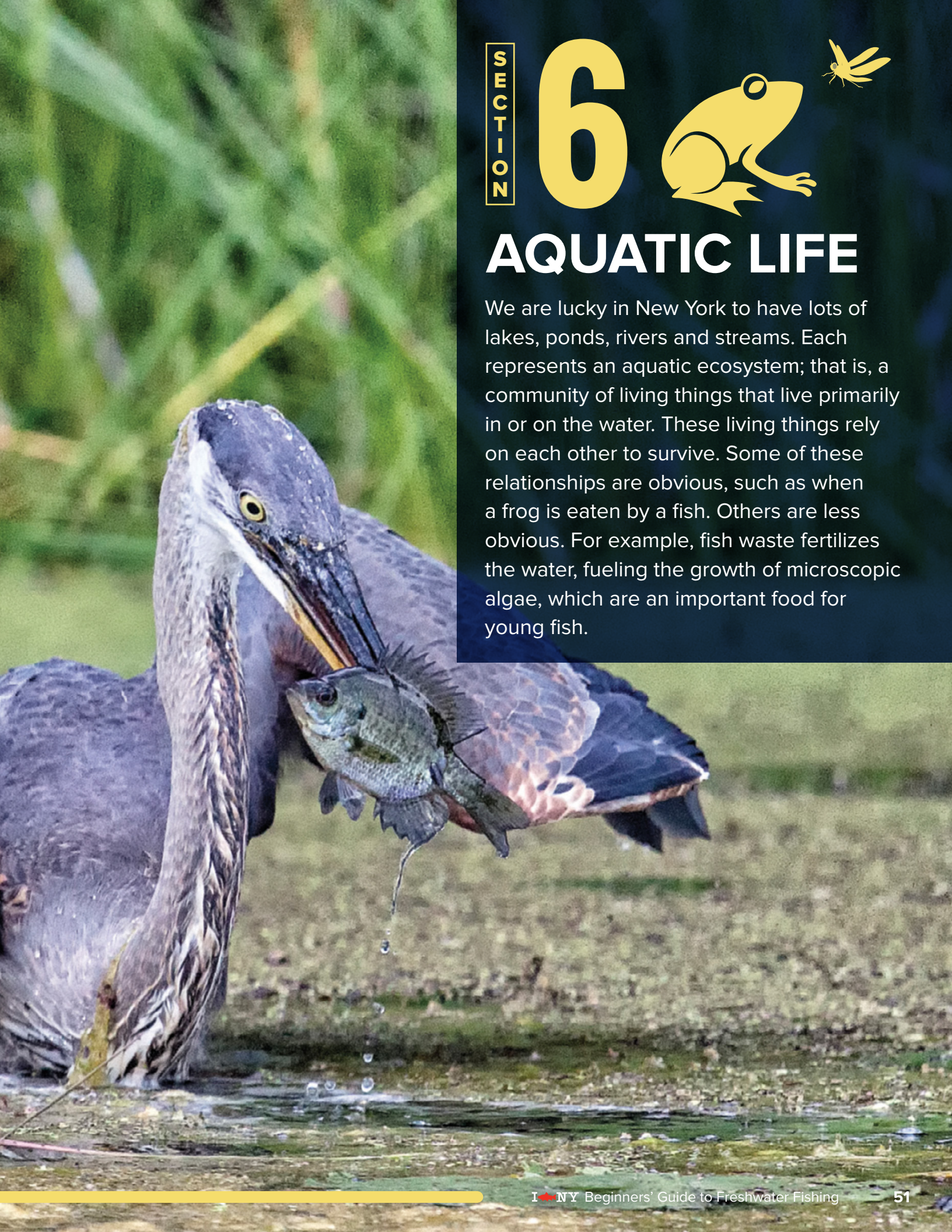


SECTION 6

AQUATIC LIFE

We are lucky in New York to have lots of lakes, ponds, rivers and streams. Each represents an aquatic ecosystem; that is, a community of living things that live primarily in or on the water. These living things rely on each other to survive. Some of these relationships are obvious, such as when a frog is eaten by a fish. Others are less obvious. For example, fish waste fertilizes the water, fueling the growth of microscopic algae, which are an important food for young fish.

Healthy aquatic ecosystems have a wide variety of plant species and different species of insects, fish, amphibians and other animals. Unhealthy aquatic ecosystems have very few species. You have already learned about the different types of fish found in New York waters. Here are some of the other common plants and animals, from the smallest to the largest, that you might find when you fish these waters.

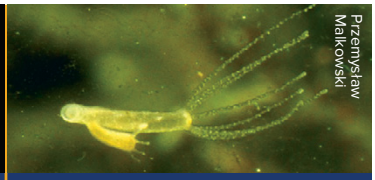
WATCHING AQUATIC LIFE

A perfect time to look for aquatic life is when you're fishing. Besides telling you what the fish you're after might be eating, watching aquatic life can help pass the time when the fish aren't biting. Look around. What can you see while you're out fishing?

MICROSCOPIC ANIMALS (ZOOPLANKTON)

These tiny animals float or "swim" in the water and seeing them usually requires a microscope. Along with microscopic plants (algae), they form the base of the food web (page 57) that all other organisms directly or indirectly depend upon.


Copepod



Hydra

LEECHES

These are often found in warmwater lakes, ponds and rivers. They like weedy areas with soft bottoms. They attach to fish and other animals and feed on blood.


Leech

AQUATIC INSECTS

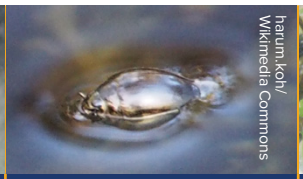
These are an important source of food for many fish species. Insects, such as mayflies, stoneflies and caddis flies, are an important food for trout. Fly fisherman tie flies to look like various aquatic insects.

Insects that Spend Most of Their Lives In or On the Water

Water Strider

Water Boatman

Backswimmer



Whirligig Beetles

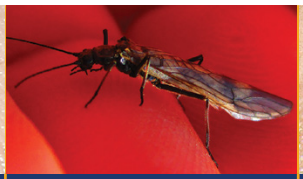
Diving Beetle

Insects that Spend Some or All of Their Adult Lives Out of Water


Mayfly (nymph)


Mayfly (adult)


Stonefly (nymph)


Stonefly (adult)

Blackfly


Caddisfly (nymph)


Caddisfly (adult)


Dragonfly


Damselfly

Mosquito

Insects such as mayflies are only found in high-quality waters. Most kinds of mayflies are sensitive to pollution. Usually the presence of mayflies is an indication of good water quality.

MOLLUSKS (SNAILS, CLAMS AND MUSSELS)

These soft bodied animals are usually covered by a hard shell. Although saltwater clams and mussels are popular foods, freshwater species are not typically good to eat. Mussels and clams feed by filtering algae out of the water, while snails usually eat plants. Some mollusks move by a slimy foot that sticks out of their shell, while others attach themselves to hard surfaces, like rocks and docks, and do not move.

Pond Snail


Freshwater Mussel

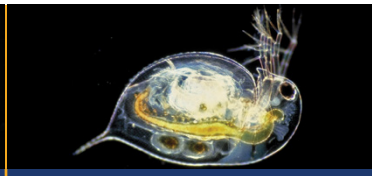
Fingernail Clam

CRUSTACEA

This very large group of animals includes crabs, lobsters and shrimp. Almost all are found in water. Crayfish, a relative of the saltwater lobster, are one of the more obvious crustaceans found in freshwater. They usually live in burrows or under rocks during the day and feed at night. Other freshwater crustaceans, such as the water flea and scud, are much smaller in size and seeing them may require a microscope.


Crayfish

Scud


Water Flea

REPTILES

Unlike amphibians, reptiles do not lay their eggs in water and do not have a phase of life where they live entirely in water. Their young hatch out of eggs on land and look like smaller versions of the adult. Turtles and some species of snakes prefer watery habitats. Note that although New York's water-snake species look dangerous and may bite if handled, they are not poisonous.

Snapping Turtle

Painted Turtle


Northern Water Snake

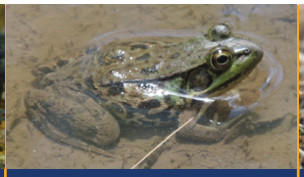
AMPHIBIANS

Unlike reptiles that can be found far from a lake or pond, amphibians require that their skin remain moist, so they are always found near water. Their eggs are laid in water, and young amphibians have gills and spend their early lives in water. Hellbenders and mudpuppies, two of New York's larger amphibians, spend their entire lives in water.


Mudpuppy


Juvenile Red Spotted Newt

Hellbender


Green Frog

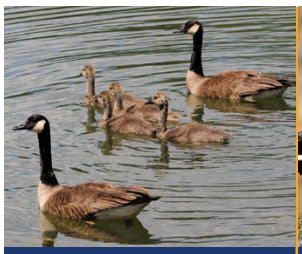
Bullfrog

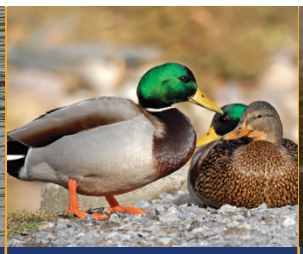
BIRDS THAT LIVE NEAR WATER

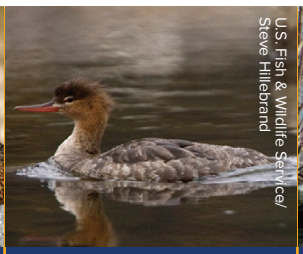
Abundant plant and animal life around lakes, ponds, rivers and streams attracts many birds to live near water.

Waterfowl (ducks, geese and swans)

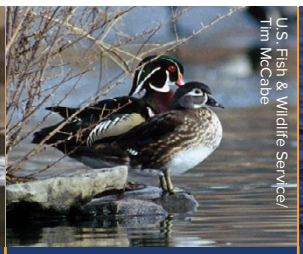
Ducks, geese, and swans love to feed on the aquatic plants that grow in freshwater. Diving ducks, like mergansers, are excellent swimmers and divers, chasing down the fish they eat.


Canada Goose

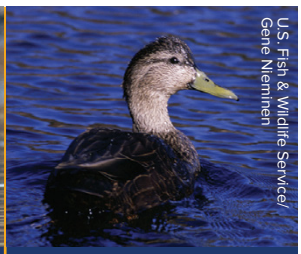

Mallard Duck (Male and Female)



Common Merganser



Wood Duck (Male and Female)



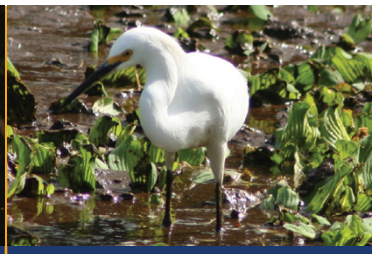
Black Duck

Wading Birds

Herons and egrets are specially adapted with long legs for wading and pointed beaks for feeding on fish in shallow water.


Great Blue Heron


Green Heron

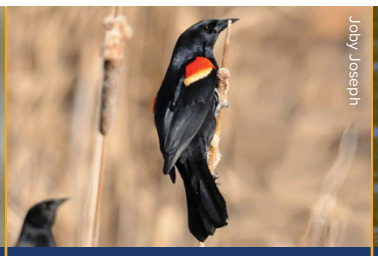

Snowy Egret

Other Birds that Live Near Water

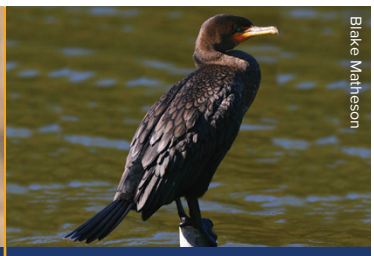
The osprey, or fish hawk as it is sometimes called, is a large raptor often seen hovering over water bodies searching for fish to dive on and catch in the sharp talons on their feet. Belted kingfishers look for prey from branches overhanging the water, diving to catch small fish in their large beaks. Red-winged blackbirds are insect eaters that nest in cattails and other marsh grasses. Cormorants are large, voracious, fish-eating birds whose abundance sometimes becomes a nuisance.

Osprey

Kingfisher



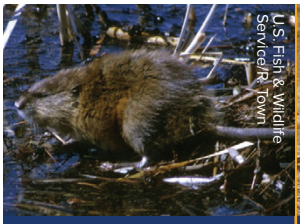
Red-winged Blackbird



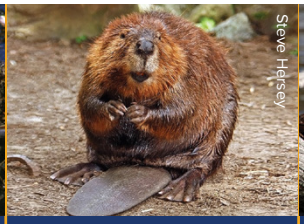
Double-crested Cormorant

MAMMALS

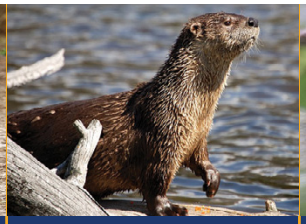
Muskrat, beaver and otter spend most of their lives in and around water. Other animals, like raccoon and mink, frequent shoreline areas, feeding on crayfish, frogs and insects. Bats can often be seen swooping after insects at dusk above a lake or river.



Muskrat



Beaver


River Otter

Raccoon


Bat

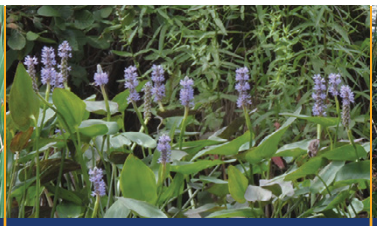
AQUATIC PLANTS

Except for the microscopic plants called algae, aquatic plants are classified as floating, emergent or submergent. See definitions and examples below. Aquatic plants are an important food source for many aquatic animals and provide habitat for insects that are an important food for fish. Ducks and many other aquatic birds nest among aquatic plants and many also eat them.

Emergent Plants

Plants like cattail, pickerelweed and bulrush have sturdy stalks that emerge above the water's surface.

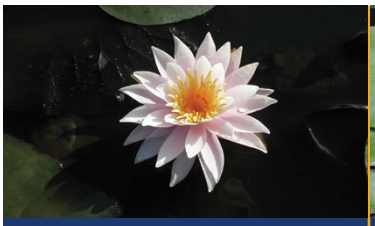

Cattail

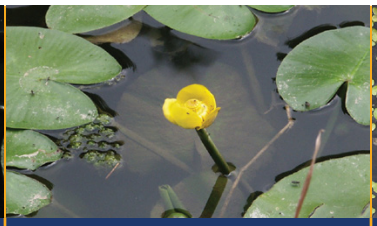

Pickerelweed

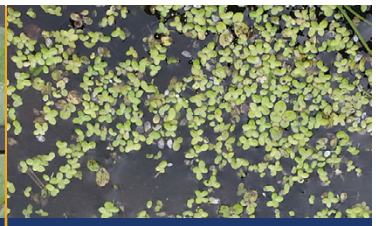

Bulrush

Floating Plants

Plants like white water lily, yellow water lily and duckweed have leaves that float on the water's surface.


White Water Lily

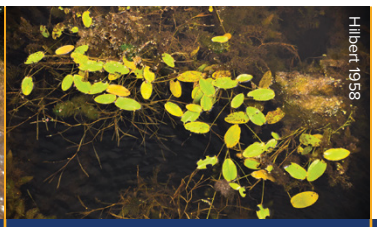

Yellow Water Lily


Duckweed

Submergent Plants

Plants like pondweed, water-milfoil and coontail grow completely below the water's surface.

Eel Grass



Pondweed

Coontail

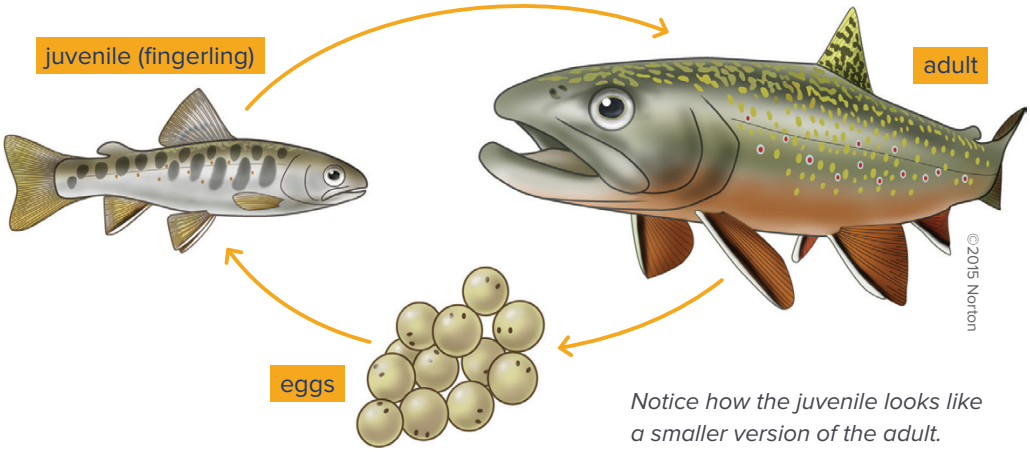
THE CYCLE OF LIFE

A life cycle is the series of changes, or stages, in the life of an animal. Most animals, including mammals, fish, reptiles and birds have simple life cycles with three life stages: before birth, young and adult. The young typically look similar to the adults, only smaller. Humans have a simple life cycle.

Some animals, such as amphibians, go through a more complex life cycle called metamorphosis. They completely change as they develop into adults. The adult can often live in different environments than the young. The change of a tadpole into a frog is an example of metamorphosis. The tadpole lives entirely in water, while the adult can live in both water and on land.

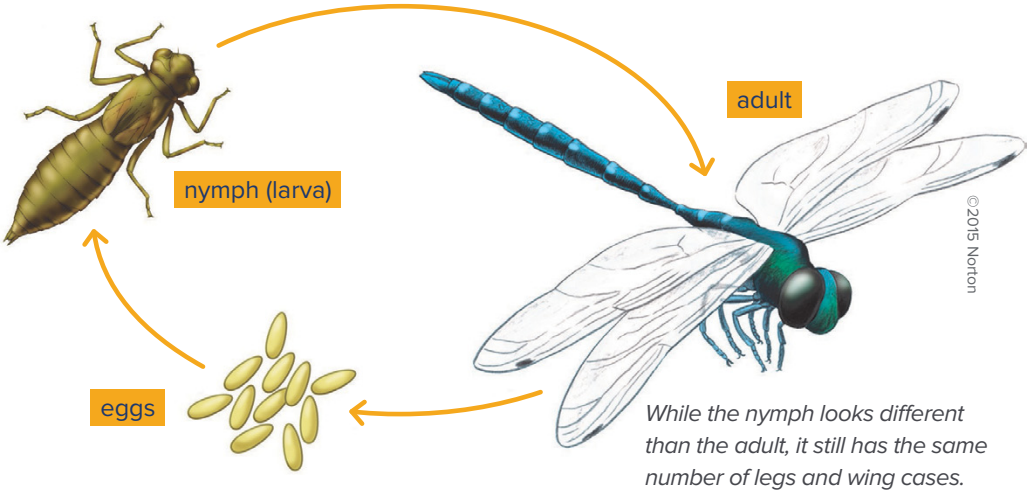
Look at me now!

The early development stages of aquatic organisms can look similar or very different from the adult stage! At right are three examples of aquatic organism life cycles that illustrate this:



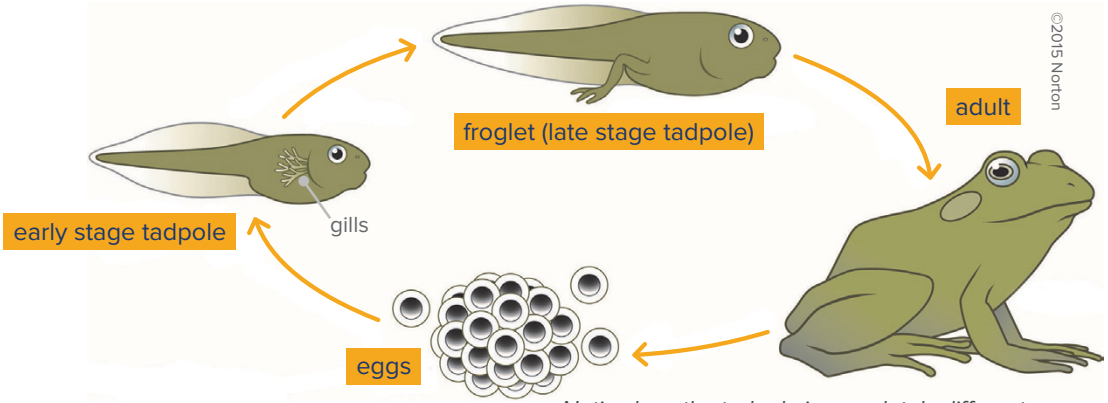
Notice how the juvenile looks like a smaller version of the adult.

TROUT (SIMPLE LIFE CYCLE) – Egg to juvenile to adult



While the nymph looks different than the adult, it still has the same number of legs and wing cases.

DRAGONFLY (INCOMPLETE METAMORPHOSIS) – Egg to nymph to adult



Notice how the tadpole is completely different than the adult. It has a tail where the frog has legs.

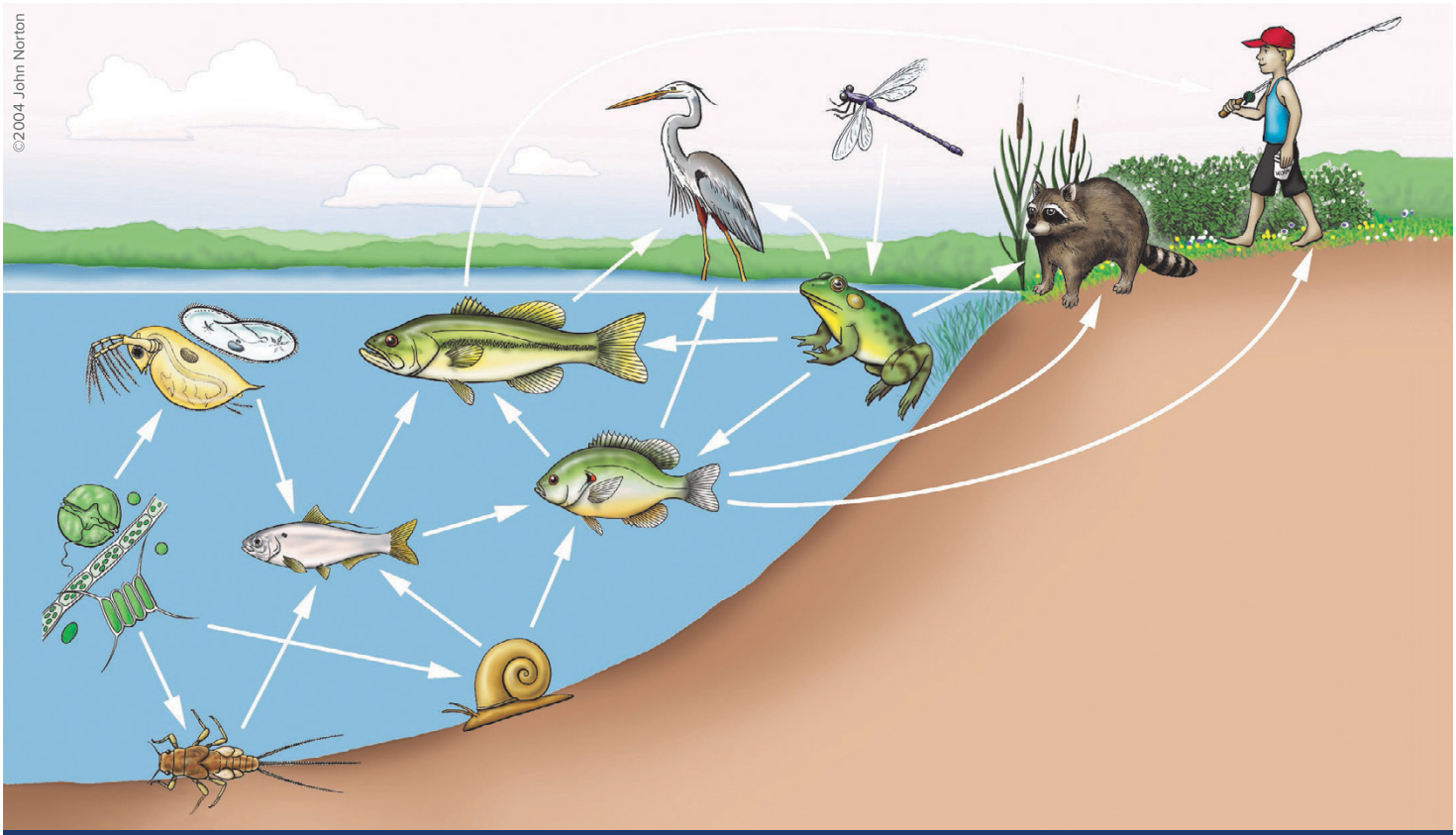
FROG (METAMORPHOSIS) – Egg to tadpole to froglet to adult

THE WEB OF LIFE

All life is connected to each other in one way or another. The simplest way to think about this is a food chain. In a food chain each group of plants and animals is used as food by the group above it. For example, the sun gives energy to algae (tiny plants), which feed zooplankton (tiny animals), which feed aquatic insects, which feed minnows and other small fish, which feed bass and other large fish.

Aquatic Food Chain

In any ecosystem, a series of food chains connect to each other. When you draw all the connections, you get something that looks more like a web than a chain. This more complicated "food web" shows how living things are connected to each other.



Aquatic Food Web

REFERENCES

Publications

Pond Life (Golden Guide) by George K. Reid, Sally D. Kaicher and Tom Dolan

Websites

- DEC Animals, Plants and Aquatic Life Publications www.dec.ny.gov/pubs/4799.html
- Freshwater Macroinvertebrates of NY www.dec.ny.gov/animals/35772.html

ACTIVITY

Coloring page of aquatic life in a pond.