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AQUATIC INSECTS

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AQUATIC INSECTS

Aquatic insects have some things in common with all insects. They have six legs. They have no bones but are covered by an exoskeleton, a shell similar to your fingernails. They also have three main parts to their body: head, thorax and abdomen.

To be called aquatic insects, insects must spend part of their lives in water. They may live beneath the water surface or skim along the top. Some examples of aquatic insects are mosquitoes, dragonflies and caddisflies. Aquatic insects come in many shapes and sizes, and they all have some interesting ways of dealing with living in and on water.

If you were an insect living underwater, how would you breathe? Insects are animals, so they need oxygen to survive. Many aquatic insects have gills, just like fish. The gills may be attached to the outside of the insect's body or found inside the body. Some insects have tubes sticking out of their abdomens. They stick the tube above the water and breathe the same air you breathe. They may even stick the tube into plants underwater. They get oxygen straight from the plants that make it! Other aquatic insects, like diving beetles, grab bubbles of air and pull them underwater. The beetles carry the bubble in their back legs as they swim. Once they have used all the air in the bubble, they go up and grab another bubble.



Photos top to bottom:
Watchable Wildlife CCBY Idaho BLM on Flickr, Dragon Flies CCBY A Yee on Flickr,
Breathing Water Beetle Public Domain, Mosquito CCBY Sanofi Pasteur on Flickr,
Bruneau Sand Dunes CCBY Don Barrett on Flickr.

To get around underwater, many insects have legs and feet that are shaped like paddles. The two back pairs of legs on the giant water bug are wide, flat and hairy. The legs are perfect oars to push the bug through the water. Some aquatic insects are jet-propelled. They force water out of their abdomens and shoot through the water. Insects that do not swim usually have hooks on their bodies that help them cling to rocks and plants. The hooks help keep them from being swept away by water currents. Have you ever seen an insect skate on top of the water? These insects have hairs and wax on their feet and legs that keep them from sinking into the water. Instead, they glide along the surface.

Aquatic insects are sometimes seen more as pests than having important roles to play on our planet. They may sometimes bother people, but aquatic insects help to keep our planet healthy. They are food for fish, birds, bats, spiders and even other insects. They help connect the links in food chains and webs. If there were no aquatic insects, what would the trout that you catch find to eat in the river? When you think about it, we are connected to aquatic insects in our human food webs.

Aquatic insects are amazing! Look inside this issue to learn more about some aquatic insects that call Idaho home. Then go exploring and look for them next time you are around a pond or stream.



Giant Water Bug



Water Strider

Constructing Caddisflies

Can you think of an insect that lives most of its life in water and builds a home for protection? It's the caddisfly. In North America, there are over 1,200 different kinds of caddisflies; worldwide there are over 7,000! Many species of caddisflies look similar and telling them apart can be difficult.

Caddisflies are insects that have four stages in their life cycle. They lay their eggs in water. The eggs hatch, and caterpillar-like larvae crawl out. The larvae turn into pupae, and the pupae into adults. Only the adults can survive out of water.

Caddisfly larvae are builders. They make a silk from the spit in their mouths. Some caddisflies use the silk to spin webs or tunnels. These caddisflies are predators. They trap very small animals in the sticky webs. Most caddisflies are not predators. They eat dead and sometimes living plants. These caddisflies use the silk as glue. As they spin silk, they mix in sand, twigs or grass. This makes a case, or shell, around their soft bodies. The case is held in place by a pair of hooks on the tip of the insect's body. As the insect grows, it just adds onto the case. The case protects the caddisfly. It looks like a little twig or rock in the water. This camouflages the caddisfly and makes it harder for predators to see it.

Caddisfly larvae need oxygen to survive. They use the same things fish use to get oxygen out of the water - gills. Adults do not live in water, so they do not have gills. Air enters and leaves their bodies through spiracles. Spiracles are holes in the insects' abdomens.

Caddisfly adults look very different from the larvae. They look like moths that have lost the scales on their wings. Long, silky hairs cover caddisfly wings. Adults are brown to yellowish-brown in color. They have big eyes and long antennae. When resting, caddisflies place their wings like a tent over their bodies. Caddisfly adults do not live long. Once they leave the water, most never eat again. They breed, lay their eggs and die. Adult caddisflies are nocturnal or active mostly at night. During the day, they hide in cool, moist places around riverbanks, lakes and ponds. At night, caddisflies often swarm around lights.

Caddisflies are very interesting insects. Look for their cases next time you are wading in a stream or pond. They might tell you something about your favorite fishing hole.

Photos top to bottom:
Caddisfly CCBY Benjamin Smith on Flickr. Caddisfly Case CCBY Kerry Wixted on Flickr. Caddisfly CCBY Kent McFarland on Flickr.



TOOTHED DRAGONS

Toothed dragons are flying around Idaho!

Actually they are just dragonflies and damselflies. Dragonflies and damselflies are in the insect order **Odonata**. Odonata comes from the Greek word for “toothed.” Dragonflies have chewing mouthparts that have a serrated edge; they look a bit like teeth.

Dragonflies lay their eggs in water. The eggs hatch out into something called a **naiad (NI-add)**. The naiad gets bigger and bigger until one day it crawls out of the water. The back of the naiad splits open, and out crawls the adult! Some species stay in the naiad stage for up to five years.

An amazing part of a dragonfly is the mouth. They have a powerful set of mandibles that are used to chop-up their prey, but the really amazing part is the **labium (LAY-bee-um)**. It is sort of like a lower jaw. When a dragonfly is immature and living in water, it likes to eat slimy things. Tadpoles, small fish and other insects are all on the menu. To help the dragonfly grab its slimy prey, the dragonfly can shoot the labium out to almost its body length. The labium has hooks on it so the prey can be dragged back to the mouth. As adults, dragonflies eat other flying insects. The adult dragonfly’s legs point forward like a basket. The basket is used to scoop insects right out of the air. Once a dragonfly has food in its grasp, dinner is served!

Have you ever sat along a pond on a summer day and watched dragonflies zip and buzz around you? Some might swoop down a little too close for your comfort! What you are witnessing is a battle over territory or space. It’s the males, not the females, madly buzzing around the pond. Some dragonflies are very territorial. They will try and chase off anything that gets too close. They will chase off dragonflies, birds, and even humans!

The largest dragonfly in Idaho is the green darner. The adults can reach a size of just over three inches. This dragonfly is a strong flyer. A group of bird watchers along the Eastern Coast of America saw an amazing event during the fall migration of green darners. They actually saw a green darner take down a ruby-throated hummingbird. Now that’s some amazing flying!

Idaho has 67 species of dragonflies and damselflies. Get outside this summer and look for them. You can find a dragonfly just about everywhere in Idaho where there is water!

Photos top to bottom:

Dragonfly CCBY Murray Foubister on Wikipedia. Dragonfly with prey CCBY Pidikkunnu on Wikipedia.

Two dragonflies CCBY Smithsonian on Flickr.



Marvelous Mayflies



Mayflies are classified in the order Ephemeroptera (ef-a MER- op-ter-a). This long, funny name comes from Greek words that mean “**living a day.**” This is a good name for mayflies; as adults they only live for a few hours or days.

Mayfly adults are gray, brown or yellow in color. They have a slender abdomen that slants upward with two or three long “tails” at the end. Their front wings are large and shaped like a triangle. The wings look a bit like the sail on a sailboat. Their back wings are very small and often difficult to see. Some mayflies do not have back wings at all.

Adult mayflies have one thing to do as adults. They need to mate and lay eggs. Adult mayflies cannot eat. Their mouths are small and not made for eating. This is one reason why they die soon after becoming adults. Male mayflies gather in large swarms. They move in a kind of dance together looking for females. Females lay their eggs in different ways. It all depends on the type of mayfly. Some mayflies fly close to the water, dip their abdomen on the water surface and lay the eggs while flying. Other females lay their eggs in strands attached to plants and other things in the water. Some just lay their eggs and let the eggs fall where they may. The females will die as soon as their eggs are laid. The males die after mating.

Mayfly eggs may hatch very quickly. Some eggs will hatch as soon as they hit the water.



Others may take a while longer. A naiad emerges from the egg. They have biting mouthparts. Most mayfly naiads are scavengers. They scrape algae from rocks in the water and eat whatever

plants or tiny water animals they can find. The color of a naiad may be green or brown. Their color varies depending on what they eat! Naiads may stay in the water for up to four years. When they leave the water they molt. This mayfly is called a subimago. Subimagoes have cloudy or smoky wings. Think of them sort of like short-lived teenagers. They molt and then they are adults. The adult mayflies have clear wings. Mayflies are the only insects that molt after they have wings!

Mayflies really are marvelous. Look for mayflies in the spring and summer. They are not only seen in the month of May!

Nature's Red Flags

Have you ever heard anyone say, “That put up a red flag?” That person meant that he or she got a clue that something was wrong. Nature has red flags, too. Nature's red flags are called indicator species.

Indicator species may be animals or plants. These plants and animals are the first to react if their habitats change. By keeping an eye on them, scientists get hints about the health of an ecosystem.

Aquatic insects are used to detect water pollution. Some insects are more sensitive than others and die quickly in polluted water. Scientists count the number and types of insects they find in water. It is important to see if the numbers and types of insects they find change over time. Caddisflies are insects that are intolerant to water pollution. They are sensitive to changes in the water. If water quality is decreasing in a stream, the number of caddisflies will also decrease. The fewer the number of caddisflies, the more polluted the water. Scientists use aquatic insects as tools to see if a stream is unhealthy.

Indicator species give clues that something is wrong in nature. Sometimes people see changes in the “red flags” before they notice that anything else is wrong. This early warning is important. The sooner we know something is wrong, the faster we can make changes to fix the problem.

Photos top to bottom: Clearwater River near Greer, ID CCBY FDHW_IDLC. Blackbird Creek near Lemhi, ID CCBY NOAA.



BE OUTSIDE - FISHING IS FUN!



With summer vacation about a month away, you may be thinking of things to do in the warm summer sun. How about fishing? Fishing is a great outdoor activity any time of the year, and it can be a blast!

You may have heard the saying “There is more to fishing than catching a fish.” This saying is so true. If you ask someone who fishes a lot why she likes to fish, catching a fish may not be the first thing she mentions.

Part of the fun of fishing is trying to out-smart the fish and get it to take our bait.

Fish love to eat aquatic insects, so how about turning over some rocks in the stream and placing an insect that you find on your hook? You may even want to try fly-fishing. When fly-fishing, people use artificial insects made from yarn and feathers that look like the insects that fish eat. It is a lot of fun and sometimes tricky to get a fish to strike at an artificial fly.

Fishing is about experiencing the great outdoors and all the wonderful things that it has to offer. It is refreshing and calming to be outside. When fishing, you get to feel the warm sun on your face and listen to the trickling water. How great does it feel to dip your feet in a stream or lake on a hot day? You can't do that while playing video games in your house! Even if you are in the worst of moods, sitting outside, along a stream with a fishing pole in your hand can melt all those bad feelings away.

You don't need a lot of money to fish. If you live in Idaho and are under 14 years of age, fishing for you is free! If you are looking for fun this summer, go fishing! You may have the thrilling experience of catching a fish, but you might experience something much more. You may also be refreshed and inspired by the natural world around you.

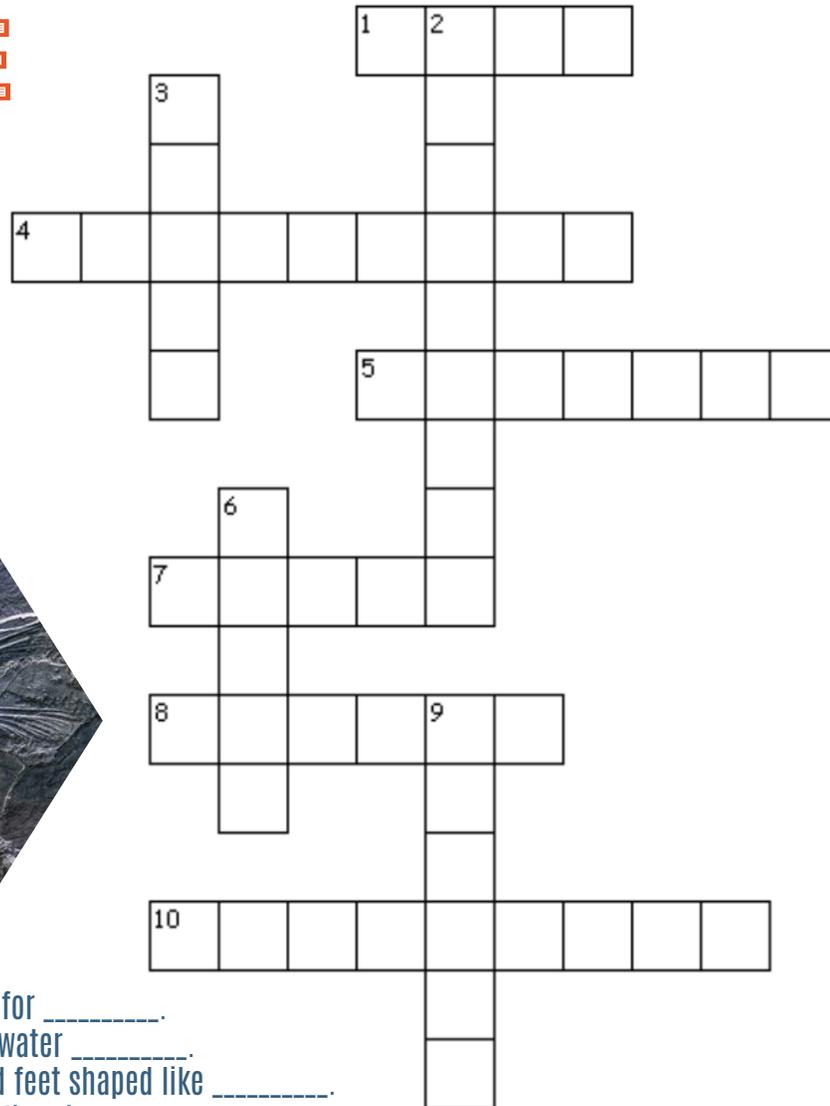


BE OUTSIDE
IDAHO CHILDREN IN NATURE

Photos top to bottom: Boy with bass CCBY Jim Fredricks for IDFG. Chair anglers CCBY Mike Demick for IDFG.



AQUATIC INSECT PUZZLE



ACROSS

1. Aquatic insects are important food for _____.
4. Aquatic insects are used to detect water _____.
5. Many aquatic insects have legs and feet shaped like _____.
7. Aquatic insects spend part of their lives in _____.
8. This aquatic insect has front wings that are large and shaped like a triangle.
10. This aquatic insect builds a case around its body.

DOWN

2. _____ species are often the first to react to changes in habitats.
3. Some aquatic insects use these to get oxygen out of the water.
6. The name of an immature dragonfly.
9. This helps a young dragonfly grab prey.

WORDS:

- Caddisfly
- Fish
- Gills
- Indicator
- Labium
- Mayfly
- Naiad
- Paddles
- Pollution
- Water

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Photos top to bottom:
CCBY Chuck Evans on Wikipedia.
Dragonfly fossil Public Domain.

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WE WOULD LIKE TO HEAR FROM YOU!
If you have a letter, poem or question for Wildlife Express,
it may be included in a future issue! Send it to:
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