LIFE OF A Pike

Growing up is hard to do—especially when your siblings are trying to eat you!

Childhood can be a tough time—whether you are a human or a fish. No matter the species, all offspring share many common challenges of navigating the path to adulthood.

We humans think of "growing up" as learning to crawl, learning to feed yourself, avoiding the hazards of the schoolyard, and moving up the ladder from grade to grade.

For a fish called the northern pike (*Esox lucius*), "growing up" isn't done until the fish completes its life cycle and becomes a parent. The pike must make a long and dangerous journey between new and strange places. From bullies to annoying siblings, humans and pike share some of the same growing pains. If you think childhood is difficult, you might want to take a closer look at the life cycle of a northern pike.

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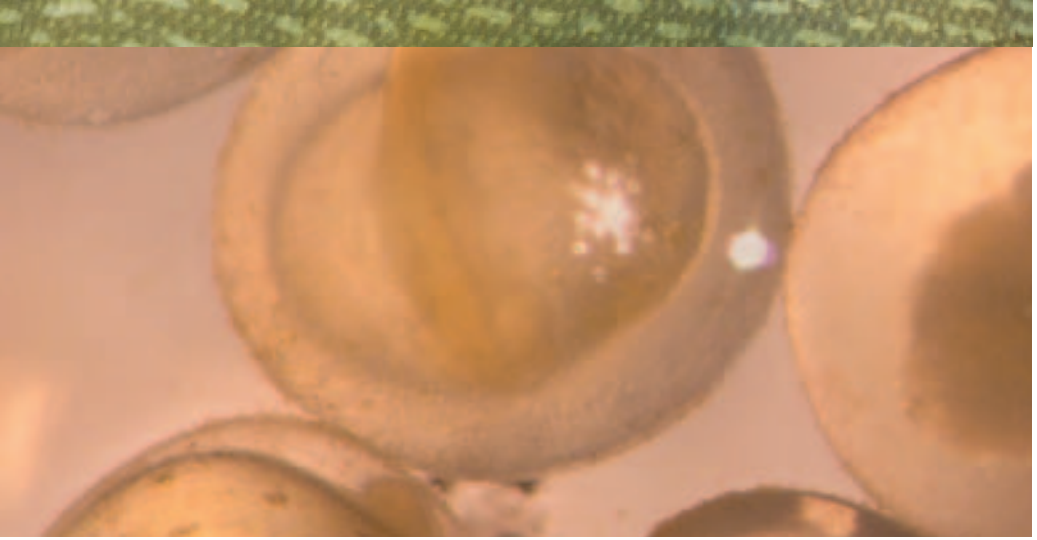
By Scott Moeller



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These translucent northern pike eggs (above) *are beginning to develop into embryos. Newly hatched sac fry* (top right) *were photographed in a laboratory. In the wild they would be attached to aquatic plants. After detaching from the plant, swim-up fry* (center right) *finish consuming their yolk sac in five to six days. A young pike* (bottom right) *is considered a fingerling until it is either 1 year old or reproductively active.*

Thousands of Eggs

Imagine that you are a northern pike at the beginning of your life cycle. You enter the world as an egg about the size of a candy sprinkle. You are stuck to the leaf of an underwater plant in a shallow wetland. It is here that your parents scattered you and about 50,000 of your brothers and sisters. (Talk about sibling rivalry.)

Your parents chose this spot for your nursery very carefully. The shallow water warms easily in the sun. Because fish are cold-blooded, warm water will help you and your siblings grow and develop as quickly as possible.

You are one of the lucky ones, because your plant helps protect and camouflage you from predators such as crayfish, frogs, and other fish. Many of your siblings have fallen to the bottom of the wetland and will easily be found and eaten, becoming part of the food chain.

Like a human baby, you begin your life fragile and vulnerable. Unlike a human baby, you will not have the protection of your parents. Your parents journeyed here only to lay their eggs, then retreated back downstream to their lake. You will grow up quickly, without the help of your parents.

Sac Fry

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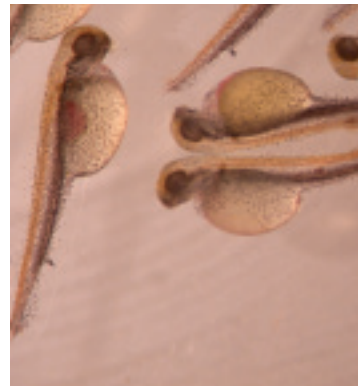


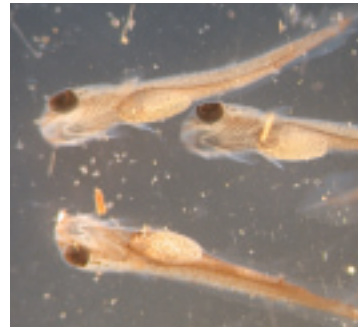
You develop inside your tiny egg for about two weeks, all the time in danger of being discovered by a fish, turtle, or other predator.

After hatching from your soft eggshell, you remain stuck to an aquatic plant by a sticky patch on your forehead for the next 10 days. You are now known as a *sac fry*.

Your new name comes from the large yolk sac that is still part of your body. The energy-rich yolk sac is similar to what is in a chicken egg, but with one big difference: While a chick consumes the yolk before hatching, a fish doesn't consume the yolk until after it hatches. Of course, you don't really eat the yolk like a fried egg (you don't even have a mouth yet). Rather, you slowly absorb the energy into your body.

Swim-up Fry

DNR PHOTO



After you've absorbed most of your yolk sac, you experience your first taste of freedom. You have detached from your plant, you have developed a mouth, and you must now go search for food. You're not a great swimmer yet, so you spend the next three weeks making short trips away from the safety of the plants you hide near. You swim up to the surface of the water, grab a tiny bit of plankton to eat, then float back down to your hiding spot. You are now known as a *swim-up fry*.

Fingerling

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After about a month of swimming up for food, you have grown to the size of a human finger, a few inches in length. You are now called a *fingerling*. This is a big milestone in the life of a young pike. You are now equipped with strong muscles for swimming, and your first set of baby teeth. It's time for you to become a true predator.

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Olive skin with light oval-shaped spots help conceal northern pike (above) *from other fish. Camouflage and a torpedo-shaped body allow this sleek predator to ambush prey. Pike have voracious appetites and sometimes eat muskrats and ducklings, but they prefer to eat large minnows, perch, suckers, and ciscoes.*

Eat or Be Eaten

The name of the game now is to eat as much as you can, and grow as big as you can, as fast as you can. You must eat or be eaten. That's why you are lucky to be bigger than the other fish.

The size advantage that you now have is a result of your parents *spawning* (laying their eggs) where they did, so you can hatch earlier than many other fish species do. You see, cold eggs can't hatch, and pike eggs can only hatch when the water temperature rises to between 45 and 66 degrees F. A shallow wetland might reach this temperature by late March. That is several weeks or months before a nearby deep lake reaches the same temperature. By the time you are big enough to hunt, you can catch and eat newly emerging fry of other fish species.

But, it's not just other species of fish that pike fingerlings will feed on. If smaller prey are not around, young pike will even eat their own brothers and sisters. Forget about brotherly love or table manners—young pike are known to grab the head of a fish nearly their own size, then swim around with the tail sticking out of their mouth until they can take another bite.

Dangerous Journey

After a year of ambushing prey in your wetland home, you have gotten bigger—nearly 12 inches long. You need bigger fish to hunt and cooler water in which to swim. Your body is changing, and the warm wetland water is making you lose energy too quickly. You know that it is time for you to leave the wetland and begin your journey to the cooler waters of the lake of your parents.

You swim through the waters that connect the wetlands to the lake. This may be only a few hundred yards in some places, or many miles of stream in others. In both cases, different predators patrol these waters. Herons and egrets stalk the shoreline and strike at you. Kingfishers and osprey swoop down from above. Otters and mink attack from below.

At Home in the Lake

You make it to the lake. You spend another year eating and growing as large as 18 inches. You are an ambush predator, lying in wait behind plants or rocks, then darting out at 30 miles per hour, grabbing, puncturing, and swallowing your prey.

You eat mostly fish, but also frogs, crayfish, ducklings, and even muskrats. You must still avoid big pike, muskies, and other fish larger than yourself. As you get older, you might learn that a person with a fishing line, bait, and hook is another predator to be avoided.

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What Are the Chances?

Every fish encounters dangers, obstacles, or other things that limit its chances of surviving long enough to reproduce. Hungry predators, anglers, and dams are all *limiting factors*. And many other limiting factors can be even more devastating to a population of fish. For example, consider what might happen if fertilizer, road salt, and soil from surrounding land, parking lots, and roads ran into the wetlands where fish eggs hatch. What would happen if the wetland dried up or was drained? What would happen if anglers kept too many large pike?

Knowing about all of these limiting factors, you can guess why pike parents lay so many eggs. What would happen if all of the eggs survived to adulthood? Why are predators important in maintaining the size of the pike population? What purpose do limiting factors serve?

Back to the Pond

As the springtime thaw begins, if you have gained enough weight, it is time for you to return to the wetlands of your youth to complete the life cycle. Like your parents before you, you leave the cold waters of the lake to spawn in the warm wetlands, which will give your offspring the best chance for success.

As you make your way back to the wetland, you might encounter some new obstacles to your success. Human-made dams can slow you down or even block your path entirely. Fortunately, most dams today are constructed with fish passages. These passages are water-filled canals or stair-steps in front of the dam. They allow fish to safely swim over or around a dam, and then continue to move freely up and down the stream.

First Spawn

In the wetlands, the annual spawning ritual lasts about one to two weeks. Males arrive a few days earlier than females. Males and females pair up over the submerged vegetation of shallow areas. As the female releases thousands of eggs, the male thrashes wildly around her, releasing his milt to fertilize the eggs and scattering the fertilized eggs to stick among the vegetation.

After spawning, you part ways with your mate. You leave your offspring to face the very same dangers and obstacles that you faced. You have completed your life cycle. Will your offspring successfully live to reproduce?

The End

How many years you return to the breeding grounds depends on many factors. A *limiting factor* is anything that can reduce your chances of surviving. (See "What Are the Chances?" on page 39.)

With luck, you could live to be 10 years old and reach a length of 36 inches. The average adult Minnesota pike lives about six years, reaches 26 inches in length, and weighs 4 pounds. Rarely, some pike are more than 20 years old and over 50 inches long. The largest pike caught in Minnesota weighed nearly 46 pounds. It was caught in Basswood Lake in Lake County in 1929.

It's important to remember that gigantic pike are uncommon survivors of many journeys. With so many dangers and obstacles, most pike never make it past the fry stage.

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A Note to Teachers

Find links to teachers guides for this and other stories online at *www.mndnr.gov/young_naturalists*.

Visit *www.mndnr.gov/minnaqua* for classroom-ready lesson plans about fishing and fish habitat. Visit *www.statefishart.com* for a free online lesson plan about fish habitat and to enter your students (grades 4 through 12) in a state fish art contest.