***Animal Diversity, 8e* (Hickman)**

**Chapter 16 Fishes**

1) The cladistic use of the term "fish"

A) applies to a monophyletic group of aquatic vertebrates.

B) includes all swimming animals from the amphioxus lancelet up to but not including the true amphibians.

C) would also include the common ancestor with land vertebrates (including us) and a strict cladist would then include us in "fish."

D) only includes aquatic vertebrates with gills.

E) reflects any vertebrate that is adapted to water.

Answer: C

Section: 16.01

Topic: Ancestry and Relationships of Major Groups of Fishes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 2. Understand

Gradable: automatic

2) The most primitive of the early fishes were the

A) Agnathans.

B) Gnathostomes.

C) Acanthodians.

D) Lobe-finned fishes.

E) Ray-finned fishes.

Answer: A

Section: 16.01

Topic: Ancestry and Relationships of Major Groups of Fishes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

3) The "Age of Fishes" was in the \_\_\_\_\_\_\_\_ period.

A) Permian

B) Cambrian

C) Carboniferous

D) Devonian

E) Silurian

Answer: D

Section: 16.01

Topic: Ancestry and Relationships of Major Groups of Fishes

Learning Objective: General-Understand basic concepts related to fishes.

Bloom's: 1. Remember

Gradable: automatic

4) The Teleost fishes consist of what major groups?

A) Acanthodii, actinopterygii, and sarcopterygii

B) Chondricthyes and agnatha

C) Myxini and placoderms

D) Agnatha, craniata, and osteichthyes

E) None of the choices are correct.

Answer: E

Section: 16.01

Topic: Ancestry and Relationships of Major Groups of Fishes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

5) The cartilaginous fishes do NOT include

A) skates.

B) rays.

C) sharks.

D) eels.

E) All of the choices are correct.

Answer: D

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

6) Cartilaginous fishes

A) lost the heavy dermal armor of their ancestors.

B) had ancestors with bone but moved to an all cartilage skeleton.

C) flourished in the Devonian and Carboniferous but nearly went extinct at the end of the Paleozoic.

D) lack a swim bladder.

E) All of the choices are correct.

Answer: E

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 2. Understand

Gradable: automatic

7) Hagfishes

A) are entirely fresh water animals.

B) are parasitic.

C) have a complex but well-researched reproductive cycle.

D) generate enormous quantities of slime if disturbed.

E) All of the choices are correct.

Answer: D

Section: 16.02

Topic: Living Jawless Fishes: Cyclostomata

Learning Objective: 16.01 Compare and contrast hagfishes and lampreys.

Bloom's: 1. Remember

Gradable: automatic

8) Unlike other vertebrates, the body fluids of hagfishes are

A) strongly hypoosmotic to seawater.

B) strongly hyperosmotic to seawater.

C) in osmotic equilibrium with seawater.

D) very concentrated, with over 80% blood solids.

E) under high internal pressure near the surface.

Answer: C

Section: 16.02

Topic: Living Jawless Fishes: Cyclostomata

Learning Objective: 16.01 Compare and contrast hagfishes and lampreys.

Bloom's: 1. Remember

Gradable: automatic

9) The hagfish has a keen sense of

A) depth and water pressure in order to control its swim bladder.

B) smell and touch in order to locate dead and dying fish.

C) sight in order to locate dying fish and annelids, molluscs, and crustaceans.

D) hearing in order to locate prey in dark depths.

E) All of the choices are correct.

Answer: B

Section: 16.02

Topic: Living Jawless Fishes: Cyclostomata

Learning Objective: 16.01 Compare and contrast hagfishes and lampreys.

Bloom's: 1. Remember

Gradable: automatic

10) Shark characteristics include

A) having internal fertilization.

B) having isosmotic blood (compared to that of marine water) due to high concentrations of urea and trimethylamine oxide.

C) having teeth of modified placoid scales.

D) being able to detect bioelectric fields.

E) having a swim bladder to control buoyancy.

Answer: A, B, C, D

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 2. Understand

Gradable: automatic

11) The lateral-line of a shark is used for

A) detecting and locating objects in the water.

B) excretion of urea and water.

C) detecting odors.

D) secreting mucus as a swimming lubricant.

E) detecting the heat of prey animals.

Answer: A

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

12) Sharks have \_\_\_\_\_\_\_\_ scales.

A) placoid

B) ctenoid

C) cycloid

D) ganoid

E) polyploid

Answer: A

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

13) Shark reproduction and development involves

A) clearing a bottom area in order that the female can lay eggs and the male can deposit sperm over them.

B) no production of yolk at all but the first development of a primitive placenta in all sharks.

C) substantial care of young after the eggs are laid or young are born.

D) cases of oviparous, ovoviviparous, and viviparous strategies.

E) a larval stage quite different from the adult.

Answer: D

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

14) The spiral valve in the intestine of a shark serves to

A) release strong acids to aid digestion.

B) function as a liver in producing bile salts.

C) entrap food molecules in a mucus strand.

D) slow passage of food and increase absorptive surface area.

E) propel food through the tract at a faster rate.

Answer: D

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 2. Understand

Gradable: automatic

15) Ampullary organs of Lorenzini

A) are located along the lateral-line of a shark.

B) help the shark see prey at night.

C) help the shark detect bioelectric fields at a close range.

D) detect orientation similar to that perceived by our semicircular canals.

E) amplify sounds of a struggling prey from great distances.

Answer: C

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

16) The large spiracles on the tops of the heads of skates and rays are used in what way?

A) Air intake for respiration

B) Water intake to prevent clogging the gills

C) Detection of bioelectric fields from prey buried in the sea bottom

D) Detection of chemical odors in the water

Answer: B

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

17) The ovoviviparous sharks are those that

A) lay eggs for external fertilization.

B) bear their young alive after retaining the eggs in the oviduct but with no further nourishment except from that of the yolk.

C) lay eggs after internal fertilization.

D) feed developing young a nutritious "uterine milk."

E) None of the choices is correct.

Answer: B

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

18) The chimaera

A) include representatives called ratfish and ghostfish.

B) have an odd mixture of shark-like and their own unique characteristics.

C) were more common in the Cretaceous than they are now.

D) have the upper jaw fused to the cranium.

E) All of the choices are correct.

Answer: E

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 2. Understand

Gradable: automatic

19) The most diverse fish group is the

A) ray-finned fishes.

B) lung-fishes.

C) lobe-finned fishes.

D) cartilaginous fishes.

E) None of the choices are correct.

Answer: A

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

20) A representative of the ray-finned fish group, the chondrosteans, is the

A) gar.

B) sturgeon.

C) coelacanth.

D) bowfin.

E) carp.

Answer: B

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

21) Representatives of the most primitive non-teleost neopterygians are the

A) gar and bowfin.

B) sturgeon and paddle-fish.

C) coelacanths.

D) minnows and suckers.

E) carp and buffalo fish.

Answer: A

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

22) What feature(s) separates a shark from a blue-gill?

A) Gill slits versus operculum

B) Cartilage versus bones

C) Internal versus external fertilization

D) No swim bladder versus swim bladder

E) All of the choices are correct.

Answer: E

Section: 16.01

Topic: Ancestry and Relationships of Major Groups of Fishes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.; 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 2. Understand

Gradable: automatic

23) In schooling, fish rely on sensitivity to vibration and water currents. This is provided by cells called neuromasts located inside

A) caudal fin.

B) gills.

C) swim bladder.

D) lateral-line.

E) placoid scales.

Answer: D

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 2. Understand

Gradable: automatic

24) Darters are fish that live in fast-running rapids; they eat surface insects, they rest on the bottom avoiding the push of the water, and make brief frantic dashes to the surface to feed. If they swam midstream, they would expend a huge amount of energy staying midstream. What physiological strategy likely accounts for their ability to live on the bottom?

A) Lack of gills

B) Loss of a lateral-line

C) Loss of a swim bladder

D) Reduction in fin size and number

E) Expansion of a swim bladder into a lung

Answer: C

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 4. Analyze

Gradable: automatic

25) The lungfishes

A) are all extinct.

B) do not really have functional lungs.

C) live only in Australia, Africa, and South America.

D) are an aberrant branch of the cartilaginous fishes.

E) are survivors of primitive ray-finned fishes.

Answer: C

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 2. Understand

Gradable: automatic

26) The primary propulsive mechanism of a fish is

A) use of the trunk and caudal musculature.

B) movement of water into the mouth and forced out the gills.

C) movement of the pectoral fins.

D) movement of the pelvic fins.

E) None of the choices are correct.

Answer: A

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 2. Understand

Gradable: automatic

27) The mechanism whereby buoyancy is achieved in different kinds of fishes is

A) through the presence of a large, oily liver when a swim bladder is not present.

B) through the presence of a swim bladder that is kept filled as the fish periodically swims to the surface and gulps air.

C) through the presence of a swim bladder that is regulated internally by structures that add or remove gas from the bladder by capillary beds.

D) All of the choices are correct.

E) None of the choices are correct.

Answer: D

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 2. Understand

Gradable: automatic

28) Marine bony fishes are

A) hypoosmotic regulators.

B) in osmotic equilibrium with seawater.

C) hyperosmotic regulators.

D) osmotic adjustors.

E) None of the choices are correct.

Answer: A

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 3. Apply

Gradable: automatic

29) To replace water lost osmotically, marine fish

A) pump water inward across the gill surface by means of special absorptive cells.

B) drink seawater and then pump extra salt outward across the gill surface by means of salt secretory cells, and excrete the remaining ions in the feces.

C) increase glomerular filtration by the kidney.

D) drink much more seawater and accumulate unwanted salts in crystalline form.

E) produce water metabolically by the oxidation of food stuffs.

Answer: B

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 2. Understand

Gradable: automatic

30) Eel-like, jawless fishes with both marine and freshwater species belong to the class \_\_\_\_\_\_\_\_.

Answer: Petromyzontida

Section: 16.02

Topic: Living Jawless Fishes: Cyclostomata

Learning Objective: 16.01 Compare and contrast hagfishes and lampreys.

Bloom's: 1. Remember

Gradable: automatic

31) The class \_\_\_\_\_\_\_\_ is composed of vertebrates having eel-like bodies, a biting mouth with two rows of eversible teeth, and numerous slime glands.

Answer: Myxini

Section: 16.02

Topic: Living Jawless Fishes: Cyclostomata

Learning Objective: 16.01 Compare and contrast hagfishes and lampreys.

Bloom's: 1. Remember

Gradable: automatic

32) The group designation \_\_\_\_\_\_\_\_ was formerly considered a class name and designated bony fishes that possessed a swim bladder or lungs.  Cladistic analysis has resulted in the division of this group into two classes.  One includes ray-finned fishes and the other lobe-finned fishes.

Answer: osteichthyes

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

33) The class \_\_\_\_\_\_\_\_ is composed of vertebrates having placoid scales, a heterocercal caudal fin, a more ventral mouth, and a cartilaginous endoskeleton.

Answer: Chondrichthyes

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

34) Great Lakes fisheries nearly collapsed last century due to an invasion by \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

Answer: sea lampreys

Section: 16.02

Topic: Living Jawless Fishes: Cyclostomata

Learning Objective: 16.01 Compare and contrast hagfishes and lampreys.

Bloom's: 1. Remember

Gradable: automatic

35) In the elasmobranchs, the sexes are separate and fertilization is \_\_\_\_\_\_\_\_.

Answer: internal

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

36) The lateral-line system of sharks contains special receptor organs, called \_\_\_\_\_\_\_\_, that are sensitive to vibrations and currents in water.

Answer: neuromasts

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 1. Remember

Gradable: automatic

37) Sarcopterygians are the sister group of the \_\_\_\_\_\_\_\_.

Answer: tetrapods

Section: 16.01; 16.04

Topic: Ancestry and Relationships of Major Groups of Fishes; Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

38) A lobe-finned fish thought to have been extinct for 70 million years, but discovered off the coast of South Africa in 1938, is called the \_\_\_\_\_\_\_\_.

Answer: coelacanth

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 1. Remember

Gradable: automatic

39) Teleost fishes have a type of tail that is called a \_\_\_\_\_\_\_\_ tail.

Answer: homocercal

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 1. Remember

Gradable: automatic

40) The gas gland of the teleost swim bladder contains a remarkable network of blood capillaries called the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

Answer: rete mirabile

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 1. Remember

Gradable: automatic

41) The gills of bony fishes are covered with a movable flap called the \_\_\_\_\_\_\_\_.

Answer: operculum

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 1. Remember

Gradable: automatic

42) Adult eels from both Europe and North America swim enormous distances to spawn at great depth in the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

Answer: Sargasso sea

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.05 Contrast, using examples, two kinds of migratory fishes: anadromous and catadromous.

Bloom's: 1. Remember

Gradable: automatic

43) Migratory fishes, such as the Atlantic salmon, that spend their adult lives at sea but return to fresh water to spawn are called \_\_\_\_\_\_\_\_.

Answer: anadromous

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.05 Contrast, using examples, two kinds of migratory fishes: anadromous and catadromous.

Bloom's: 1. Remember

Gradable: automatic

44) Experiments have shown that homing salmon are guided upstream by the characteristic \_\_\_\_\_\_\_\_ of the parent stream.

Answer: odor

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.05 Contrast, using examples, two kinds of migratory fishes: anadromous and catadromous.

Bloom's: 1. Remember

Gradable: automatic

45) Some sharks that develop a placental-like attachment for the nourishment of the embryo in the mother's reproductive system exhibit \_\_\_\_\_\_\_\_ reproduction.

Answer: viviparous

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 2. Understand

Gradable: automatic

46) The term for external fish reproduction where eggs are released and sperm (milt) is exuded over the eggs.

Answer: spawning

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.05 Contrast, using examples, two kinds of migratory fishes: anadromous and catadromous.

Bloom's: 1. Remember

Gradable: automatic

47) How does a shark detect potential prey or distinguish it from floating non-living debris?

Answer: Answers will vary.

Section: 16.03

Topic: Cartilaginous Fishes: Chondrichthyes

Learning Objective: 16.02 Discuss the functional morphology of sharks and rays, especially sensory and reproductive systems.

Bloom's: 3. Apply

Gradable: manual

48) Why has the coelacanth apparently changed so little from its fossil ancestor of 70 million years ago?

Answer: Answers will vary.

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.03 Contrast the two major clades containing bony fishes.

Bloom's: 2. Understand

Gradable: manual

49) Why is there a relationship between fish size and speed? Does this not start an evolutionary speed race driving predator and prey to grow to ever increasing lengths? Why do any small fish survive?

Answer: Answers will vary.

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 2. Understand

Gradable: manual

50) How is gas moved into and out of the teleost swim bladder? Describe the physiological process involved.

Answer: Answers will vary.

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 2. Understand

Gradable: manual

51) Describe the life cycle of the eel. Contrast this migration with the Pacific salmon.

Answer: Answers will vary.

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.05 Contrast, using examples, two kinds of migratory fishes: anadromous and catadromous.

Bloom's: 2. Understand

Gradable: manual

52) Some teleost fish have a four-chambered heart. Yet this is not the same as the four-chambered heart of a bird or a mammal. Compare and contrast these two types of "four-chambered" hearts.

Answer: Answers will vary.

Section: 16.04

Topic: Bony Fishes and Tetrapods: Osteichthyes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 4. Analyze

Gradable: manual

53) Discuss the efficiency of swimming versus walking or flying, in energy cost per kilogram per unit distance covered. How does this translate into advantages for being small or large?

Answer: Answers will vary.

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 4. Analyze

Gradable: manual

54) Explain why some fish die if they are prevented from continuously swimming forward.

Answer: Answers will vary.

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 2. Understand

Gradable: manual

55) Discuss the vascularization of the gills of fish. Is this homologous or analogous to the vascularization of mammalian lungs?

Answer: Answers will vary.

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.04 Describe how fishes (1) swim; (2) maintain buoyancy; (3) osmoregulate; (4) obtain oxygen.

Bloom's: 4. Analyze

Gradable: manual

56) Outline and compare the life histories of Pacific salmon and the North Atlantic eel. Which of these two life histories is the more evolutionarily successful (in your opinion)?

Answer: Answers will vary.

Section: 16.05

Topic: Structural and Functional Adaptations of Fishes

Learning Objective: 16.05 Contrast, using examples, two kinds of migratory fishes: anadromous and catadromous.

Bloom's: 4. Analyze

Gradable: manual