

When is water not just water? When it comes from a pond! A jar full of pond water is a jar full of life. From bacteria too tiny to see, to fat tadpoles wiggling their way around their miniature world, pond water teems with plants, animals, and other living things.

A variety of life

A pond is a very rich place—rich in nutrients that living things need to thrive. Water that runs into a pond when rain falls or when snow melts carries nitrogen, phosphorus, and other nutrients. Leaves and other plant parts that fall or wash in bring even more. You're probably familiar with some of the things at home in a pond, such as ducks, turtles, frogs, and fish. But most pond residents are smaller—some so small you can see them only with a microscope. These critters are an important source of food for each other and for bigger living things around them.

Life in a Jar

By MARY HOFF

Five Pond Kingdoms

When you scoop up a jar of pond water, you scoop up living things too. Some might look like see-through tubes. Some might have 10 legs. Some might look like tiny, darting dots. Some might move by wiggling a whiplike tail. A pond creature's body parts, shape, and behavior help it survive in its watery world.

If you're lucky, your jar of pond water will contain members of all five kingdoms of living things:

- **animals** (such as insects and tadpoles)
- **plants** (such as duckweed)
- **fungi** (such as slime molds)
- **protists** (such as amoebas, paramecia, microscopic algae)
- **monerans** (bacteria).

Many of these creatures are too small to see, but all play an important part in the cycle of life of a pond.

Looking at Life

To get a look at life in a pond, find a grownup who can help you stay safe around water. Then put on old shoes or boots. Take your grown-up and a bucket to the edge of a pond. Scoop

DEBORAH ROSE



up some water with the bucket. Scoop through the weeds so you can catch creatures that live there too. Take your water to a well-lit place where you can study it.

Look in your bucket. Then



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A diving beetle grabs a meal.

take a closer look. Do you see little living things moving around? Use a turkey baster to transfer the ones you want to see, along with water, into a jar. Look through the sides of the jar to see what you can see. Pour the water into a thin layer in a white plastic container or in a glass pie pan on a piece of white paper. Look down at the living things with a magnifying glass.

If you have a microscope, look at a drop under the microscope. Draw a picture of what you see.

The Web of Life

Like all living things, those in a pond can be put into categories according to how they get the energy to stay alive.

- **Producers** combine water, carbon dioxide, and energy from the sun to make sugars to nourish themselves and, eventually, other living things. Plants and some protists and monerans are producers.
- **Primary consumers** eat producers. When you eat a carrot, you are a primary consumer.
- **Secondary consumers** eat primary consumers. When you eat a hamburger, you are a secondary consumer.
- **Decomposers** break down the remnants of other living things into molecules, which can then be used once again by other life forms.

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Big Things

Did you catch some big things in your bucket? If you were fast and lucky, you might have tadpoles, frog eggs, snails, leeches, or even a baby fish! Here are some other things big enough to see without a magnifying glass:

Backswimmers are true bugs with big eyes and long legs that look like oars. They live just below the water surface. They eat insects, snails, and other small animals. Animals that eat backswimmers include fish, diving beetles, and water scorpions.



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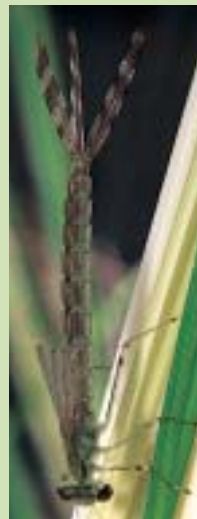
Duckweed is a plant with tiny, flat leaves that float and roots that hang down into the water. Duckweed captures energy from the sun to grow. It is a valuable food for fish and ducks.

Dragonfly and damselfly nymphs are the young of flying insects with big wings. Dragonfly nymphs are big and stubby.



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Damselfly nymphs are skinnier than dragonfly nymphs and have three leafy gills on their rear end. They eat midge larvae and water boatmen. They are eaten by fish.



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Fairy shrimp, or pond shrimp, have lots of legs and big eyes. They eat algae, detritus (bits of dead things), and tiny animals. Fairy shrimp can be hard to find in ponds with fish because fish gobble them up. Fairy shrimp eggs



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can survive for 20 years after a pond dries up. When water returns, they hatch.

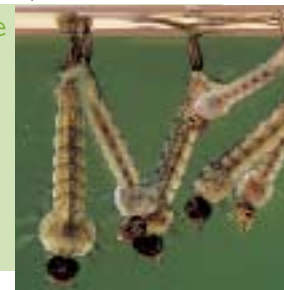
Midge larvae are long and skinny. One kind, a bloodworm, is found at the bottom of a pond. It is red. Another kind, a glassworm or phantom midge larva, is see-through and has two sets of two spots, one at the front of its body and one at the back. Midge larvae eat copepods and daphnia. They are eaten by fish.



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Mosquito larvae eat detritus, bacteria, and algae. They make good food for fish and ducklings.



Diving beetle larvae, known as water tigers, hang from the water surface and gobble up small creatures that swim by. Adults eat tadpoles, fish, and insect larvae. When adult beetles dive, they carry a bubble of air to breathe.



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Scuds are crustaceans—relatives of crabs and shrimp. They have 14 legs and eat detritus. Fish, frogs, and birds eat scuds.



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Water boatmen are true bugs that use their long legs like oars to move through water. They eat algae and are eaten by water scorpions, dragonfly nymphs, and fish.

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Water scavenger beetles, like diving beetles, carry air when they dive. Water scavenger beetle larvae have huge jaws and eat other animals.



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Water striders “skate” on top of water. These insects eat mosquito



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larvae and insects that get trapped on the surface of the water. Their long legs help spread out their weight so they can walk on water instead of sinking.

Whirligig beetles zip around in circles on the water. Their eyes can see above and below water



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at the same time, as they search for other insects to eat.

Little Things

These creatures are tinier than the ones you met on the previous pages. If you can see them at all, they might look like specks in the water.



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Amoebas are protists, one-celled organisms. They live at the bottom of a pond. The name *amoeba* comes from the Greek word *amoibe*, which means “change.” This blobby creature can readily change shape. It eats by stretching its body around its food—bacteria, algae, and other tiny creatures.

Copepods are tiny crustaceans that eat bacteria, algae, and detritus. Some copepods eat mosquito larvae.

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They are important food for fish. One kind of copepod is called a cyclops. Like the Greek mythological creature of the same name, the cyclops has one eye.

Daphnia belong to the group of crustaceans known as water fleas. Each daphnia has an eye, a pointy head, and two antennae that help it move about in jerky strides. Its 10 legs push detritus, algae, and tiny animals toward its mouth. Daphnia are good food for small fish.



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Paramecia are oval-shaped protists covered with hairs, called *cilia*, that propel them through water. Cilia also help the paramecium push food toward its mouthlike indentation. Many paramecia form partnerships with algae, which capture energy from the sun to help them stay alive.

Water mites look like swimming orange or red dots. Under a microscope you can see eight legs on their fat bodies. Like their spider relatives, they eat other tiny animals.



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Microscopic Things

If you use a microscope, you might be able to find some pond things that are too small to see otherwise.

Bacteria are extremely tiny creatures. Many decompose dead plants, animals, and other living things, releasing nutrients that can then be used again by other life forms. Bacteria are food for mussels, daphnia, and other small creatures. A single drop of pond water can hold millions of bacteria.



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When you see a **desmid**, you might think you're seeing double. It has two parts that are mirror images of each other. Desmids come in different shapes. Sometimes they live in colonies.

Desmids, diatoms, dinoflagellates, euglenoids, and volvox all belong to a group called *microscopic algae*. They are members of the protist kingdom. Most produce food for themselves, as plants do, from sunlight, carbon dioxide, and water.

One-celled **diatoms** are brownish and shaped like tiny covered boxes. Their shells contain silica, a hard mineral. Most diatoms photosynthesize. That makes them



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an important source of energy for the pond ecosystem.

Dinoflagellates are named after their long tails, called *flagella*. When they wiggle their flagella they move through the water, slowly rotating. Most of the time dinoflagellates reproduce by splitting into two. They are eaten by crustaceans and other animals.



ROBERT MEGARD

