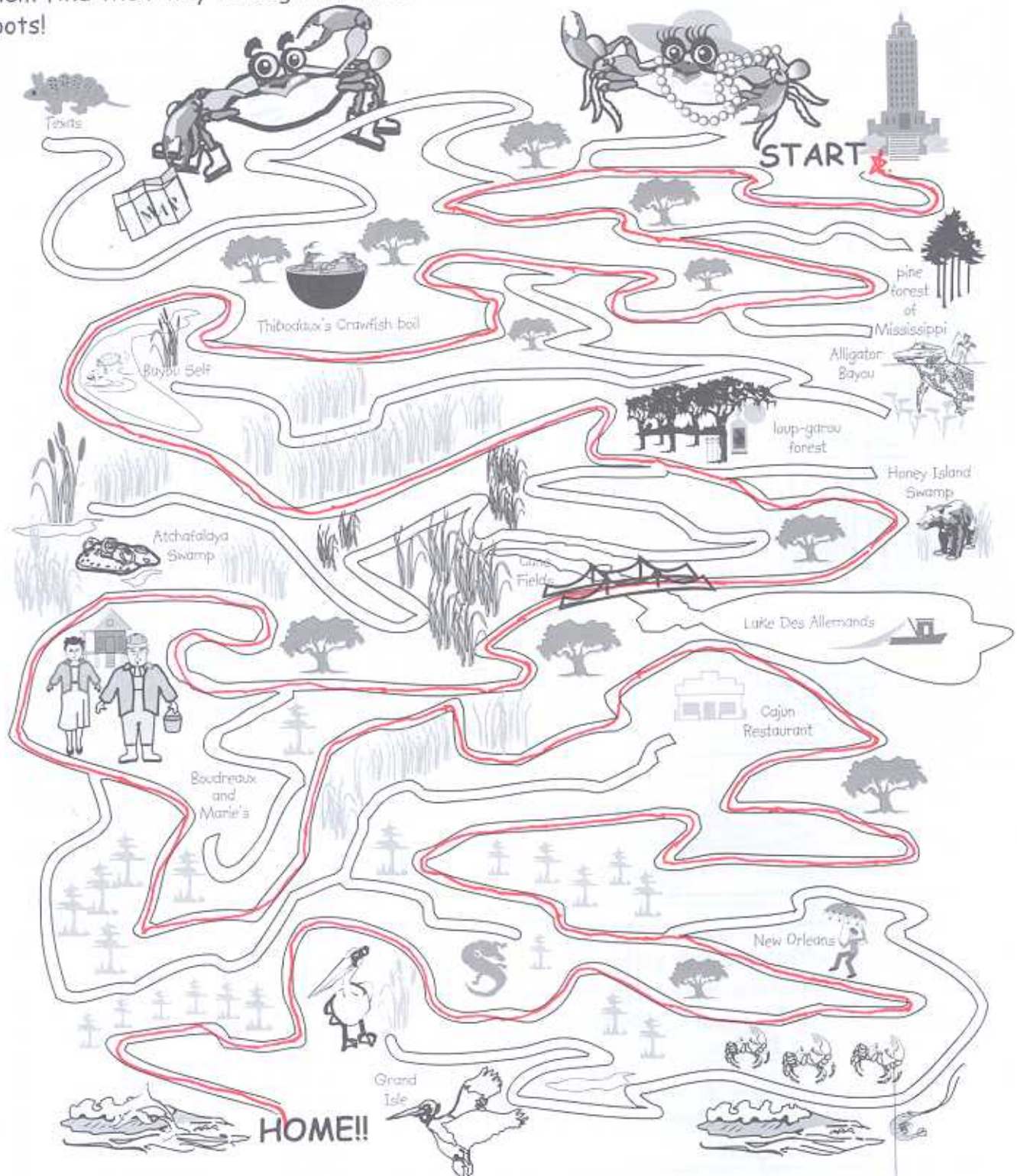
That's right! The estuary is very important to Louisiana. It protects the coastline from damage in hurricanes! It is home to many species of animals and plants. It provides people with resources such as oil, gas, fisheries, and serves as an inlet for the navigation industry. Our activity book will teach you a little about the Barataria-Terrebonne National Estuary and the animals and plants and people that live here! Label the major cities the people of Louisiana live in. We hope that you enjoy the adventures we have created for you in our book! (Cities: Baton Rouge, New Orleans, Shreveport, Lake Charles, Lafayette, Monroe, Alexandria)

Can You Find the Hidden Pictures?



Claude and Clawdette need your help!

Claude and Clawdette need your help to get home!! They went to visit Baton Rouge, but forgot how to get back to their home in the Barataria-Terrebonne National Estuary. Help them find their way through the maze to return to their home! Watch for the danger spots!



Claude and Clawdette's Word Find

Claude and Clawdette have hidden words that describe our estuary in the table below. Check out the estuary word bank for hints to find the words. Words on the puzzle read forward, backward, up, down and diagonally in both directions. Find all the estuary words.

Can you find all the words?

Claude and Clawdette think you can!!



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

Estuary
Word
Bank:

Alligator
Armadillos
Cajuns
Crabs
Cypress
Dragonfly
Eagle
Egret
Estuary
Fish
Hurricane
Nutria
Oysters
Pelican
Raccoon
Redfish
Shrimp
Snake
Swamp
Trap

In the space below, list any other words you may have found in the puzzle above!

Crossword Puzzle

You may choose to use the clues in the word bank to help you solve the crossword puzzle.

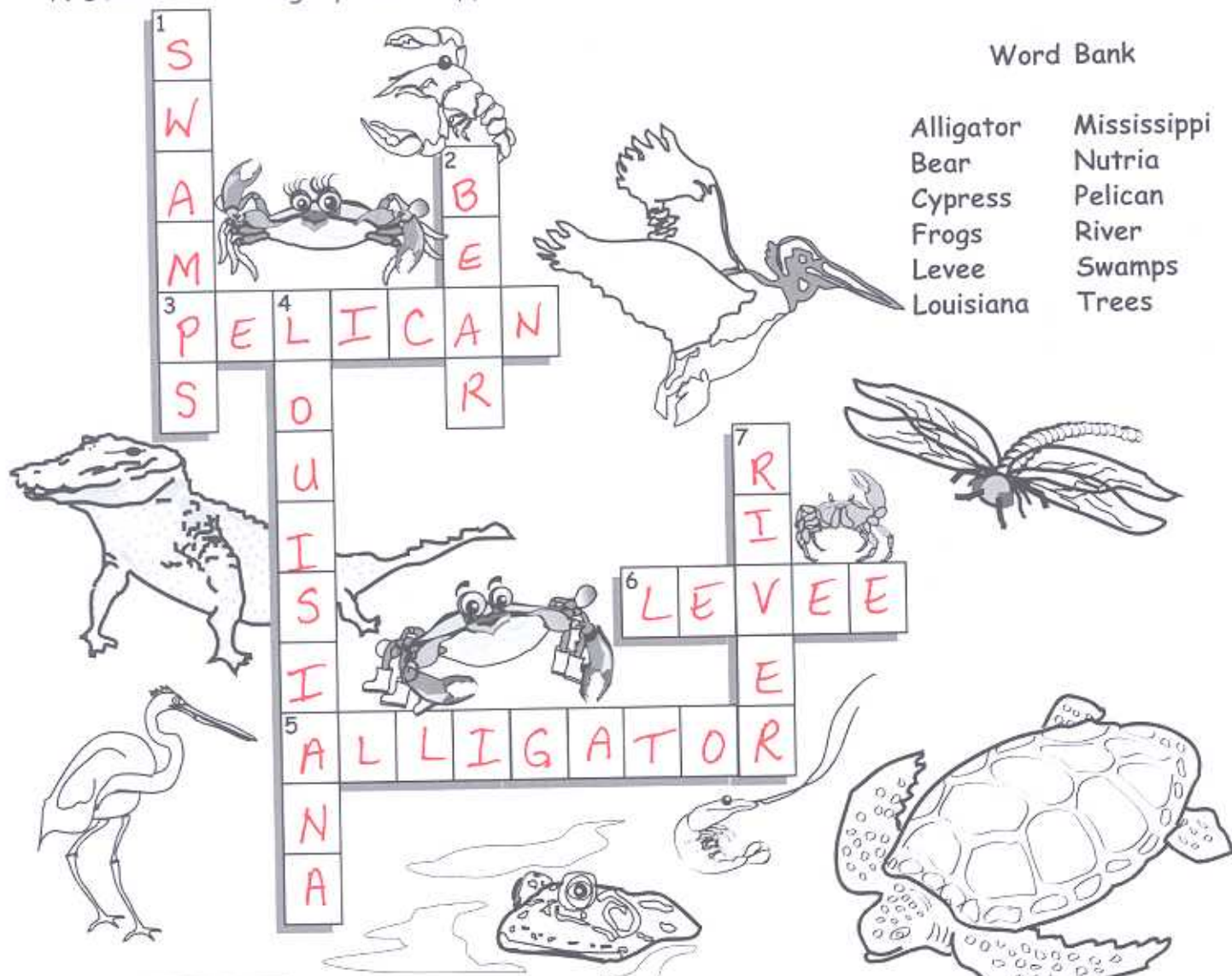


CLUES:

1. Down: The Barataria-Terrebonne Estuary is composed of many ? with beautiful cypress trees.
2. Down: This black mammal hibernates in Louisiana. It is on the threatened species list.
3. Across: The Louisiana State Bird is the ?
4. Down: The state that contains the Barataria-Terrebonne Estuary is ?
5. Across: A native reptile that lives in the clue from 1. Down.
- 6 Across: A man-made structure along the rivers that controls the flow of water in the river.
7. Down: The mighty Mississippi is one of these.

Word Bank

Alligator	Mississippi
Bear	Nutria
Cypress	Pelican
Frogs	River
Levee	Swamps
Louisiana	Trees

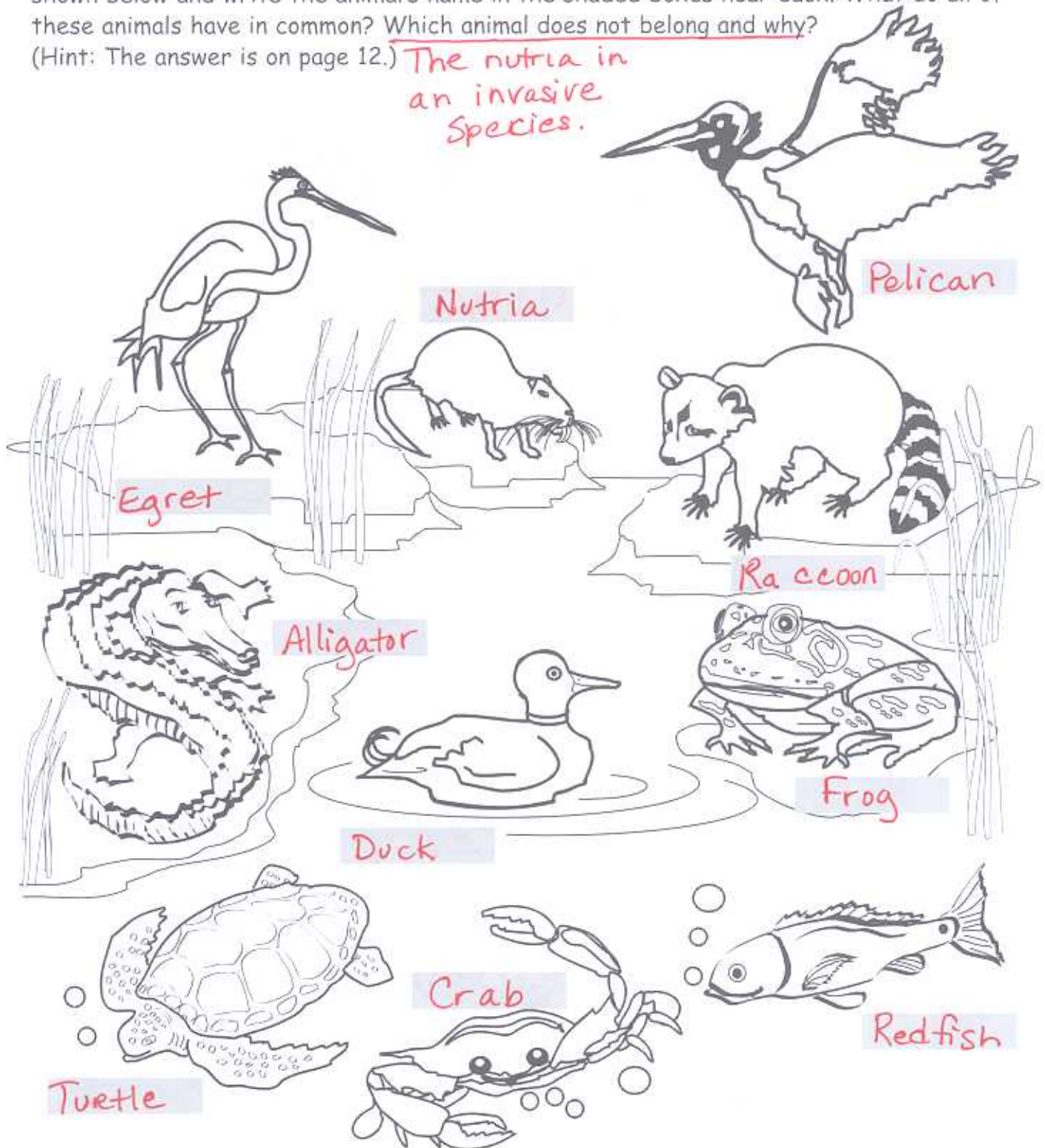


Coloring Page

An estuary provides habitats for many different animals. Color the estuary animals shown below and write the animal's name in the shaded boxes near each. What do all of these animals have in common? Which animal does not belong and why?

(Hint: The answer is on page 12.)

The nutria is an invasive species.



Animal Names: Alligator, Crab, Duck, Egret, Frog, Pelican, Raccoon, Redfish, Turtle, Nutria

Swamp Scramble

Claude and Clawdette have scrambled words related to the Barataria-Terrebonne National Estuary. Unscramble the words in the blanks to the right of each word.

Word:

LEPCANI
SYPCRES
LALGRTOIA
TRNUAI
ISSIMISPSPII
VLEEE
GFRO
YABUO
YRETUSA
GPROUIE

Unscramble the Words Here:

PELICAN
CYPRESS
ALLIGATOR
NUTRIA
MISSISSIPPI
LEVEE
FROG
BAYOU
ESTUARY
PIROGUE

Word Bank:

Alligator, Bayou, Cypress, Estuary, Frog, Levee, Mississippi, Nutria, Pelican, Pirogue

Now, unscramble the shaded letters above to reveal the message below. Some letters are already placed for you.

HINT: How do we make sure that all of Louisiana's estuary animals have a home near the Gulf of Mexico?

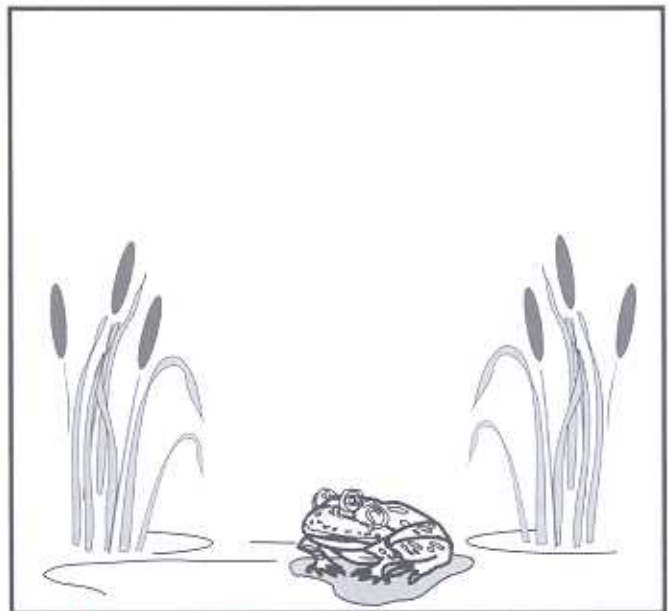
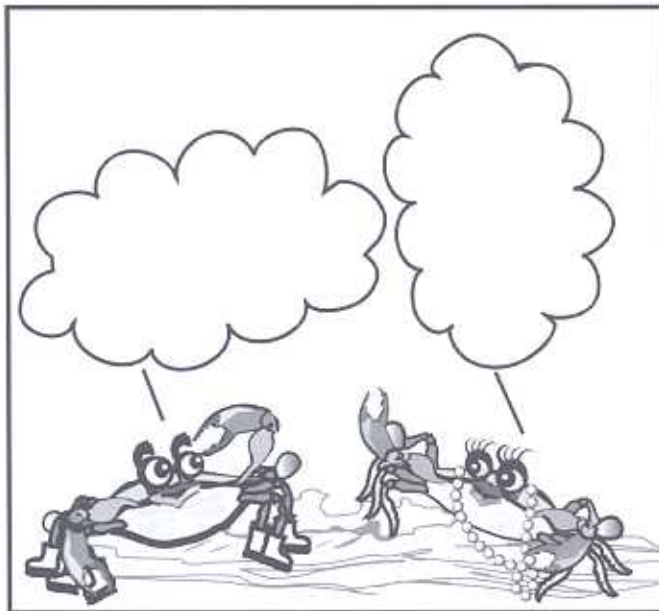
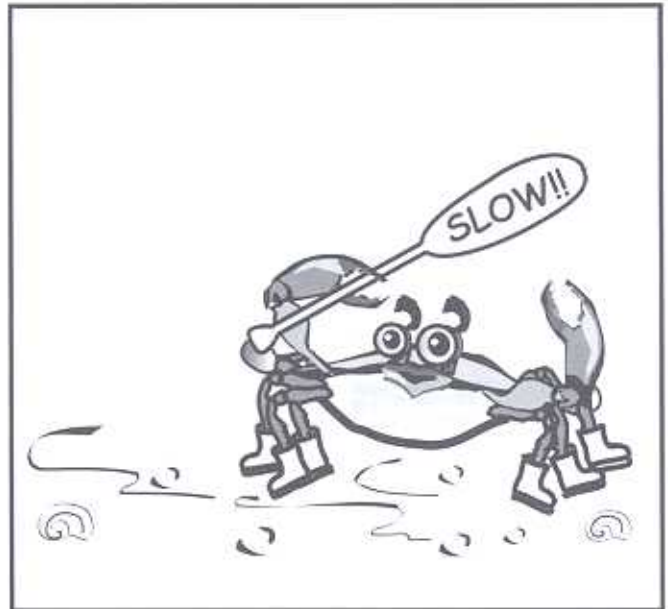
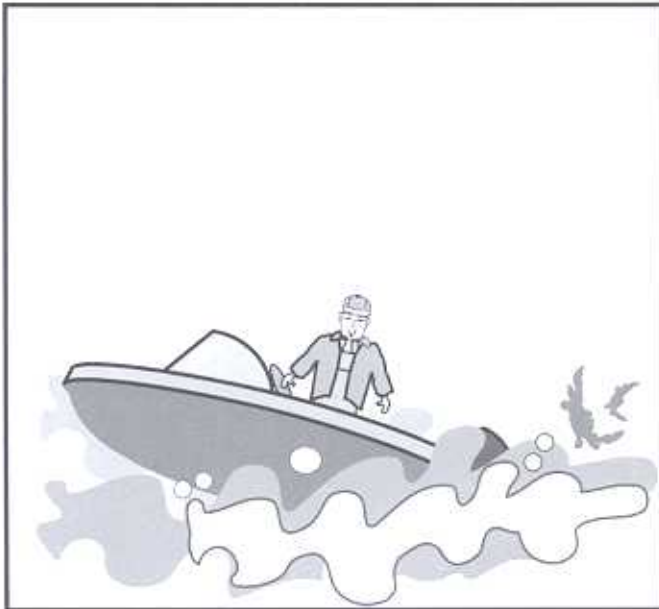
SAVE LOUISIANA'S COAST



Fragile Marsh Story

Claude and Clawdette were sitting in the marshes of Louisiana one day. It was a "no-wake" zone near the bayou. While they were sitting there, they saw a boat approaching them. Claude said "That's Mr. Boudreaux in his boat, and he's going too fast." Clawdette agreed with him, saying "Boats that go too fast can damage the fragile coastal wetlands because they make big waves."

In the boxes below, finish the story between Claude and Clawdette. Draw in anything else you would like in the boxes. Don't forget to fill in the conversation bubbles!



What did you draw?

Wetlands as Water Purifiers

You can make your own filter and use it to clean a sample of dirty water.

SAFETY NOTE: It is very important that you **DO NOT** drink this water, as it may still have things in it that are unhealthy. This experiment just shows you how water can be separated from the other materials in solution.

MATERIALS: 2 coffee filters, 20oz. heavy plastic cup, nail, sand, gravel, zip-top bag, charcoal briquettes (unused), clear bowl (approx. 1 quart or larger) & some muddy ditch water.

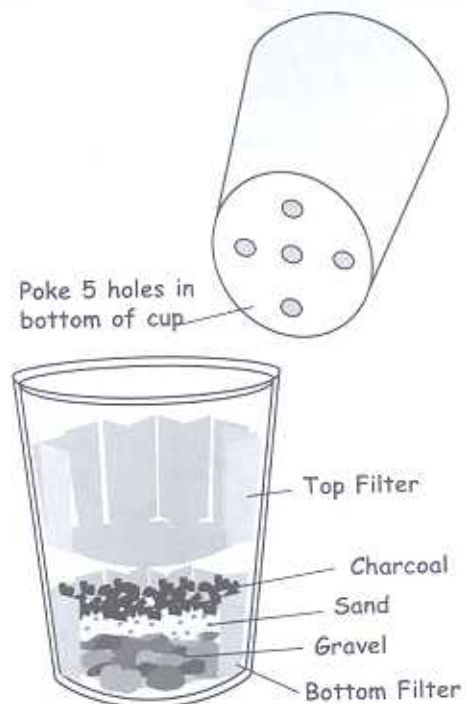
PROCEDURE:

1. Using the nail, poke five holes into the bottom of the cup. Have an adult help you with this.
2. Put a coffee filter into the bottom of the cup.
3. Pour about 2 cm of gravel into the bottom but over the filter.
4. Cover the pebbles with about 5 cm of sand.
5. Put 1-2 charcoal briquettes into the zip-top bag and then crush them as fine as you can get them. Pour this onto the top of the sand.
CAUTION: Crushed charcoal can become quite dusty. Do not breathe in the dust.
6. Put the other coffee filter on top of the charcoal.

Once the filter has been put together, collect some muddy water from a ditch or waterway. Gently, pour the muddy water into the filter, being careful not to overfill. Look at the water that comes out of the bottom of the cup into the bowl.

QUESTIONS:

1. Describe what you observed in this experiment. Write a paragraph telling your best friend about your experiment and your observations.
2. Explain why we should not pollute our water supply.
3. Why is pollution bad for the animals and plants of the estuary?
4. What are some things you can do to help prevent water pollution in our estuary?



Have an adult check your answers.

Swamp Sleuth

Crack the code below to figure out how to help to save Louisiana's Coastline. There are three messages below.

A = 5	B = 12	C = 26	D = 21	E = 1	F = 6	G = 13	H = 2
I = 22	J = 18	K = 9	L = 10	M = 23	N = 3	O = 8	P = 15
Q = 20	R = 7	S = 24	T = 4	U = 11	V = 14	W = 17	X = 25
Y = 19	Z = 16						

HELP PROTECT AND PRESERVE

2 1 10 15 15 7 8 4 1 26 4 5 3 21 15 7 1 24 1 7 14 1

LOUISIANA'S

10 8 11 22 24 22 5 3 5 24

COASTAL WETLANDS!

26 8 5 24 4 5 10 17 1 4 10 5 3 21 24

Interesting, my dear Clawdette!



KEEP

9 1 1 15

WATER

17 5 4 1 7

CLEAN AND

26 10 1 5 3 5 3 21

HEALTHY.

2 1 5 10 4 2 19

RESPECT

7 1 24 15 1 26 4

THE

4 2 1

ESTUARY

1 24 4 11 5 7 19

ENVIRONMENT.

1 3 14 22 7 8 3 23 1 3 4

Estuary Invaders

Claude and Clawdette meet up with their friend from the estuary, Sally Shrimp. Sally is telling them that the people who live in our estuary have put in several animals and plants that are not native to our area. It has resulted in a dangerous situation for their survival. These creatures are called **exotic** and may become **invasive**.

Can you tell me what exotic species have been put into our estuary?

Sure I can! I'll pick 3 of the most common examples. **Alligatorweed, Water Hyacinth, and Nutria.**

You're right, Sally!

Nutria are large rodents that live near water. Nutria were released to Louisiana's coastline originally for the fur trapping industry. However, not many people trap anymore, so the population

Color the nutria brown.

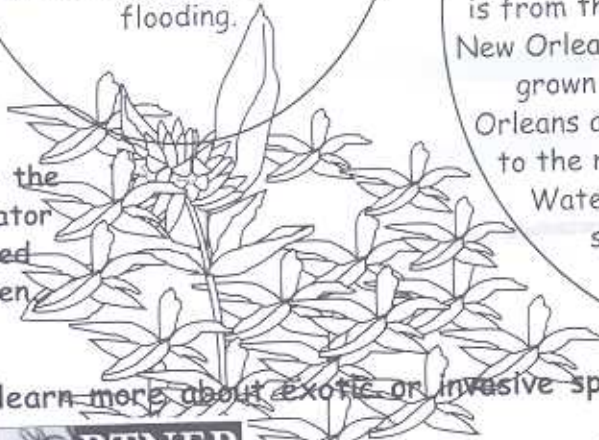


has grown rapidly. The problem with nutria is that it is a very hungry animal that eats the roots of our native plants, causing coastal land loss. A nutria can eat 25% of its body weight each day. There is a coast-wide nutria control program.



Alligatorweed is originally from Argentina, and it has become a major pest. It grows in shallow marsh ponds and on the edges of bayous and sheltered lakes, as well as on the wetland surface. Alligatorweed infestations block rivers, canals, and ditches across the south, often causing severe flooding.

Color the alligator weed green.



The **Water Hyacinth** is a plant that forms floating mats. It is native to South America and is now a serious pest in the southern United States. It was first brought to Louisiana because of its beautiful purple flowers. The first account of its introduction is from the Cotton Centennial Exposition at New Orleans in 1884. The plant was originally grown in ponds at homes around New Orleans and eventually escaped from there to the marshes and bayous of Louisiana. Water hyacinth mats may double in size within two weeks. The plants remove oxygen from water.

Color the flowers purple.



To learn more about exotic or invasive species, visit the website: www.invasive.btnep.org

Claude's Estuary Quiz

Claude wants to know how much you've learned about the Barataria-Terrebonne National Estuary. Choose wisely!!
Circle your answer.



- The types of trees that grow in Louisiana's freshwater swamps are called:
a) Great Oak Trees
b) Cypress Trees
c) Poplar Trees
d) Christmas Trees
- Which of these animals is **NOT** native to Louisiana's estuaries and swamps?
a) Nutria
b) Alligator
c) Crab
d) Snake
- The Louisiana Estuary System supports which of these outdoor recreational sports?
a) Fishing
b) Hunting
c) Trapping
d) It supports all of these.
- Which of these plants is **NOT** native to Louisiana **AND** can harm our wetlands?
a) Water Hyacinth
b) Marsh Grass
c) Cat Tail
d) Magnolia Tree
- Which of these is **NOT** a way southeast Louisiana residents make money from the estuary?
a) The Oil and Gas Industry
b) Fishing, Trapping, and Hunting
c) Navigation and Boating
d) Making Cars

FACT: Since 1932, the Louisiana estuary has lost over 656 square miles of wetlands and barrier islands. The losses are caused by forces of nature and activities of people.

FACT: Louisiana loses nearly a football field of wetland (on average) every 40 minutes!!

FACT: Louisiana is one of America's largest and most productive estuaries. Freshwater drains from the land into lakes, bays, and bayous and meets the salty tides of the Gulf of Mexico.

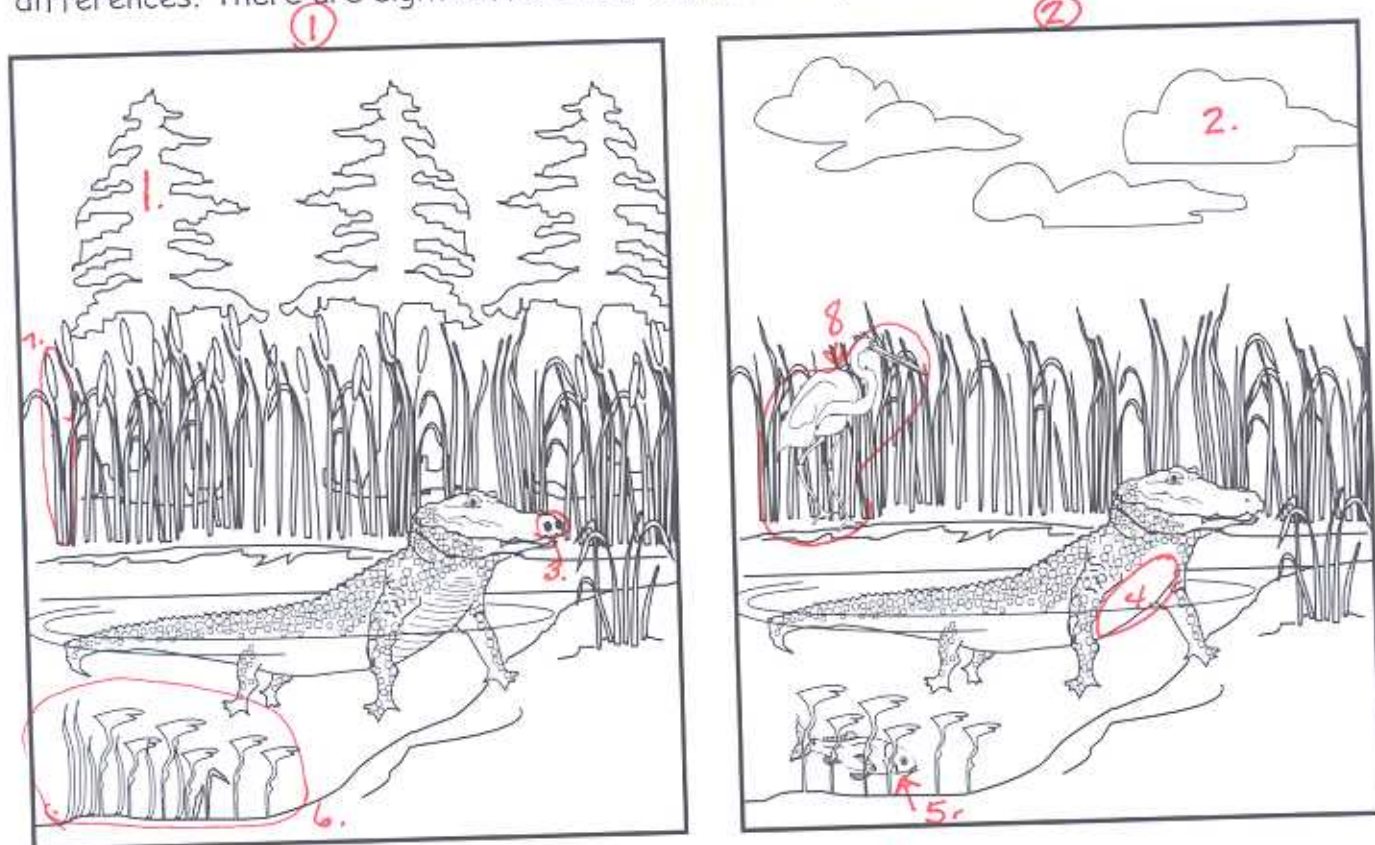


FACT: As land is lost, salt water from the Gulf of Mexico moves deep into the estuary's freshwater areas through a process called saltwater intrusion causing harm to animals and plants.

FACT: Barataria-Terrebonne's four-million-acre estuarine system provides nearly \$1 billion a year in commercial seafood fishing, sport fishing, and hunting.

Eagle Eye Challenge

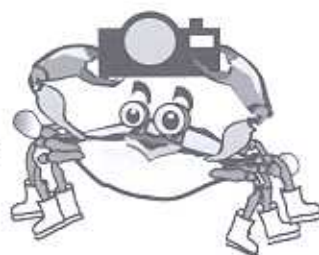
Claude and Clawdette want to know how good your eyes and observation skills are. Can you spot the differences between the two pictures of Mr. Al E. Gator? Circle the differences between the two and then on the lines below the pictures, explain the differences. There are eight differences between the pictures. Good Luck!



1. Cypress trees are in picture one only.
2. Clouds are in picture two only.
3. Nostrils on the alligator are different.
4. Under belly of alligator is different.
5. Fish is in picture two only.
6. Pond grasses are different.
7. Cat tails are in picture one only.
8. Egret is in picture two only.

Habitat Happenings

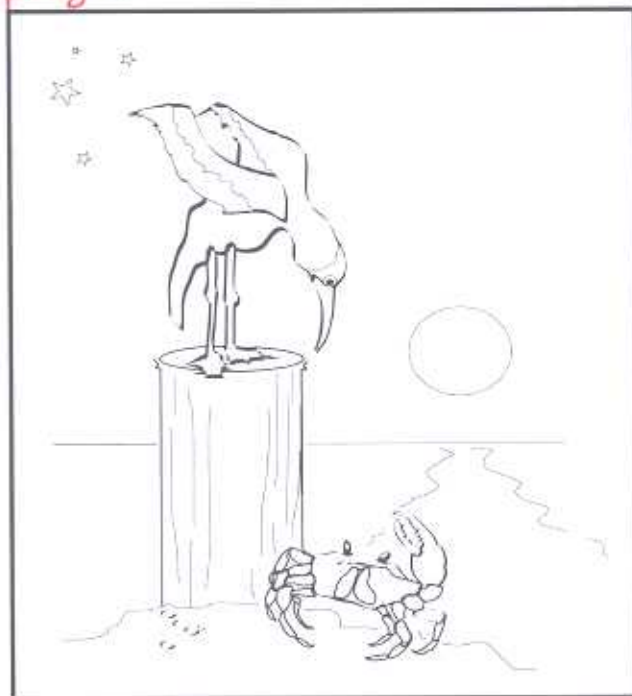
Claude has taken pictures of his estuary friends. But, the film was black and white. Help him out by coloring in the pictures. Below each picture is a description of a habitat happening.



Color your page.



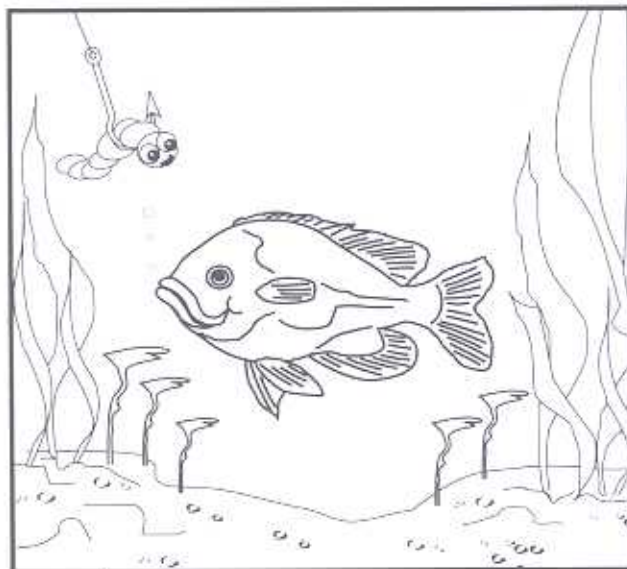
Freddie the Fabulous Frog waits for his next meal.



Sal the Seagull & Frankie the Fiddler Crab say good evening.



Claude & Clawdette go Cajun dancing in this self-portrait.



Perry the Playful Perch tricks the fisherman.

Edible Estuary

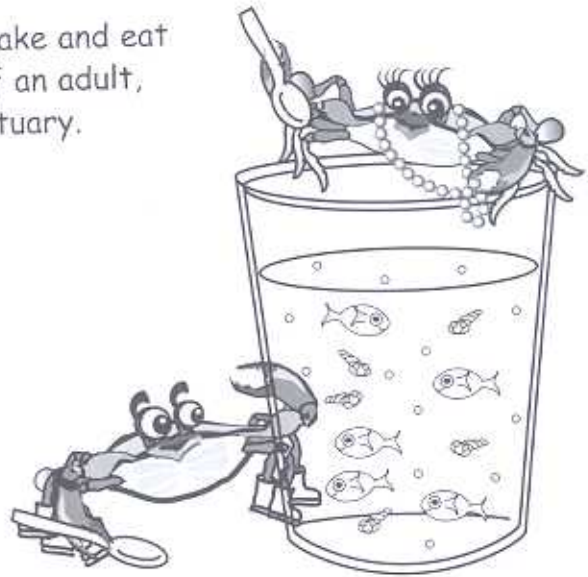
Claude and Clawdette have found a fun way to make and eat your own home-made "estuary". With the help of an adult, follow the directions below to make your own estuary.

Ingredients:

- 1 package berry blue gelatin
- 1 cup boiling water
- 2 cups ice cubes
- gummy fish and/or worms

Directions:

1. Dissolve blue gelatin in the boiling water. Prepare as package directions indicate.
2. Add ice cubes, stirring until gelatin thickens. This will take about 3-5 minutes.
3. Remove any un-melted ice and spoon gelatin into clear-sided bowls or cups or into one big bowl. The gelatin should be slightly thickened.
4. Poke gummy fish and/or worms into each dish of slightly thickened gelatin. Create your own "estuary ecosystem."
5. Refrigerate at least 30 minutes to allow it time to set.
6. Have fun and eat your own home-made estuary.



If you are unable to find the berry blue flavor, use a store brand plain gelatin and add blue food coloring and/or flavoring to suit your taste. Another alternative would be to add a couple of drops of blue food coloring to lemon or lime gelatin to obtain the color green.

Estuary Quick Facts

- In 1991, wetland-related tourism activities such as hunting, fishing, bird-watching and photography added approximately \$59 billion to the United States' economy.
- An acre of wetland can store 1 - 1.5 million gallons of flood water.
- Up to one-half of North American bird species nest or feed in wetlands.
- Although wetlands keep only about 5 percent of the land surface in the United States, they are home to 31 percent of our plant species.

Adapted From: http://www.epa.gov/owow/wetlands/pdf/fun_val_pr.pdf

Resources Page

Use these links to learn more about Louisiana wetlands or just to have fun.

<http://www.btnep.org>

The Barataria-Terrebonne National Estuary Program Web Page

<http://www.lacoast.gov>

Coastal Wetlands Planning, Protection and Restoration Act
Web Page

<http://www.laseagrant.org/>

Louisiana Sea Grant Web Page

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

LSU Agricultural Center Web Page

http://www.leeric.lsu.edu/le/special/bara_terre3.htm

Facts about the Louisiana Estuary system

<http://biology.usgs.gov/s+t/SNT/noframe/gc138.htm>

Facts about Coastal Louisiana

<http://invasive.btnep.org>

Images of invasive species

<http://www.wlf.louisiana.gov/>

Louisiana Department of Wildlife
and Fisheries Web Page

<http://www.geocities.com/timtam50k/>

Nutria-Ray.jpg
Nutria Pictures

<http://www.wisegorilla.com/images/seacreatures/seacreatures.html>

Sea Creatures Images

<http://www.photo.net/photo/pcd4336/corkscrew-swamp-alligator-70.tcl>

Picture of Alligator

<http://www.ucls.uchicago.edu/students/projects/ChicagoWater/filter.html>

Learn to make your own water filter

http://www.leeric.lsu.edu/educat/lessons/erosion/coast_e2.htm

Coastal Erosion on LEERIC at LSU

http://www.myfreecolouringpages.com/free_coloring_pages.htm

Coloring Pictures

