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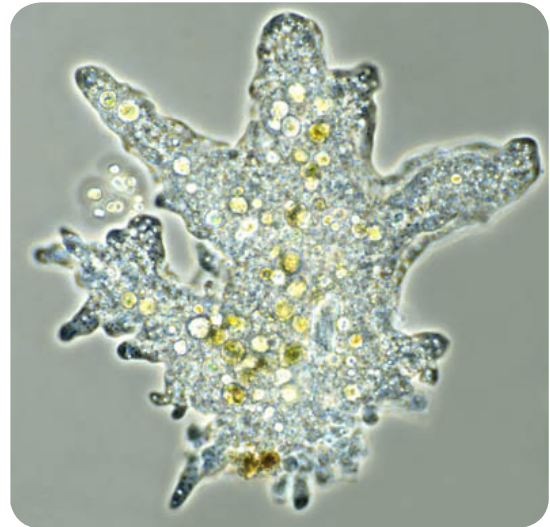
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Reproductive Strategies

Animal Profile:

AMOEBIA (*Amoeba proteus*)

Take one look through a microscope at a drop of healthy pond water and you'll find a ton of one-celled organisms zooming about. Some of these cells move by fluttering tiny hair-like cilia, while others are propelled by large whip-like flagella. You'll also come across a lot of blobby cells creeping about and engulfing other cells by extensions of their bodies. These one-celled critters are known as amoeba, and they move and feed by extending bulges called pseudopodia (false feet). When an amoeba moves, it reaches pseudopodia away from its edges and anchors them at their tips. The rest of the cell's insides stream into the pseudopodia until the entire amoeba has slurped into a new location.



Steve Durr

Amoeba proteus with several green algae trapped inside food vacuoles.

Amoebas are found all over the place, from oceans to soil. They play a very important ecological role by making meals of the huge number of bacteria, algae, and small protists found on this planet. One common amoeba is the giant amoeba, *Amoeba proteus*. Giant amoebas reproduce by binary fission, a fancy word that means splitting in two. When a giant amoeba begins to divide, it pulls its pseudopodia in to form a kind of ball. After its nucleus doubles, the amoeba constricts in the middle, as if a belt were being pulled tighter and tighter around the cell. Finally, the two new cells pinch apart, send out pseudopodia, and slink away from each other. In this way, two identical "daughter" cells are created from one. When conditions are right, this amoeba can divide every 48 hours.

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Reproductive Strategies

Animal Profile:

LEAFY SEA DRAGON (*Phycodurus eques*)

Dragons lurk in the cool waters off the southwestern Australian coast, but they aren't the mythical beasts that devour huge ships before slipping away into the deep. Instead, these dragons are calm, gorgeous fish known as leafy sea dragons (*Phycodurus eques*). Though not as large as mythical dragons, leafy sea dragons can be pretty big. They grow up to 51 cm (1.7 feet) in length and have long leaf-like

appendages sprouting from their bodies. This leafiness helps them blend in with their seaweed habitat,

protecting them from predators and giving them an advantage while hunting for food. Like their cousins the seahorses, leafy sea dragons have long tubular snouts they use to suck up tiny shrimp. To hunt, they drift around camouflaged as a piece of seaweed and ambush their small crunchy prey.

Leafy sea dragons and their relatives reproduce in a way that's rare in the fish world: the males carry and hatch the young instead of the females. When sea dragons mate, the female finds a potential dad and deposits her eggs underneath his tail where his sperm fertilize them. Pregnant dads can have as many as 200 incubating eggs tucked tightly beneath their tails. It pays to have a dad that looks like seaweed, because the eggs are protected from predators there. The eggs cling for 4-5 weeks before they hatch. The young are less than 2.5 cm (1 inch) long when they finally hatch. Many of them, sadly, will become little fishy snacks for larger fish, but the lucky ones who survive will grow up to be beautiful adults. Getting protection from dad when they were developing likely gave them one fin up in the vast ocean world.



Jeff Jeffords - divegallery.com



Eggs attached under a male sea dragon's tail.

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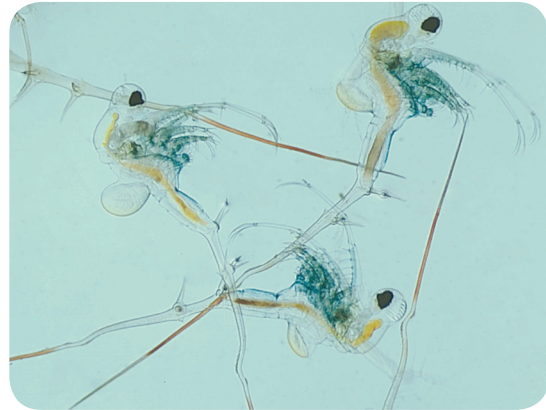
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Reproductive Strategies

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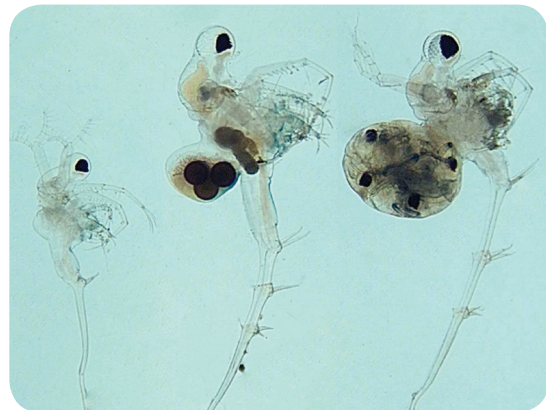
SPINY WATER FLEA (*Bythotrephes longimanus*)

There's a tiny, transparent crustacean that swims jerkily around in the Great Lakes. It spikes fish in their mouths with its long tail and gobbles up other microscopic aquatic animals (zooplankton). It's called the spiny water flea, but it's more related to crabs and lobsters than to any insects. Though many different kinds of water fleas are common in ponds and streams, the spiny water flea is not a welcome visitor. It's an invader from European waters and it competes with local fish and water fleas for food. It's protected from predators by its nasty barbed tail, which makes up 70% of its 2 cm long body.



Pieter Johnson, University of Colorado at Boulder

Spiny water fleas are a threat to ecosystems because of their power to rapidly reproduce. Like all water fleas, this one alternates between asexual and sexual phases. Most of the time, a female produces eggs without fertilization. She releases about 10 eggs into the brood chamber on her back, where they develop into young clones within several days. During summer, females can produce clones of themselves every 2 weeks.



Pieter Johnson, University of Colorado at Boulder

Different reproductive forms of spiny water fleas. Male (left), female with asexual eggs (center), and female with sexual eggs (right).

When food becomes scarce or temperatures change, some females produce spiny little males. These males mate with other females that have produced special eggs used for fertilization, called "resting eggs." They're called this because after these eggs are fertilized, they leave the mom and remain dormant before hatching. Many water flea resting eggs can survive drying or being eaten by fish.

Spiny water fleas seem to have a lot on their side, and they're in the Great Lakes to stay. Still, biologists are working hard to keep them from spreading into too many more lakes in the future.