

# Calendar Connections

## Pond & River Life

Target Level: grades 3-6

The facts are created at a more advanced level but can easily be used for the entire homeschool family! Young children will soak up the information their older siblings are taught while all together.

## Pond & River Life Books

Click on the book image to see the [recommended books](#).



# Calendar Connections

## Helpful Items

~these are the exact products we use~



cardstock



laminator



laminating film

We use this particular calendar, you can [get it on Amazon here!](#)





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## Pond Life

Ponds and rivers are not merely water and plants. They are an entire world of themselves. An entire ecosystem dependent upon each other for survival and growth. As we take a deeper look into the inner workings of ponds and rivers you will find a fascinating world of insects, animals and plants. Get ready for an exciting month!

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## Springtime

The life of a pond or river begins in the springtime – as the days are lengthening and temperatures are rising. For plants it is a mad dash to see who can occupy the sunniest place in the pond. It is the tiniest plants that begin to flourish – algae, duckweed, water crowfoot. These plants are all relatively small and need few nutrients to grow – but they supply the pond with much needed oxygen and food for the life yet to thrive in the coming days and months.

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## A Little Green

Have you ever walked by a pond in the springtime and thought it looked a little green? Well, you were probably right. As the temperatures warm new life begins to thrive. Eggs laid last fall begin to hatch and new creatures such as water fleas, water beetle larva, and pale green fronds give the water a pea-green-soup look to it. This early growth is important as it provides food for the larger creatures.

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## Frogs

Frogs, or amphibians, start their life in the water. Amphibian is Latin. “Amphi” means “both” and “bios” means “life” – indicating that they lead a double life – as young they start off in the water and as adults they move to land.

As early as January, adults frogs gather together and prepare to lay their eggs. Sometime in March the female frog will lay up to 3,000 eggs! They will be encased in a jelly like substance that will protect the egg and help them float just below the surface of the water. About two to three weeks later tadpoles will emerge from the eggs. The warmer the water, the faster an egg/ tadpole will develop.

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## Early Flowers

Duckweed and water crowfoot are the earliest plants to bloom in the pond. Duckweed spreads quickly across the ponds surface in the spring sunshine. Its tiny fronds create a green ceiling to provide shade and food for snails and insect larva. The tiny leaf-like bodies contain air-filled spaces called lacunae to help them float on the waters surface. Water crowfoot is a type of marine buttercup. This broad, flat leafed plant also floats on the waters surface and provides shade and good hiding places for larger fish.

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## Sunshine

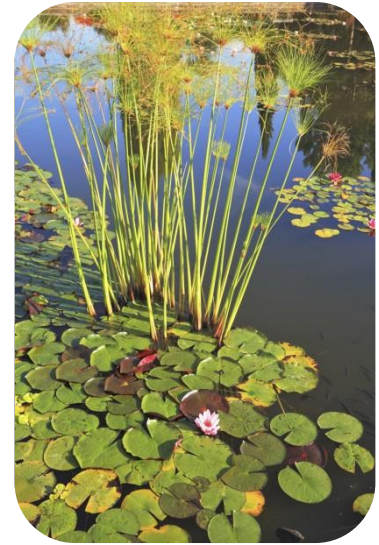
As the days lengthen, the sun shines stronger and brighter creating a good growth of greenery. The different types of plants and the great quantity that occupy a pond largely depends upon how much sunlight it receives. This in turn has an affect on the diversity and abundance of animal life found in the pond. In the end, sunlight is the energy that powers life. Green plants capture the sun's energy and transforms it into a chemical energy in their tissue – a process known as photosynthesis. A pond that is heavily shaded will lose its variety of plant life – and soon thereafter that of animals and insects.



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## Early Summer

As spring turns into summer, changes begin to occur in a pond. Rooted plants begin to establish themselves. Rooted plants are important to a pond as the roots help to stabilize the shifting soil. The food chain is just gearing up for a fantastic season. Smaller animals and insects such as tadpoles, insect larva, and water snails feed greedily on the new plant life. They, in turn, are thinned out by larger predators such as beetle larva, dragonfly nymphs, newts and small fish. As these grow fat they soon become prey to larger creatures such as frogs, fish and mink.

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## Metamorphosis

As the water warms under the early summer sun, tadpoles are growing more quickly. Approximately seven weeks after hatching, hindlimbs begin to appear. In three more weeks front limbs will appear and the frog will stop eating. Instead of eating it will absorb nutrients that are found in its tail, causing the tail to shrink. After roughly three and a half months from the time of hatching, the tadpole will officially be a froglet, ready to eat small insects and live in the open air!

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## Midsummer

By this time of the year the days are long, temperatures are warm (if not hot!) and life in the pond is in full swing. Rooted plants such as St. John's wort and flowering rush are in full bloom of yellow and pink. Many of these rooted plants have reached their full height of 3-5 feet tall! The beauty of the blooms found in the pond is breathtaking.

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## Mass Exodus

Midsummer is also a time for insects and small animals of the pond to establish themselves in their proper places. Those that have survived the spring now get down to the serious business of living and preparing for the winter ahead. Many insect larva such as gnats, midges, mosquitoes, and dragonflies are now fully developed adults and move away from the pond along with toads, frogs, and newts. Life in the pond is settling down.

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## Dragonflies

Dragonflies begin their life as an egg laid in water. It lives in its larval stage for two years – crawling on the bottom of the pond eating any small creature they can snatch – from water insects to tadpoles! During those two years it will molt 8-15 times. A gradual change such as this is called incomplete metamorphosis. During the final larval stages they are known as nymphs. It will finally crawl up a stem into the air, molt one more time and emerge as an adult dragonfly. Some species can travel as fast as 30 mph. They are aggressive predators seeking out prey such as mosquitoes and gnats.

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## Damselflies

You have probably seen these creatures and have mistaken them for dragonflies. They have a similar appearance but there are several differences that differentiate them from dragonflies. One major variation occurs while they are at rest. Damselflies hold their wings together over their back, while dragonflies hold them flat along the sides of its body. Damselflies also have smaller eyes that are set on the sides of the head, while dragonflies' eyes meet at the top of the head. Damselflies are also weaker fliers than dragonflies, unable to fly as fast or as far.



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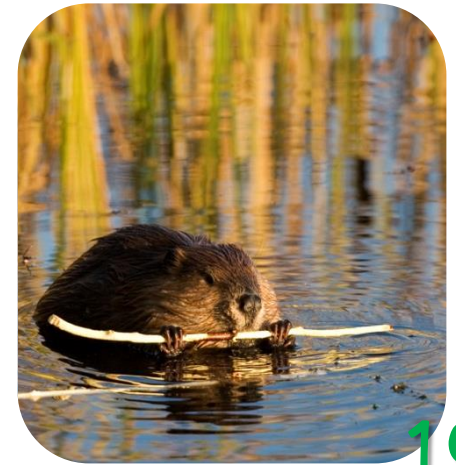
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### 13 Salamanders & Newts

There is no real difference between salamanders and newts. Newt is often the common named assigned to smaller salamanders, about 3-4 inches long. Salamanders are typically 4-8 inches long. They are amphibians, like frogs and toads. They start their life in the water, hatching out of eggs that are carefully laid attached to leaves and waterweeds. Some species wrap each egg in a leaf as extra protection. Salamanders generally live close to rivers with fast-flowing water. There is more dissolved oxygen in moving water of which they need an abundant supply.

### 14 Fish

When most people think of a pond or river they think of fishing! Ponds and rivers are often full of freshwater fish such as trout, perch, and salmon. Many freshwater fish display a type of camouflage called countershading. Their backs are dull and dark, so that when it is seen from the top it blends in with the muddy water and pond bottom. The underside is shiny and silvery so that when it is seen from below by predators it blends in with the ripples and flashes of the water's surface. Fish feed on small water animals, insect larva, and some water plants.

### 15 Eels

When picturing an eel we often think of the Morey Eel found in saltwater. There are, however, freshwater eels that live in the long grass of shallow rivers all around the United States. Despite its snakelike appearance it is in fact a fish. Eels are in a category called catadromous fish. This term means that they are born in saltwater, mature in freshwater, and return to saltwater to lay their eggs. They are the only such type of fish in North America. Eels can absorb oxygen through their gills as well as their skin, allowing them to travel over land. Eels can also cover their skin with a mucous layer making it impossible to capture them by hand – giving credence to the saying, “slippery as an eel.”

### 16 Waterfowl

Ponds and rivers are not only important to the creatures and plants that live in them, but also to creatures that live around them. Ponds and rivers around the world attract about 150 different species of waterfowl, including ducks, geese, and swans. Waterfowl commonly have webbed feet for swimming and long, mobile necks for searching in the water and soft silt for food. The thick vegetation around ponds and rivers provide waterfowl sheltered areas in which to build their nests. Aquatic plants and animals provide plenty of food for most of the year.

### 17 Waterbirds

Ponds and rivers also attract other types of birds to its feast of food. Fish, frogs, bank plants, floating and submerged waterweeds, insect larva, shellfish and other aquatic life provide a bountiful banquet for the tiny sparrows to the mighty kingfisher. The elegant heron can be found standing motionless while it waits for his prey. Some species, such as the reed warblers and buntings, find protection by building their nests in the dense reed beds and thick vegetation allowing them to raise their chicks in safety away from foxes and hawks.

### 18 Aquatic Mammals

Ponds and rivers also provide a home and food for a number of different aquatic mammals. Minks, shrews, beavers, and otters all have fur coats that are adapted to their watery environment. Special hair length allows both camouflage and the ability to trap air to keep water out and body heat in. Aquatic mammals also have webs between their toes allowing them to swim more efficiently.





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## Platypus

This unusual creature that looks to be a combination of a duck, beaver, and otter can only be located in Australia. It lives beside freshwater rivers or lakes where they create burrows for shelter and protection. They are nocturnal and are considered bottom feeders. They swim down to the bottom of the river or lake and scoop up larva, shellfish, worms and bits of gravel in their bill. Platypus have no teeth so these bits of gravel help them grind their food. The platypus is one of two mammals that lays eggs and nurses its young. Male platypus are actually venomous. They have a sharp spur on the heel of their back feet that can release a toxic blow to kill a small dog or cause serious pain to humans.

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## Turtles

Freshwater turtles are often named terrapins and vary significantly in their looks. Some have the familiar hard shell and webbed feet, while others have a flat soft shelled body and elongated neck and nose. The largest freshwater turtle is the alligator snapping turtle which can reach weights of 155-175 pounds! The smallest freshwater turtle is the stinkpot turtle which grows to be 2-4½ inches long. Freshwater turtles have a varied diet of tadpoles, fish, frogs, insects, vegetables, fruits, herbs and plants. Two-thirds of the turtle population is endangered because of water pollution.

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## Snakes

There are several freshwater loving snakes such as the water moccasin, the anaconda, and the viperine water snake. The water moccasin (a.k.a. cottonmouth), the only poisonous freshwater snake, grows to an average of 4 feet long and are so buoyant that they swim along the surface of the water. The anaconda, found in South America, is the world's heaviest snake (440 lb.) and one of the longest (30 ft.). It lives in slow-moving streams in tropical rain forests. The viperine water snake from Europe also glides along the surface of the water and grows to about 2½ feet in length.

## 22 Underwater Weeds

Underneath the water is an entire world of plants that are unseen unless one ventures down to the depths of the pond or river. These plants grow like a forest and provide food and shelter for many creatures, while also providing a place for some to lay in wait to ensnare their prey. But the most important function of these underwater weeds is to provide oxygen which is diffused into the water and used by both plants and animals alike. If you look closely at the plants on a sunny day, you may be able to see tiny bubbles of oxygen coating the plants or rising to the surface.

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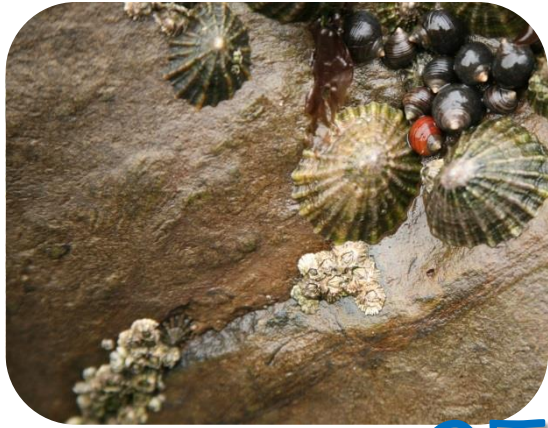
## Water Spider

Did you know that there is actually a spider that lives underwater? It does not possess gills or the ability to breathe underwater, but it makes its home there just the same! This amazing creature weaves a web among the water plants and fills it with air bubbles to create what is known as a "diving bell". The water spider lives the majority of its life underwater. It comes up about once a day to renew its water bubble by trapping air bubbles on the fine hairs of its abdomen and legs. Water spiders eat a diet of water mites, midges, and water boatman.

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## Insects

Insects are found all over the world, from glaciers to hot springs. Of the 25 major groups of insects, half of them live in fresh water. Some insects, such as the water scorpion, water beetle, and water stick insect, spend nearly all their lives in the water. While others, such as the mayfly, caddis fly, and the red-tailed maggot, spend their "youth" in the water and live their adult lives in the air. Some insects, such as the water mite, actually absorb dissolved oxygen through their skin.



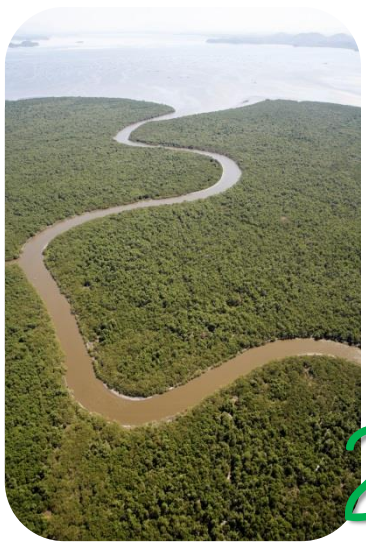
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## 25 Freshwater shells

When you think of shells you often think of finding them at the beach. But did you know that there are several different types of shells you can find in freshwater? All of the shells that you find in freshwater belong to the mollusk family. The creatures that live in the shells built them themselves! They must absorb calcium-containing minerals such as calcium carbonate, more commonly known as lime (not the fruit!). Minerals such as these are generally found in hard water areas. Shell wearing organisms such as snails and limpets feed on water plants and algae while mussels and cockles suck in water and filter out tiny food particles.

## 26 Crayfish

Any child that grew up near a stream probably spent countless summer hours capturing these creatures! They are closely related to lobsters. In fact, the only differences between the two are their size and location of living. Crayfish grow to a maximum size of six inches in length and live only in freshwater lakes or streams. They are nocturnal creatures and feed on worms, insects, mollusks, water plants and decaying organic matter. They use their pinchers to tear and crush their food into more manageable pieces to eat. When threatened they raise their claws menacingly and use their fan shaped tail to propel themselves backwards while also flinging mud at their enemy.

## 27 Stream or River? Pond or Lake?

We often use these words interchangeably, but there are differences between them. The general definition of a stream is that its width is less than 15 feet, while rivers are wider. Ponds are bodies of water that are shallow enough to support rooted plants and are fairly even in temperature throughout and may freeze solid during the winter months. A lake is deeper and not able to support rooted plants except at the waters edge. Because of the depth, temperatures vary greatly from the bottom to the top and may only freeze at the surface – rarely all the way through.

## 28 Estuary

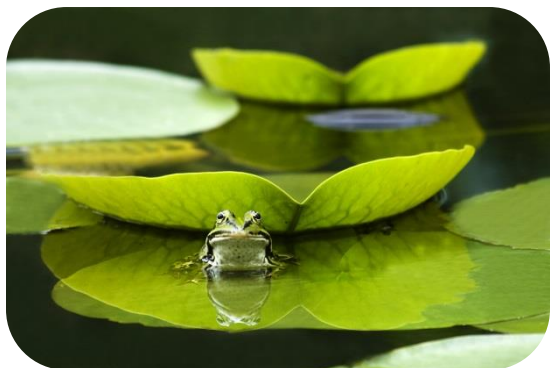
Eventually all things come to an end. But where do rivers end? Most rivers end by flowing into the ocean. The last expanse of the river is known as an estuary. It is in this area that saltwater from the ocean begins to mix with the freshwater of the river. This mixture causes the water to be cloudy which prevents water plants from growing. Because the conditions of this area vary greatly, not many plants or animals are suited to its living conditions. But those that are found, such as pipefish, sea slater, sea spurge, and glasswort, have little competition and thrive beautifully creating large population numbers.

## 29 Fall

As summer blends into fall, the days shorten and the nights become longer and chillier. The pond begins to settle down and prepare for the long winter. Animals and birds that lived along the waters edge in the thick foliage are eating the last of the fruits produced by the vegetation and moving to more protected areas as plants die and create barren banks. Fish, insect larva, and newtlets (young newts with gills) will swim to the bottom of the pond to spend the winter.

## 30 Winter

Where do all the pond creatures go for the winter? Where do flies, mosquitoes, fish, snails, and frogs disappear? As referred to yesterday, most of these creatures swim to the bottom of the pond, to prevent freezing, and settle down for winter. As the water temperature cools, so do their bodies. In this cooler state they need less energy and can survive with little food. They also need less oxygen, so the little amount that is still produced by waterweeds is sufficient for the survival of the pond. Some creatures, however, lay their eggs in the fall and die. The eggs then hatch in the spring to begin the cycle all over again.



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### **Ezekiel 47:9**

Swarms of living creatures will live wherever the river flows. There will be large numbers of fish, because this water flows there and makes the saltwater fresh; so where the river flows everything will live.