

**Assessment and Discussion Questions:**

***Adaptations and Interactions  
in the Estuary.***

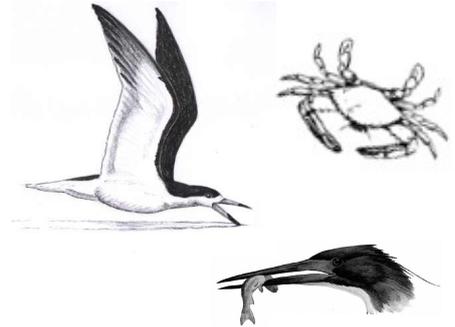
The following student study questions are intended for students from 4<sup>th</sup> to 6<sup>th</sup> grade.

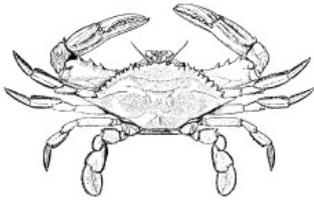
*Note to the teacher:*

*1. These questions are intended to stimulate classroom discussion/debate and as a resource for assessment following lessons and activities.*

*2. Before attempting these study questions, students should be familiar with the following key words and concepts:*

Adaptations  
Buoyancy  
Estuary  
Food chain  
Invasive species  
Mandible  
Plankton  
Talons  
Water column





*Blue Crab*

1. The blue crab is one of the fastest swimming crabs in the world. Their incredible swimming speed can best be attributed to the crab's ...

- A. large claws.
- B. jointed legs.
- C. body shape.
- D. paddle-like feet



*Ibis*

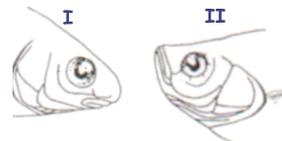
2. An Ibis is best adapted to feeding ...

- A. by diving into the water and striking small fish.
- B. by picking at worms, insects and small fish in shallow water.
- C. by picking small insects from the bark of trees.



3. Ospreys and eagles have sharp claws called talons. This feature makes ospreys and eagles best adapted to ...

- A. swimming very fast.
- B. landing on flat surfaces.
- C. grasping fish
- D. walking



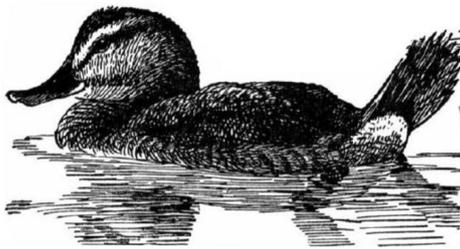
4. Different species of fish find their food at different depths in the water column. Which of the following statements is best supported by drawing?

- A. Fish I feeds on insects that live on the bottom. Fish II feeds on insects floating on the surface of the water.
- B. Fish II feeds on insects that live on the bottom. Fish I feeds on insects floating on the surface of the water.
- C. Both fish feed only at night.
- D. Fish I eats more than Fish II.



5. On the upland edges of an estuary, raccoons feed on crabs that crawl along the shoreline. Feeding on crabs without getting pinched by the crab's claws is an example of ...

- A. an inherited trait.
- B. learned behavior.



6. Duck feathers have the ability to trap air very efficiently. This characteristic makes ducks better able to ...

- A. swim underwater
- B. catch fish
- C. float



7. The Brown Pelican is best adapted to feeding ...

- A. by picking small insects from the bark of trees.
- B. by filtering plankton and small fish from large volumes of water.
- C. by picking at worms, insects, and small fish in shallow water.



**Eagle**



**Osprey**

8. The beaks of eagles and ospreys make the birds best adapted to ...

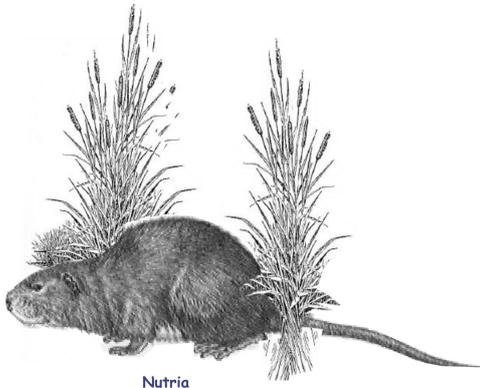
- A. feed on worms and insects buried in the estuary mud.
- B. filter plankton and small fish from large volumes of water.
- C. rip apart their food.



Black Skimmer

9. Skimmers are recognized as the only North American bird with the lower mandible longer than the upper. Due to this unique feature, skimmers are best adapted to feeding ...

- A. by flying near the surface of the water collecting insects and small fish as they fly.
- B. by picking small insects from the bark of trees.
- C. by picking at worms, insects and small fish in the shallow water of the marsh.
- D. by filtering plankton and small fish from large volumes of water.



Nutria

10. In North America, Nutria are considered an invasive species and can be found residing in marshlands. Which of the following best describes why they are called 'invasive'?

- A. They were brought to North America in the mid 1900 s.
- B. Their feeding habits include digging up the roots of plants.
- C. They travel on land and in the water.

*Answer Summaries to:*

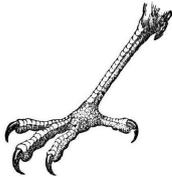
*Adaptations and Interactions in the Estuary (Grades 4-6)*



1. (D) Blue Crabs are known as some of the fastest swimming crabs around. This is because their fifth pair of legs has been modified into paddle-like appendages called swimmerets .”



2. (B) An Ibis is a shore bird that can often be seen in the shallow waters of the marsh and tidal mudflats. The long legs allow the Ibis to walk easily through the mud and shallow water. Their long curved beak allows them to reach worms and other invertebrates as they retreat to their holes in the mudflats.



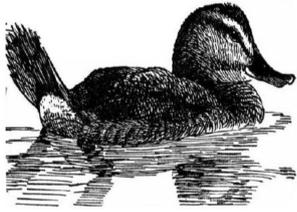
3. (C) Ospreys and Eagles can be found in many of the estuaries in North America. They are classified as raptors because of their incredibly strong talons and fierce feeding habits. The talons of these birds allow them to dip into the water and grab unsuspecting fish.



4. (A) Fish find their food at different depths in the water column. Those fish with mouths on the underside (Fish I) feed along the bottom and over decaying plants. Those with mouths similar to Fish II, can be found feeding on insects and plants floating on the surface of the water.



5. (B) Raccoons and other small mammals inhabit the shores of the estuaries. Young raccoons learn to feed on crabs without getting pinched by learning from their mistakes.



6. (C) During the migration season, ducks use the estuaries of the gulf coast to rest and feed before their journey across the Gulf of Mexico. Because duck feathers trap air so efficiently, ducks are better able to dry quickly, fly for long distances, and float with a lot of their body above the water.



7. (C) Brown Pelicans fly just above the water surface with their necks folded, heads resting on their backs, using slow, powerful wingbeats. When they feed, they dive beak-first into the water, returning to the surface with a mouthful of fish. Their massive bills, elastic throat pouch, and strong bodies are exceptional features for this type of feeding behavior.



**Eagle**

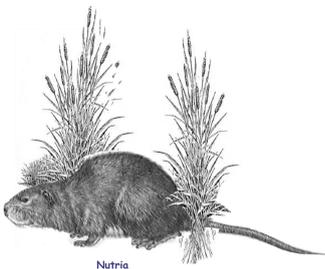


**Osprey**

8. (C) The bills of ospreys and eagles is strong and sharp. These characteristics make the eagle best adapted to ripping apart their food.



9. (A) The unique longer lower mandible allows the skimmer to fly near the surface of shallow water collecting insects and small fish. They can be recognized from afar by their black-tipped bill, red legs, and black topside.



**Nutria**

10. (C) Nutria are an introduced species because they are not native to North America. They have earned their status as an invasive species because of the dramatic and sometimes irreversible damage done to marshlands by digging up and feeding on the roots of marsh grasses.

