

Name _____

Date _____

Reproductive Strategies

Animal Profile:

DUCK LEECH (*Theromyzon tessulatum*)

Leeches are the stuff of horror movies and doomed journeys into infested waters, and this leech is no exception to the rule. It has the disgusting habit of attaching itself to nostrils, eyes, throats and even brains. Thankfully for humans, it only does this in ducks and other waterfowl, earning it the common name “duck leech.”



Biopix.dk

The duck leech does a fair job getting around and probably gets spread as ducks move from pond to pond. This leech, like all leeches, is a hermaphrodite, meaning that a leech has both male and female reproductive parts. But that doesn't mean it can move into a pond all alone, reproduce with itself, and start a new leech population. It still takes two to tango, as they say, and a leech requires sperm from another leech to fertilize its eggs.

When the duck leech reproduces, two leeches rub together and give each other their sperm. Each leech will use the other's sperm to fertilize its eggs before placing them in goeey cocoons for protection. The leech attaches the cocoons, which hold as many as 400 eggs, to a rock or other sheltered place. The parent then waves its body over the eggs, passing fresh oxygen-rich air over them with the movement of its body. After 21 days, all 400 of the developing young leeches attach to their parent's belly. They remain attached there until the parent finds a suitable bird for a meal. When that happens, the young bloodsuckers leave their parent behind and attach to the host for their first blood meal. The parent dies shortly thereafter, but not before giving hundreds of new eyeball-suckers a shot at the game of life.



Young attached to the underside of a parent leech.

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Plant Profile: **MEADOW GARLIC** (Liliaceae: *Allium canadense*)

Long before settlers ventured into North America with their European garlic and onions, Native Americans were likely spicing-up their cooking with a native garlic known as meadow garlic. This garlic, called *Allium canadense* by botanists, grows wild from Florida to Canada. Surprisingly, it belongs to the same family as garden-variety lilies - those big colorful flowers that perch in flower vases and add splashes of color to many gardens around the world. Even though it's called meadow garlic, it really smells and tastes more like an onion. Rubbing the leaves and stems emits a definite bad breath, onion smell.



Larry Allain © USGS National Wetlands Research Center

Meadow garlic, also known as wild garlic, grows from bulbs like other lilies in its family. The bulbs lie dormant underground over winter, storing energy for the burst of growth and reproduction that comes in spring and early summer. Bees aren't turned off by the onion smell, and they buzz around pollinating the small, pink or white flowers. Although each flower has both male and female reproductive parts, it can't mate with itself. The bees are needed to move pollen from one plant to another. This produces fertile seeds that eventually disperse and grow into new plants that have a mix of genes from the two parent plants.

But meadow garlic doesn't only depend on bees or other pollinators to spread itself around. Perched underneath the flowers are clusters of little, nubby growths called bulblets. The bulblets are outgrowths of the plant, and when dropped, sprout into new plants identical to their parent. The bulblets provide enough start-up energy for the new plants to grow and eventually produce flowers and bulblets of their own. The ability of plants in the lily family to reproduce both with and without fertilization means they can spread easily. Some lilies have actually become pests by taking over pastures, gardens, and roadsides across the country.

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Animal Profile:

SALMONELLA (*Salmonella typhimurium*)

There are times when we eat something and our stomachs hurt badly, and then there are times when they hurt REALLY badly. When it hurts dreadfully bad, it could be from food poisoning, which leads to fever, nausea and diarrhea. Yick. And that's a mild case of food poisoning! Some of the more life-threatening cases can send a person to the hospital.



Rocky Mountain Laboratories, NIAID, NIH

Salmonella (rod-shaped) invading human cells.

The interesting thing is, it's not poisoning at all, but the result of a sinister bacteria known as *Salmonella*. This one-celled, rod-shaped bacteria is fairly common, and can be found naturally in raw eggs, raw meats, on the bodies of some reptiles, and in animal feces. It's when *Salmonella* finds itself in the warm growth chambers of our bodies that it hits pay dirt.

When *Salmonella* from infected food reaches our small intestine, it divides rapidly, producing copies of itself through simple division. These bacteria continue to rapidly divide, increasing in number and infecting other cells. This causes our immune system to respond, but *Salmonella* does a good job of fending it off. It takes about 12-72 hours to feel the effects of a *Salmonella* invasion. Our bodies can fight off some *Salmonella* infections, but we generally need the help of antibiotics to overcome them.

Thankfully, *Salmonella* is not one of those extreme bacteria that can survive the freezing temperatures of the Arctic or the boiling heat of volcanic thermal vents. Humans have adapted to *Salmonella's* existence by cooking, pasteurizing, and freezing our foods and drinks, which does a good job of killing the bacteria. Still, *Salmonella* infection is common enough and turns up where people aren't washing their hands or cooking meat thoroughly.