

Estuary Survivor Game

LESSON SUMMARY

This activity gives students a visual representation of how different activities in a watershed can affect an estuary and its aquatic life. It can be an engagement activity to lead into another lesson, water testing, or a watershed lesson, for example.

LESSON OBJECTIVE(S)

- Students will identify positive and negative human impacts on estuary systems.
- Students will identify possible solutions to prevent negative situations in estuaries.

FOCUS QUESTION

What are some ways that human activities can impact aquatic life in estuaries?

LEARNING TARGET (I CAN STATEMENT)

I can identify ways that human activities can impact aquatic life in estuaries.

STANDARDS ADDRESSED

AR: 5-ESS2-1, 5-ESS3-1, 6-ESS2-4, 6-ESS3-3

MS: E.5.10.1

TN: 4.ESS3.1, 4.ESS2.1, GEO.ESS2.12

MATERIALS

- Estuary Survivor cards (attached)
- Items to represent fish (dried beans, counters, toy fish)

PROCEDURES

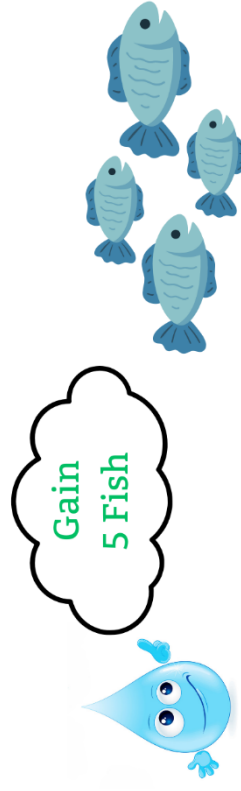
1. Print out as many sets of cards as you need. Laminate for extended use.
2. Divide students into groups of 3-5
3. Each student gets 10 “fish”. In the middle of the group, put a handful of “fish”
4. Each group gets one set of cards face down
5. Students take turns reading the card to the group, gaining or losing fish. Use the pile of fish to add lost fish or to gain fish.
6. If a student loses all their fish, have them keep playing. They typically will get a turn where they will gain fish.
7. Continue the game for a set time or until every group has cycled through the cards.
8. Whoever has the most fish wins.

CLOSURE

Ask students what observations they had. Here are some example question prompts:

1. What are some things that affect the estuaries in a good way?
2. What are some things that affect the estuaries in a bad way?
3. What kinds of things can we do to preserve and protect estuaries?
4. Did your population completely die off? Do you think that in real life, this would happen?
5. How long would it take a fish population to no longer be found in an estuary?
6. Can pollution change what type of populations live in the estuaries?

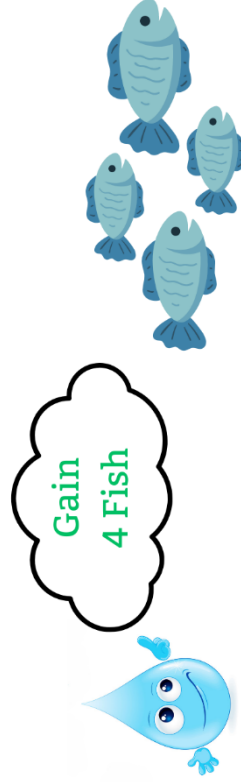
Marine Fisheries has limited the number of fish caught per person



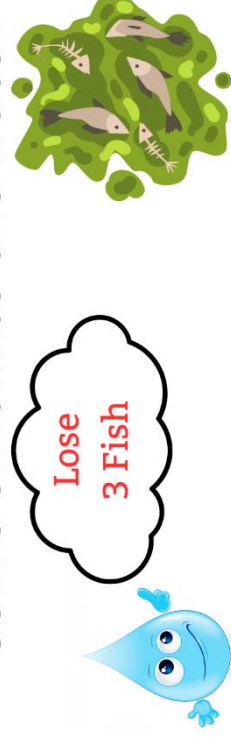
A red drum swims through your school of small fish



A nearby marsh has been designated as a nature preserve



A field was sprayed with a pesticide, and rain washed some of it into the water





Credit: ThatScienceTeacherLadyl



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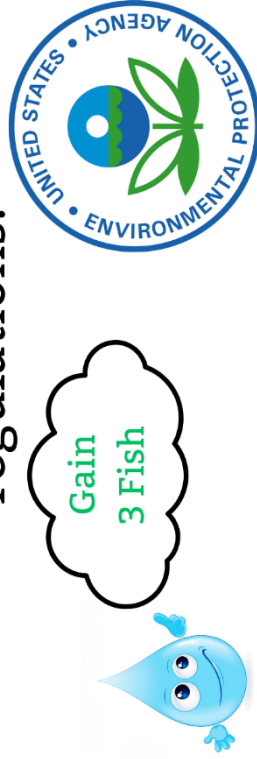
A fisherman tosses a fish back
that is too small to keep.



A town funnels all its storm drains
into a holding pond where they plant
plants that help filter out chemicals.



The EPA ensures that local
factories follow clean water
regulations.



The annual Clean Sweep event
collects 150 pounds of trash.





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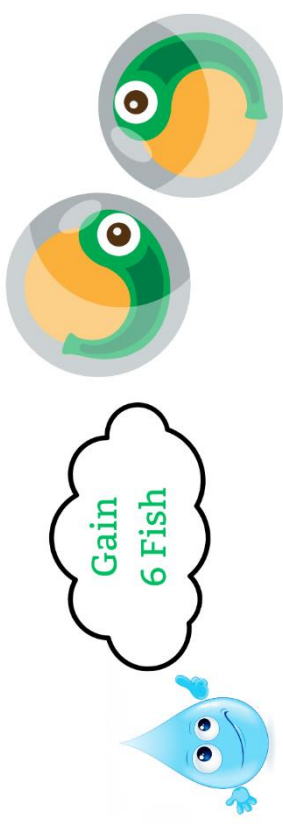
Credit: ThatScienceTeacherLadyl



A new rule states that no vegetation within 20 feet of water can be cut.



A sturgeon successfully lays her eggs in the estuary.



An area is closed to fishing during certain times of the year to protect fry (baby fish).



No dredging for clams is allowed in estuaries.





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Pfiesteria, a harmful microorganism, causes a fish kill.



Every player
Loses 4 Fish



A fisherman checks his gill nets regularly and tosses back any fish he doesn't want to eat.

Gain
3 Fish



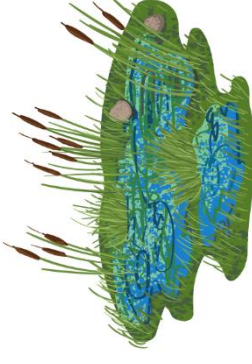
Waste from a chicken farm has run off into the nearby waterway.

Lose
2 Fish



A town decided not to turn the salt marsh into a new housing development.

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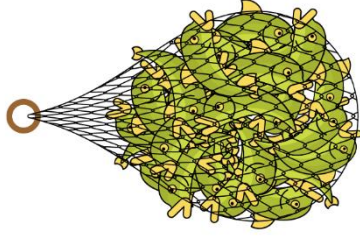


Credit: ThatScienceTeacherLadyl



A fisherman sets a gill net.

Lose
3 Fish



A dock was built in a salt marsh
without obtaining the correct
permits.

Lose
2 Fish



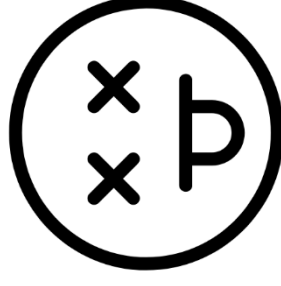
A pod of dolphin pass through.

Lose
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A large algae bloom leads to
depleted oxygen levels in the
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Lose
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Oil leaks out of a jet ski's motor.



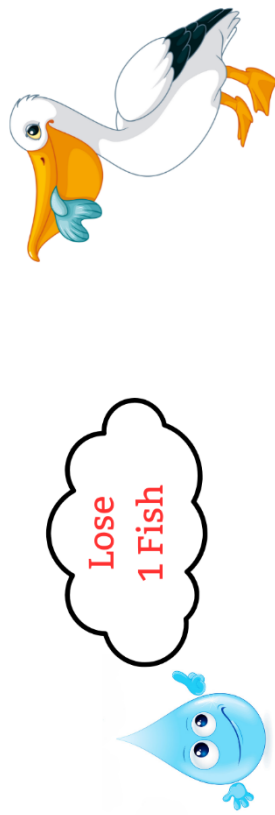
A bulldozer pushes sediment and other debris into the water.



A new marina attracts new fisherman to the area.



A pelican helps itself to dinner.





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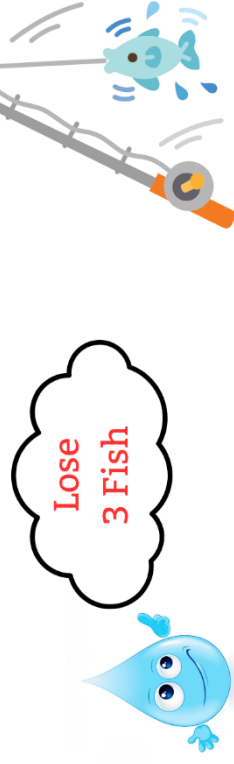
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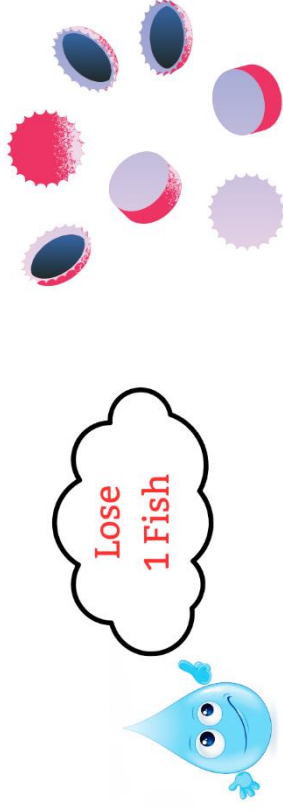
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A group of people catch three fish that are too small to keep, but keep them anyway.



A fish mistakes a plastic bottle cap for food.



Sometimes life makes you shark bait.



A school of bluefish enjoy a fish snack.





Credit: ThatScienceTeacherLadyl



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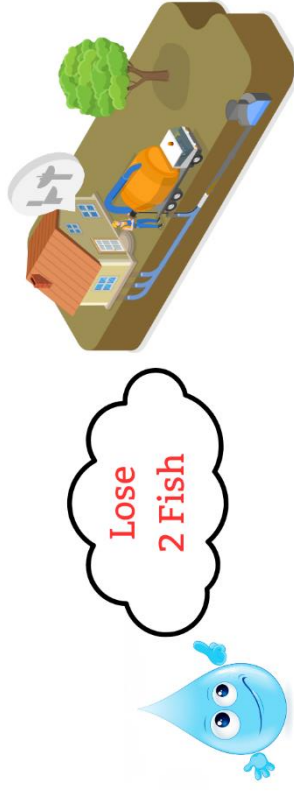
Credit: ThatScienceTeacherLadyl



A boat speeds through a shallow part of an estuary, propellers dragging the bottom.



A septic tank drains into the nearby waterway.





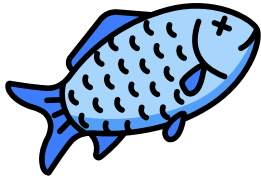
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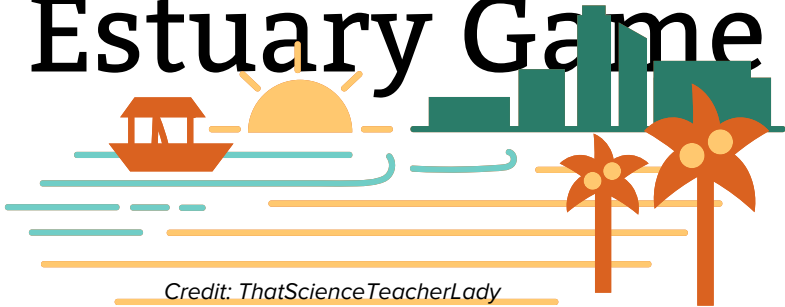
Credit: ThatScienceTeacherLady



A red drum swims through
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Estuary Game



Credit: ThatScienceTeacherLady



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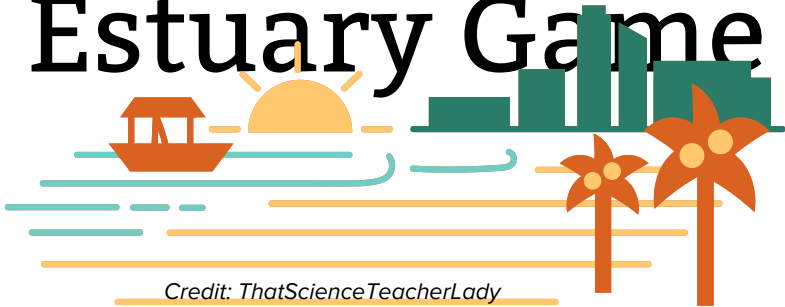
A field was sprayed with a pesticide, and rain washed some of it into the water



Lose
3 Fish



Estuary Game



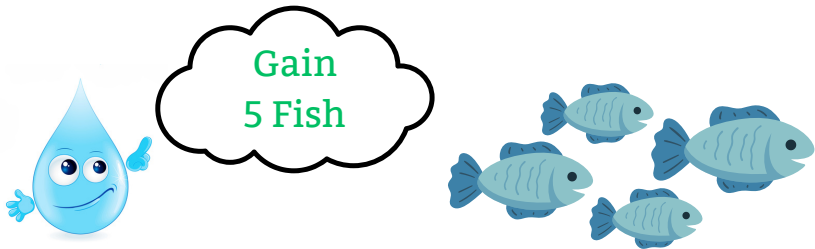
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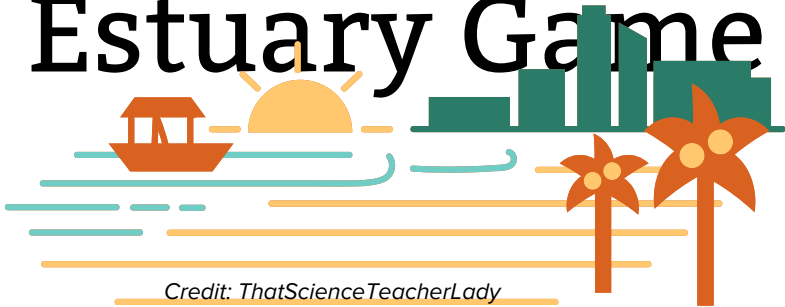
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Marine Fisheries has limited the
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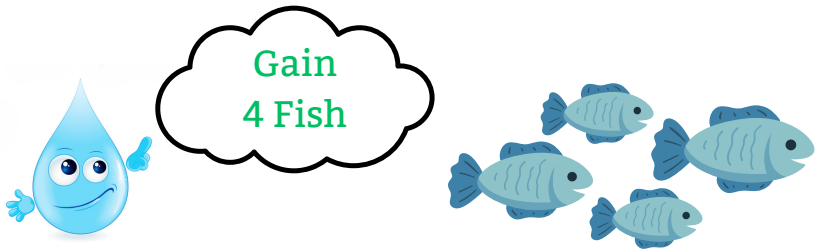
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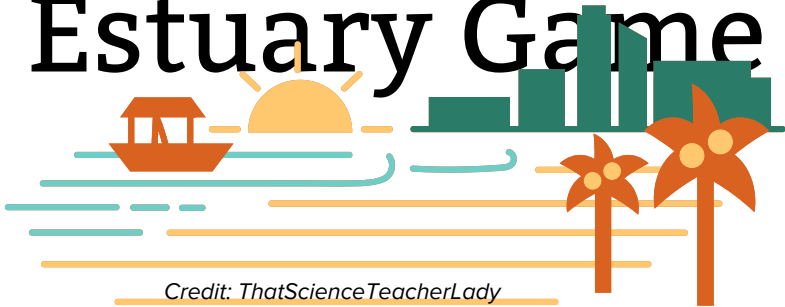
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A nearby marsh has been
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Estuary Game



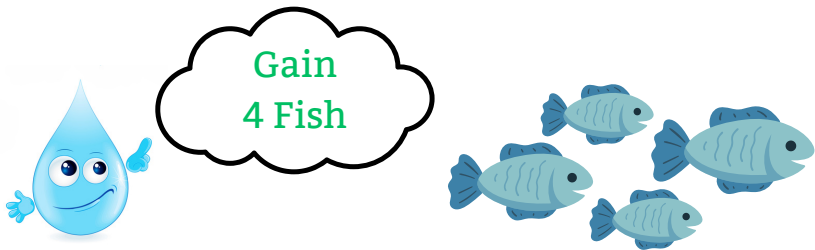
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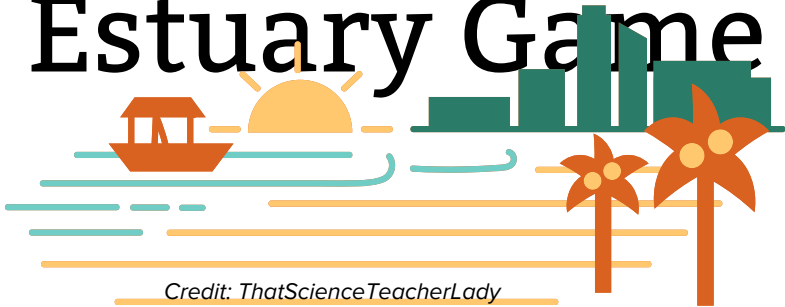
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A town funnels all its storm drains into a holding pond where they plant plants that help filter out chemicals.



Estuary Game



Credit: ThatScienceTeacherLady



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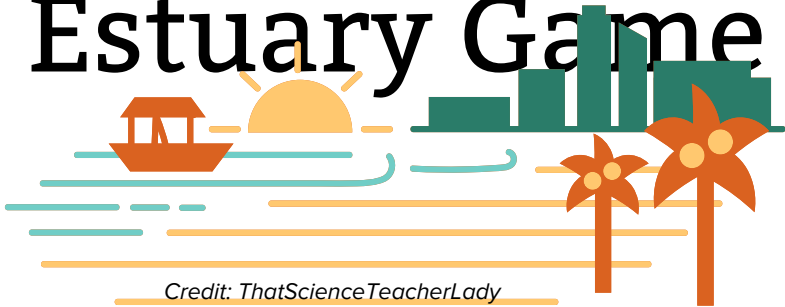
The annual Clean Sweep event
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Gain
1 Fish



Estuary Game



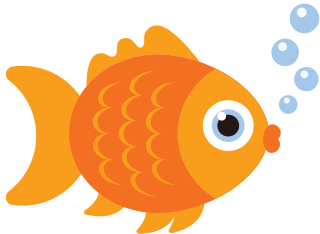
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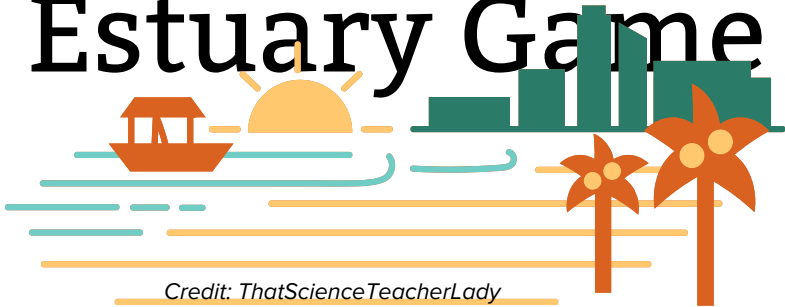
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A fisherman tosses a fish back
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Estuary Game



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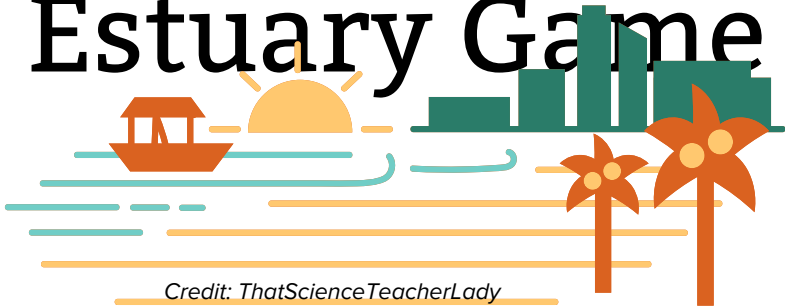
The EPA ensures that local factories follow clean water regulations.



Gain
3 Fish



Estuary Game



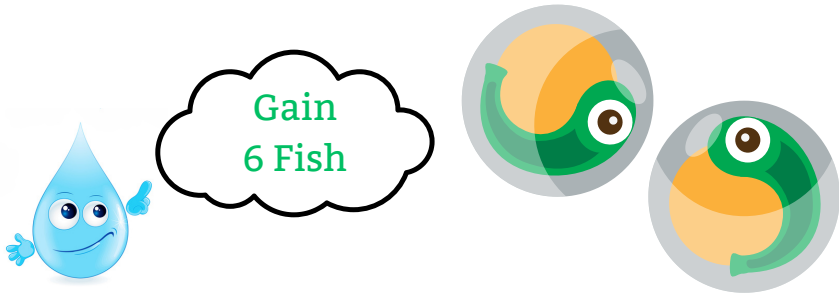
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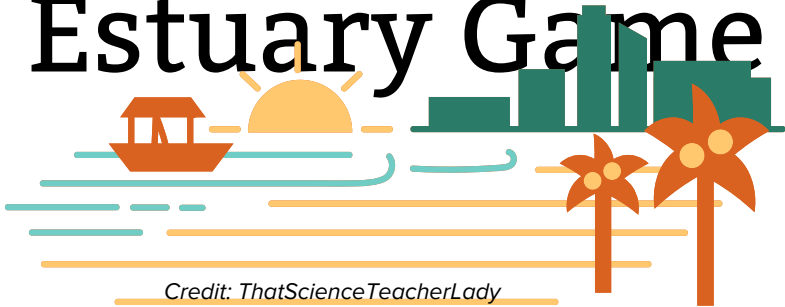
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A sturgeon successfully lays her eggs in the estuary.



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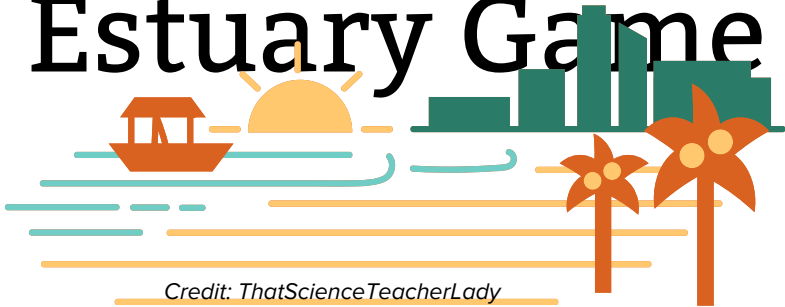
No dredging for clams is allowed
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Gain
5 Fish



Estuary Game



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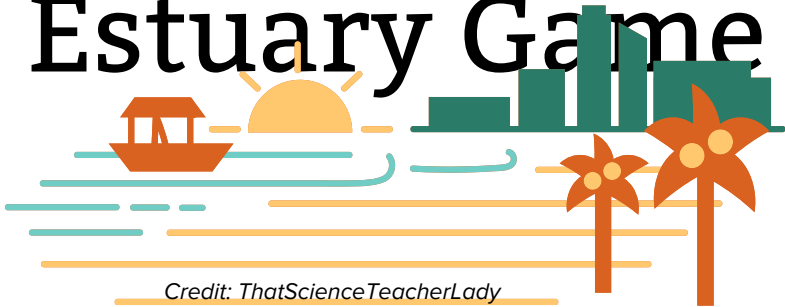
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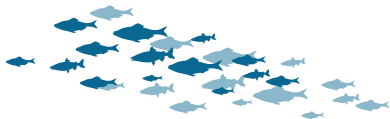
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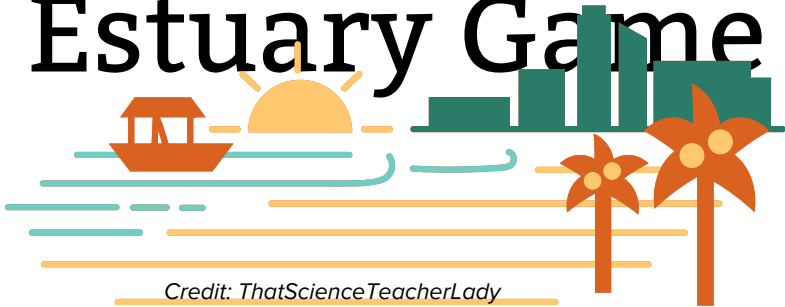
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An area is closed to fishing during certain times of the year to protect fry (baby fish).



Estuary Game



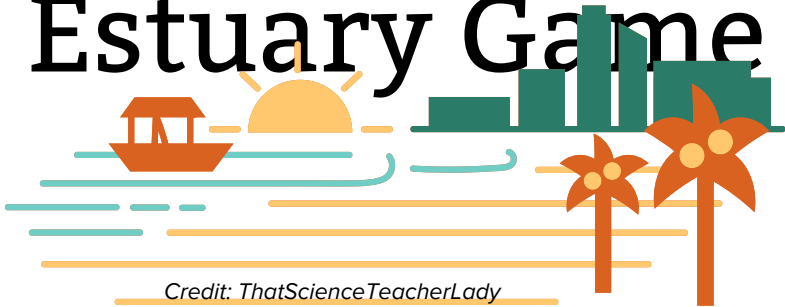
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A fisherman checks his gill nets regularly and tosses back any fish he doesn't want to eat.



Estuary Game



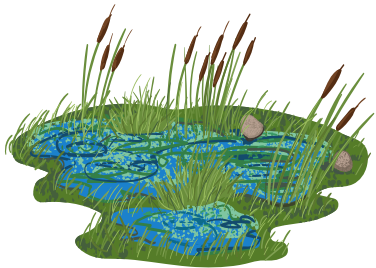
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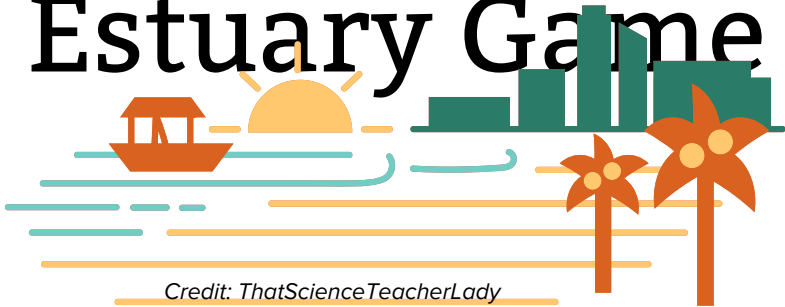
A town decided not to turn the salt marsh into a new housing development.



Every player
gains 4 Fish



Estuary Game



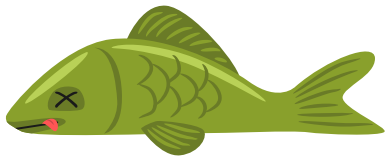
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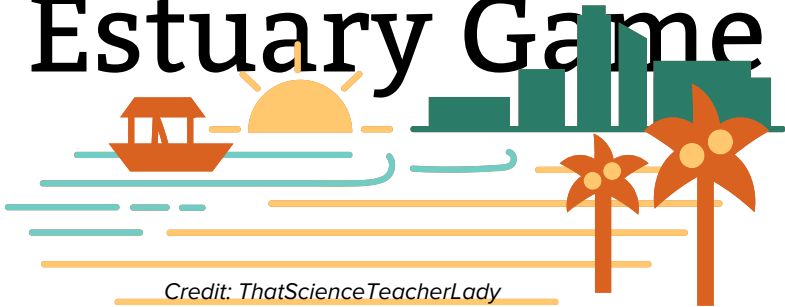
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Waste from a chicken farm has run off into the nearby waterway.



Estuary Game



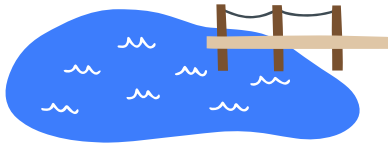
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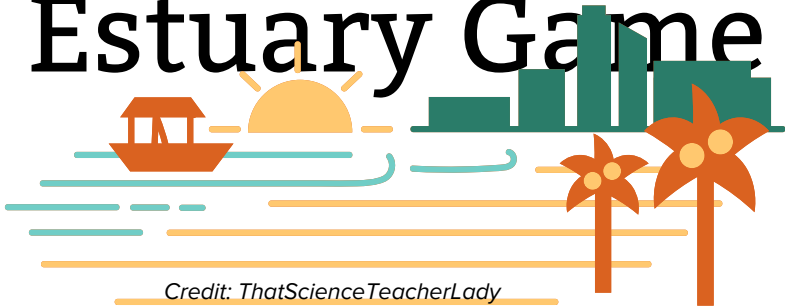
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A dock was built in a salt marsh
without obtaining the correct
permits.



Estuary Game



Credit: ThatScienceTeacherLady



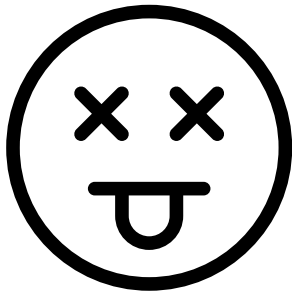
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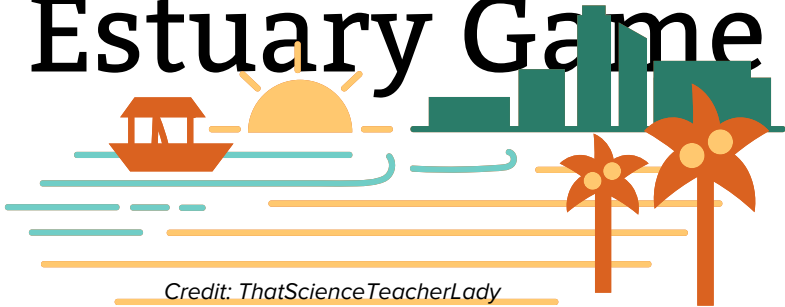
A large algae bloom leads to
depleted oxygen levels in the
water.



Lose
all your fish



Estuary Game



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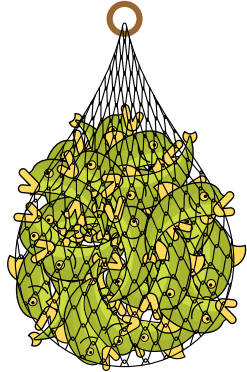
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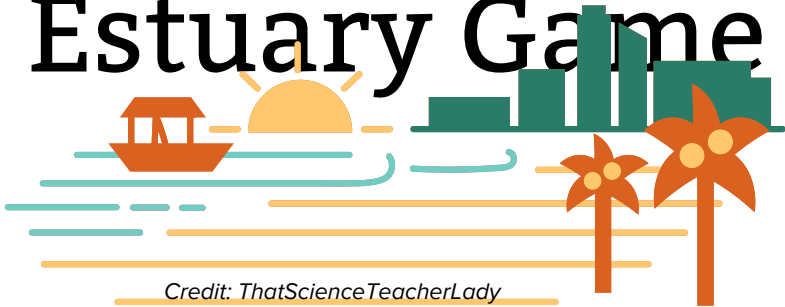
A fisherman sets a gill net.



Lose
3 Fish



Estuary Game



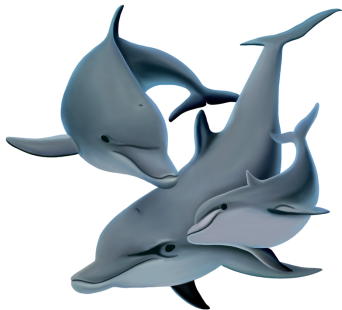
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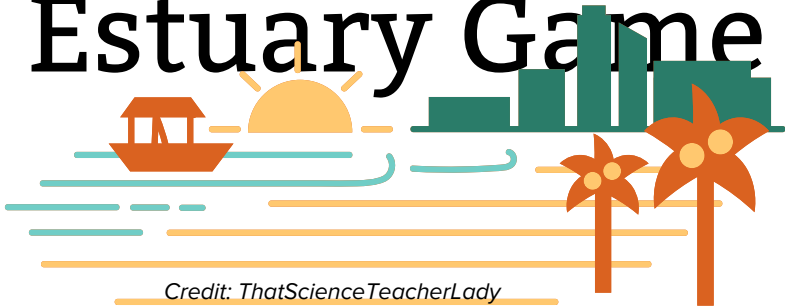
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A pod of dolphin pass through.



Estuary Game



Credit: ThatScienceTeacherLady



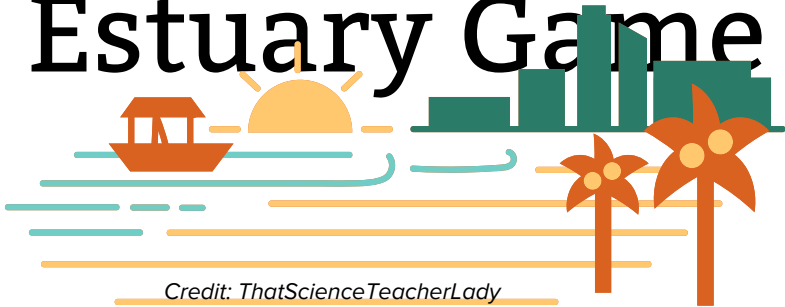
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A bulldozer pushes sediment and other debris into the water.



Estuary Game



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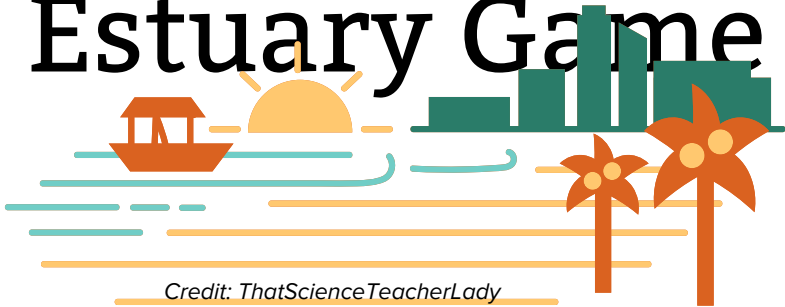
A pelican helps itself to dinner.



Lose
1 Fish



Estuary Game



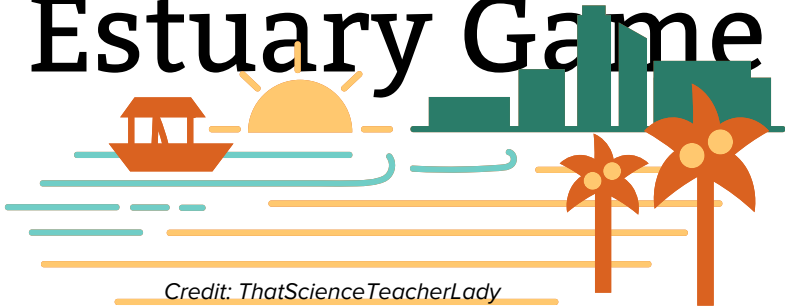
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Oil leaks out of a jet ski's motor.



Estuary Game



Credit: ThatScienceTeacherLady



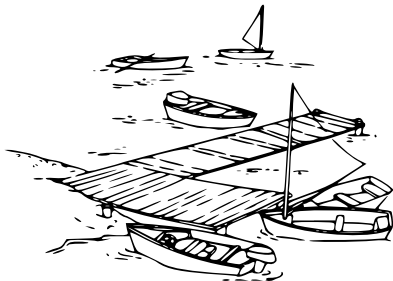
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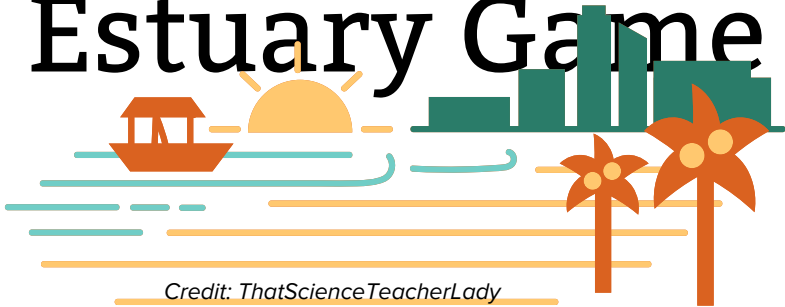
A new marina attracts new
fisherman to the area.



Lose
5 Fish



Estuary Game



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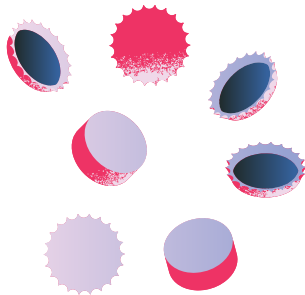
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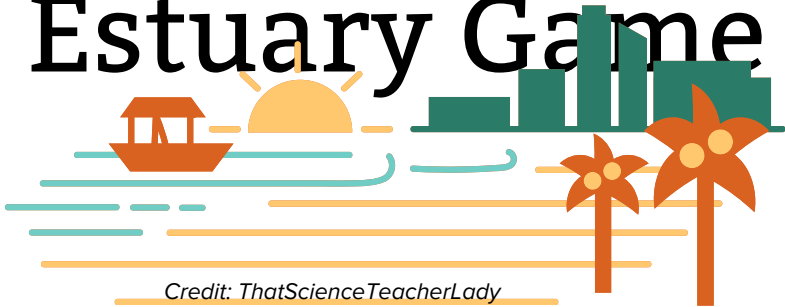
A fish mistakes a plastic bottle cap for food.



Lose
1 Fish



Estuary Game



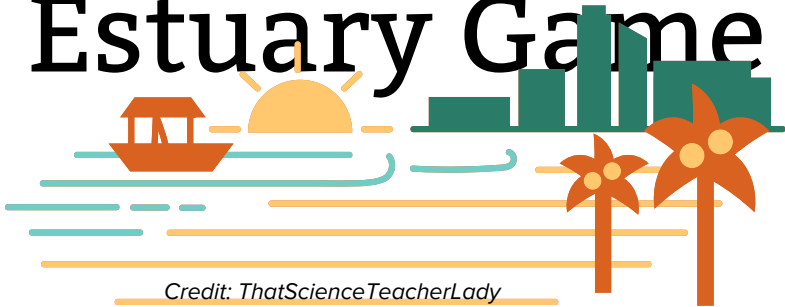
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A school of bluefish enjoy a
fish snack.



Estuary Game



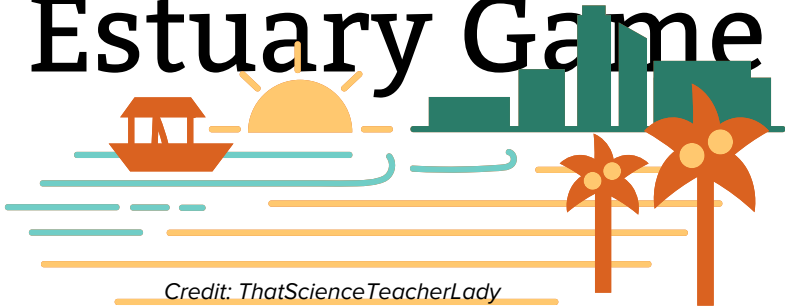
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A group of people catch three fish that are too small to keep, but keep them anyway.



Estuary Game



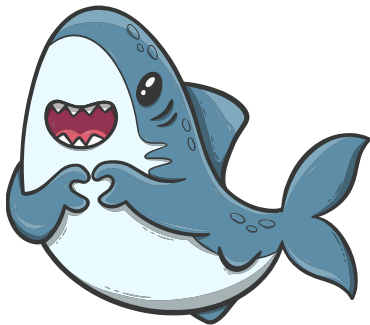
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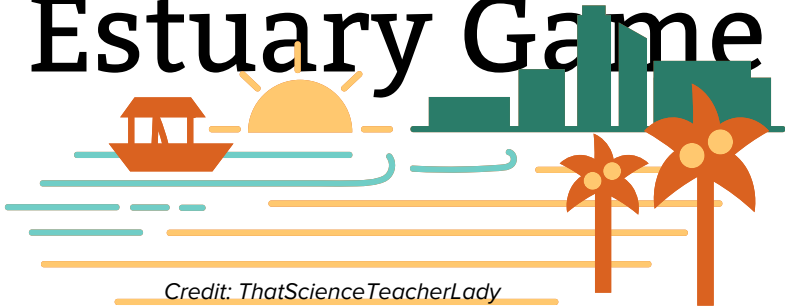
Sometimes life makes you
shark bait.



Lose
3 Fish



Estuary Game



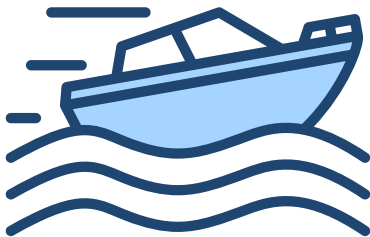
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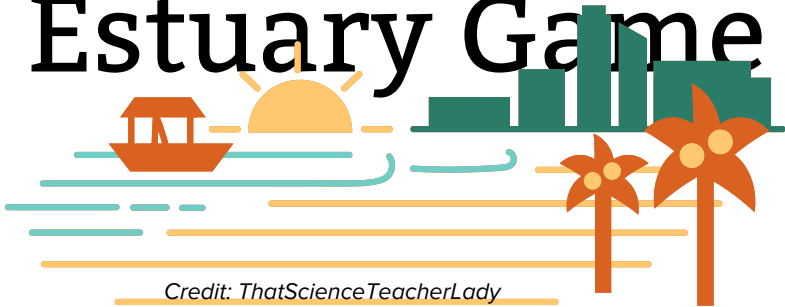
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A boat speeds through a shallow part of an estuary, propellers dragging the bottom.



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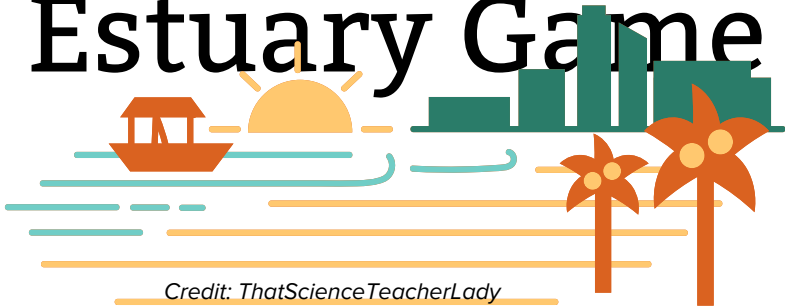
A septic tank drains into the nearby waterway.



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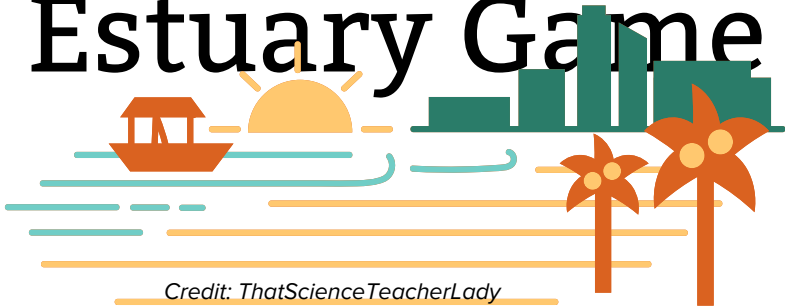
Pfiesteria, a harmful
microorganism, causes a fish
kill.



Every player
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Estuary Game



Credit: ThatScienceTeacherLady



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