

## Dragonflies and Damselflies

By Derek Flynn

Who would have thought that dragonflies and damselflies could be so fascinating, or that they could rouse such passion? In his first ever public talk, Derek treated us to a lively and informative presentation, that



fully explained how and why these small creatures have captured his heart. Not only are they very beautiful but they are truly masterpieces of design.

All of the remarkable photographs presented here were taken by Derek in his garden, in which he has created a haven for dragonflies and damselflies. In the interests of clarity, Derek spoke mainly about dragonflies.

Fossil evidence shows us that dragonflies have been around for some 300 million years, making them one of the oldest species of insects in the world. Dragonflies have been so successful over time that the only difference between modern and ancient dragonflies is size. One of the secrets to their success is how they mature; they have three stages to their life: egg, nymph and adult. The length of each stage depends on the species. Dragonflies in tropical regions typically spend less time in each stage than dragonflies in temperate regions.

Dragonflies mate on the wing, and a female can mate with several males before she is ready to lay her eggs. After mating, she selects a likely looking pond or marsh. It must be still water, where she will lay her eggs on submerged aquatic plants, in crevasses in poolside rocks, on mud banks submerged in water or, if she can't find a better spot, directly into the water. Depending on the species, a female can lay hundreds or thousands of eggs during her lifespan. In



temperate regions, dragonfly eggs are usually laid in mid- to late summer and don't usually hatch until the following spring.

When dragonflies hatch they are called nymphs. They are entirely aquatic, bearing no resemblance to their adult forms, and are voracious feeders. Dragonfly nymphs shed their skin up to 12 times, depending on species, and can spend as long as four years as nymphs.



During the final moulting, in late spring or early summer, the nymph's skin splits and an adult dragonfly emerges. Adult dragonflies only live two to four months and spend the first month fully maturing; one change that occurs with maturity is that their colour intensifies. Like nymphs, adult dragonflies are voracious predators, eating small insects, primarily mosquitoes and flies, which they catch in flight. Dragonflies can hover, fly backwards, forwards and sideways.

From egg to adult a dragonfly can live for five years. In tropical regions, they don't live as long as in temperate regions because those in temperate regions may overwinter as eggs or nymphs for several years before finally emerging as adults.

Any permanent water feature will attract dragonflies and Derek put a lot of thought into the pond he created in his garden, planting the kind of aquatic plants that dragonflies and damselflies love in the water and at the margins, as well as plants to attract insects for food.

But it isn't only the interesting life cycle of this animal that captures Derek's imagination: it is also the brilliance of its structure. In his words, dragonfly wings are 'a triumph of inflatable origami'. In flight, they continually adjust shape, with just the right amount of stiffness in different parts of the wing.



Their eyes, too, are remarkable. Dragonflies have five eyes, two 'main' eyes, with up to 30,000 pixels - many more than an ultra-high definition television, plus three smaller ones set in a V formation on the front of the face. This enables them to see to the front, side, up, down and behind. They can see polarised light, which is believed to enable them to find water and perhaps assists long distance navigation. Also, they have up to 30 different colour-sensitive proteins, 'opsins', with different parts of the eye tuned to different colour ranges, both visible

and ultra violet. As a result, they can process images more than 3 times faster than us!

Derek's talk really brought his subject to life and delighted his audience. If you would like to find out more about these fascinating creatures, a good place to start is the British Dragonfly Society website: <https://www.british-dragonflies.org.uk/home>.