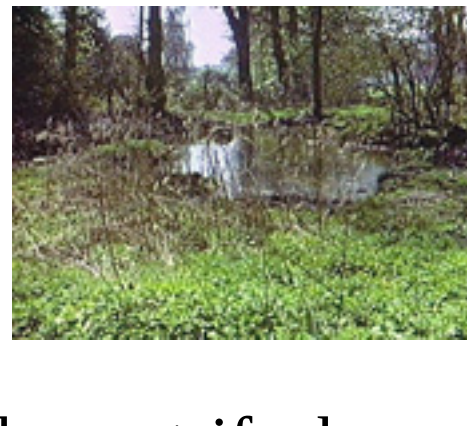
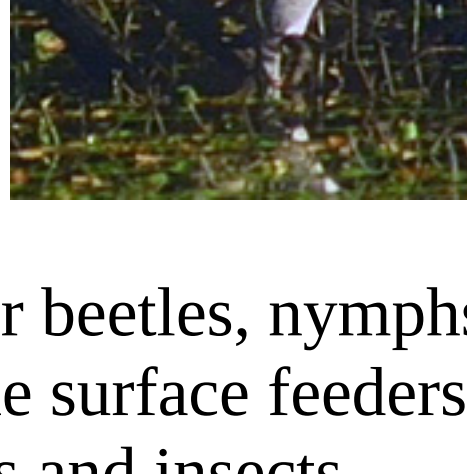


POND LIFE



Ponds are usually man made, small areas of still water and shallow enough for light to reach the bottom for rooted plants to grow, rushes, sedges, great willow herb, meadowsweet, purple loosestrife, bur marigolds and yellow iris. Reeds grow around the edges, with water lilies, pondweed and water crowfoot, duckweed and algae float on the pond surface. All these plants producing oxygen. A rich plant life supports a varied animal population. Pond skaters, water crickets and the water measurer live on the ponds surface, feeding from the plants. Water beetles, nymphs of dragonflies and damselflies predate the surface feeders, stickleback and roach feed from plants and insects. Visiting grass snakes feed on the fish and frogs, water voles feed on the plants, swallows and house martins skim the water for insects, wood pigeons come for a drink.



The waters edge of a pond separates two quite different habitats. On the land the plants draw nutrients from the soil, and in the water plants are surrounded and supported by the water where they find the carbon dioxide and nutrients they need. They normally have numerous leaves to give maximum surface area to absorb the waters gases. They produce their flowers above the water surface to attract insects or to allow their pollen to be shifted by the wind, or carried on the water surface.

Common plants in the shallow water are hard and soft rushes, branched bur-reed, greater water plantain, common water crowfoot, water cress and yellow flag. In the deeper water grow water milfoil, hornwort and fennel leaved and broad leaved pondweed. On the banks grow flowering rush, sedge and water dock. Invertebrates flourish in the warm water, snails, beetles, water boatmen, water scorpions, water stick insects, mayflies and small crustaceans like the water shrimp.

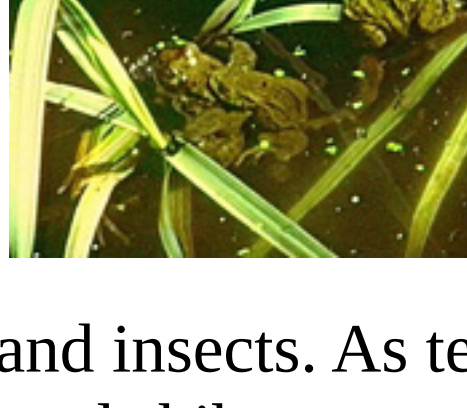


These are prey to fish like the stickleback. Larger animals like the common frog, common toad and smooth newt eat the insects and small fish. Herons may visit to fish, coot, moorhens and mallards to build their nests.

If the pond freezes over in winter, although it may enclose the fish and plants in it, the ice provides an insulation, keeping the water slightly warmer, helping the inhabitants to survive. Plants and animals adopt different survival techniques. Fish move down to the mud and vegetation at the bottom of the pond, sucking up and dispelling the mud, digesting the nutrients. They minimise activity to save energy. Worms, pond snails, insect larvae of dragonflies, caddies flies and mayflies, also find shelter in the bottom mud.

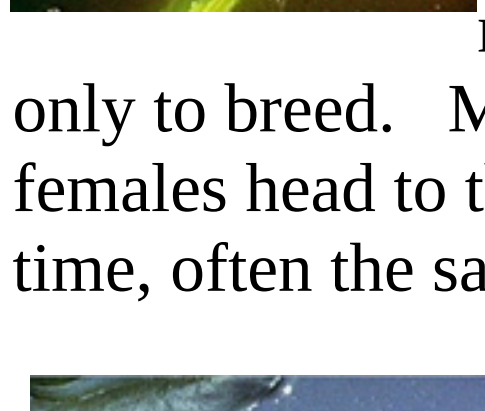
Floating pond plants like duckweed sink down to the bottom of the pond. During the summer growing season they have produced extra quantities of starch, stored in its tissue, which is now gradually absorbed to help the plant through the cold winter. In spring the duckweed floats back to the surface. Resident birds like the coot and moorhen stay on the pond as long as there is concealing vegetation, foraging around its banks.

AMPHIBIANS

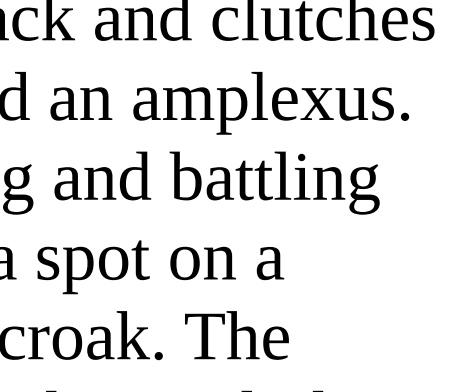


Amphibians are cold blooded animals, with their body temperature varying with their surroundings. In summer they bask in the sun, when not foraging for food, toads and frogs eating slugs snails and insects. As temperatures drop in winter frogs and toads hibernate to conserve energy, drastically reducing their heart rate and respiration. Frogs will submerge under water, burying themselves in the mud at the bottom of the pond. Underwater they have to absorb oxygen through their skin. On land they breathe through their nostrils. Toads shelter on land, in a compost heap or in a shed. The frogs and toads slowly return to activity in March, taking brief sorties not far from their wintering shelter.

TOADS



Common toad is widespread through the UK. Good swimmer although it will spend most of its life on land, living in hedgerows and among tree roots, returning to the water only to breed. Males and the larger females head to the pond at the same time, often the same pond in which they were born. The male jumps on the females back and clutches her in an embrace, called an amplexus. There is a lot of croaking and battling among males to secure a spot on a female. Only the males croak. The mating period in the pond will last 2-3 weeks. With the male on her back, the female emits a string of eggs, up to 7000 eggs in a string of 2-3 meters in length, as the male fertilises the eggs with his sperm. The string of eggs are entwined around the stems of water plants. A week later the eggs change shape from round to oval, as the tadpoles develop inside.



After another 2 weeks they wriggle free of the jelly, and swim, feeding on algae. The process from newt to adult toad takes 9-15 weeks, when the young toads will leave the pond for their life on land. When spawning is completed in spring toads leave the ponds to spend the summer on land. They are active at night although may spend the daylight basking for a few minutes at a time in the sunshine to gain body warmth. As they are naturally cold-blooded any longer their bodies may overheat. They are never too far from water as they need to keep their skins moist, which they achieve by occasional skin dipping and through glands beneath their skin which secrete a moist mucus. If conditions become too hot the toad will burrow itself into loose soil, reemerging in the evening. They feed during the night, moving from the one known spot to another known spot, returning to the same daytime retreat. Emerging at dusk they seek out worms, snails, beetles, ants and caterpillars, sitting motionless until a spider or another insect strays within range and then it darts out its long tongue to envelop the insect, flicking it back into its mouth. When the food supply dwindles it will move to another area and settle down to the same routine. Toads protect themselves from predators, birds and stoats, by secreting a mildly poisonous liquid from glands just behind their eyes. They shed a thin transparent layer from their skin several times during the summer. In autumn they seek out a sheltered safe spot for their winter hibernation, appearing again in March/April and heading immediately to a deep pond to spawn.

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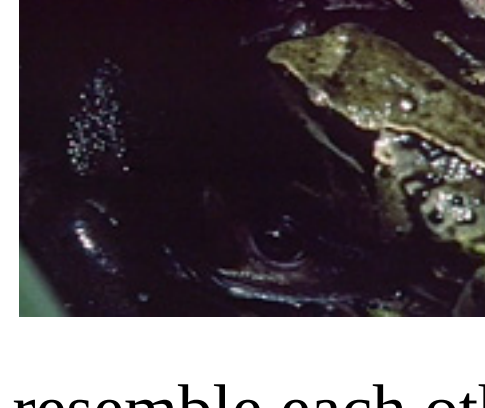
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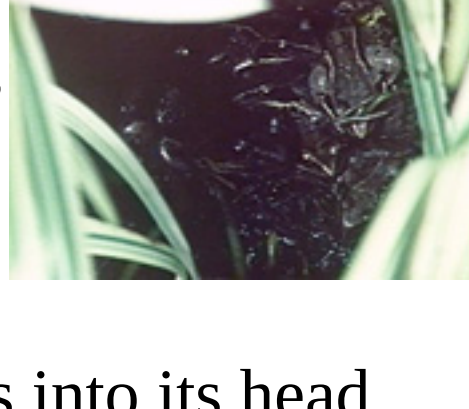
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FROGS



Found in damp vegetation around ponds. It can change its colour by spreading dark pigment cells on its body, paler in dry warm conditions and darker in colder damper weather. Both sexes resemble each other with the female developing a rougher texture in the mating season. Special mucous glands in the skin allow the frog to breath through its skin supplementing its breathing through its lungs. The skin absorbs water so the frog does not need to drink. It eats slugs and worms, supplemented with flies and insects, catching them with a whiplash action of its tongue. It cannot close its eyes, but withdraws its eyeballs into its head. The adults emerge from their winter recluse in March, and congregate on breeding grounds, where the males will croak to attract females. The male jumps on the female back, and grips her around her armpits. Spawning takes place in the water, asking a few seconds. The female lays over 2000 black eggs, as the male on her back fertilises them. The fertilised spawn floats to the surface of the water and collects with other spawn in a single mass. The eggs develop into tadpoles after 10-21 days, gaining nourishment from the remains of the egg yoke. After 8 weeks, after developing lungs, the tadpole rises to the waters surface. By the 12th week it has grown forearms. After another 10 weeks, by June, the young frog is visible on rocks and in grass at the waters edge. Only a few baby frogs will reach adulthood, most taken by water fowl and hedgehogs, snakes and foxes.



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PONDSKATER



The first aquatic insects to appear in the spring. They live on the surface of a pond, spreading its weight over a wide area with its very long legs, which they use to glide over the water. They feed from the insects that fall into the water and cannot escape. They lay eggs in March, attaching them to submerged plants. The young emerge through several moults each a smaller version of its parent,

DRAGONFLY

Dragonflies were flying in the UK 300 million years ago. There are 27 species in the UK. They live near water, ponds, streams and marshes. They are predatory, hunting other insects on the wing. They have the most highly developed eyesight of all insects, which they need to be efficient hunters. That can spot prey 12m away. They mate in Spring. The male dragonfly sits on the female passing sperm through his penis under the second segment of his abdomen. Eggs are laid on the stem of a water plant, in the mosses at the waters edge or the female will drop her eggs directly into the water. The nymphs remain in the water for usually two, for some species even five years, before emerging as adults. They feed on water insects and fish, seizing their prey with their claws.