

# Biodiversity in Schools

with Paddy Madden

My new column looks at biodiversity and sustainability, with a particular focus on what to look out for in September now that we are into the autumn. Our planet is under severe pressure and I hope that this series highlights information and materials that will help pupils appreciate the natural world and how we can observe, help and nurture the nature that surrounds us.

**NOTICE NATURE NOW:** Watch out for berries, seeds and nuts with many shapes and colours. Observe swallows and house martins gathering on telephone poles preparing to leave for Africa. Ivy produces flowers full of nectar. Watch bumblebees and wasps on it in great numbers. Common garden or cross spiders' webs are plentiful



and noticeable because the dew stays on them in the mornings, and they are easily seen in the low light.



**INSECTS IN SEPTEMBER: WHAT ARE THEY?**

There are about one million species of insect on earth. The six commonest groups are: (1) beetles; (2) butterflies and moths; (3) wasps, bees and ants; (4) bugs; (5) flies and mosquitoes; (6) grasshoppers and crickets. Insects have 6 legs, antennae and 3 parts on their bodies called the head, thorax and abdomen. Some are winged; others are wingless. Their basic life cycle goes from egg to larva to fully grown insect. Their bodies are protected by a hard shell called an exoskeleton with no backbones. Creatures with no backbones are called invertebrates.

**DID YOU KNOW?** Social wasps are insects that live in groups, but they are not bees. If they could make honey like honeybees,

Main differences between swallow, house martin, sand martin and swift	
	<b>Swallow</b> Long, forked tail. Upper part blue. Head black. Throat red. Underside white. Builds nest from mud in barns, stables and old houses.
	<b>House martin</b> Short, forked tail. Upper part dark blue. Head dark blue. Smaller than swallow. White rump. White throat. Underside white. Builds nest of mud under eaves of houses.
	<b>Sand martin</b> Short, forked tail. Upper part dark brown. Head dark brown. Smaller than house martin. Underside white with brown bar on breast. Builds nest in sandy banks and cliffs.
	<b>Swift</b> Short, forked tail. Mostly brown in colour. Throat white. Wings long and narrow. Builds nest in eaves of tall buildings. Feeds, drinks, mates and sleeps while flying.

they would live through the winter. All social wasps die in late autumn except the new queens. Both common and German wasps are the most numerous social wasps found in Ireland.



**WHY DO GARDENERS LOVE WASPS?** Gardeners love wasps because they kill millions of caterpillars and greenflies that attack their crops. The wasps kill these using their powerful jaws and then mince them into small pieces to feed their larvae in the nest. They also pollinate flowers.

**WHAT DO WASPS EAT?** Wasps love sweet juices and nectar. When the workers (which are always female) bring back food to the nest the larvae exude a sweet juice which the wasps lick.

**DID YOU KNOW?** Wasps were the first paper makers. When the new queen wakes up in the spring from hibernation, she chews on wood mixing it with her saliva to make paper. She starts building a nest with cells in it in which she lays her eggs.



**BIRDS IN SEPTEMBER:** Birds are vertebrates. They have backbones. Fish, reptiles, amphibians and mammals also have backbones or spines.

**DID YOU KNOW?** In September swallows fly to southern Africa because their favourite food-insects-become scarce in Ireland. They will return in March.

House martins and sand martins also leave Ireland in September and October.

The swifts have already left. They departed in July and August.

Excellent information on swifts can be found in the booklet *Saving Swifts*. Download it from [bit.ly/3K8XxPi](http://bit.ly/3K8XxPi).

Schools can help this declining species by erecting specialised nest boxes for them.



**CABBAGE WHITE BUTTERFLIES IN SEPTEMBER:**

Watch out for two species of cabbage white butterfly: the small white and the large white. The large white is the larger with black patches on the tips



of its wings. Its caterpillars are yellow with black spots. The small white's caterpillars are light green. Neither is liked by gardeners because they lay their eggs on cabbages. In September, these caterpillars will shred cabbages for about three weeks before changing into chrysalids or pupae. These chrysalids or pupae will open in April when new butterflies emerge.

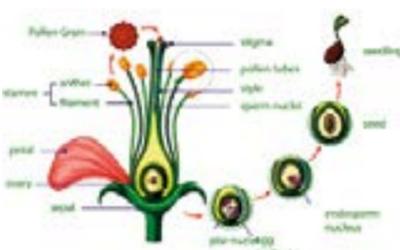
**ACTIVITY:** Cut out the base of a 5-litre water container. Insert the neck into a jar. Fill the jar with water. Place the stalk of a cabbage leaf into the water. Tuck cotton wool around the base of jar. Using a brush and a large spoon remove three caterpillars from a head of cabbage. Place these on the leaf. Tie a J-cloth around the top with an elastic band. Observe the caterpillars eating. When the leaf is mostly eaten remove the caterpillars and then the leaf and frass (caterpillar poo), empty the jar and fill with fresh water, insert a new leaf and cotton wool and cover with J-cloth. Repeat this process until the caterpillars pupate. Empty the container then and leave it with the pupae in a cool, light place until April. In April leave container outside with J-cloth removed. Watch for changes in the pupae.



**PLANTS IN SEPTEMBER**

Flowers are amazing. They produce thousands of grains of pollen on the anthers which are on top of filaments (stalks). *Filament and anther=stamen*. If one grain of pollen from the stamen of a plant, lands on the stigma of a similar flower it will grow down a tube called a style to the ovary and will continue until it reaches each ovule. *Style + stigma + ovary with ovules = pistil*. The ovary will then change into a fruit and the ovules into seeds.

Flowers need messengers to carry the pollen from one to another. These



messengers are bees, butterflies and other insects.

- To get the insect to carry the pollen the flower has a few tricks up its sleeve. 1. It has attractive petals so insects will notice it.
- 2. Guidelines to guide insects to the sweet nectar.
- 3. Nectar which these insects love.

If an insect sucks the nectar, some pollen falls on its wings and body. It then flies off to another flower for more nectar. If just one grain of the thousands it carries touches the stigma of this flower the ovary will turn into a fruit.

**DO IT NOW:** Now is a good time to sow hardy annual flowers in beds or window boxes filled with peat-free compost. These are flowers that won't be killed by frost and will live for only a year. Bees and butterflies will feed on their nectar in the spring and summer. Packets of Nigella, Calendula and Californian Poppy can be bought now. Follow the sowing directions on the packets.

Sow the native species of cornflower, poppy, corn chamomile and corn marigold in a patch on their own to create a colourful cornflower meadow. Ensure that the seed purchased is of native provenance.

**THE GARDEN OR CROSS SPIDER:** Garden spiders are not insects because they have eight legs, two parts to their bodies, no antennae and no wings. They are arachnids. Highlighted by dewdrops, their orb or spiral webs can easily be seen in September. The large ones seen are pregnant females. They spin large webs made from silk to catch insects. The web is made from spirals of silk with radials branching out from the centre. The radials are not sticky so the spider can walk on them. She waits in the middle of the web for her prey. When an insect gets stuck, the web vibrates. She then rushes to it, wraps it in silk and kills it with her venomous bite.

**SPIDERLINGS:** Before dying the female spider lays thousands of eggs in papery

egg sacs which hang from branches and twigs (the male dies after mating with the female). These hatch out in May and can be seen floating in the wind.

**WILD PLANTS IN SEPTEMBER:** *Common or Black knapweed (Minscoth/Mullach dubh):* Common on roadside verges, grasslands and wastelands from July to September. Looks like a thistle because of its deep purple flowers, however it has no prickles. Pollinated by lots of butterflies and insects that have long tongues because the nectar source is difficult to reach.

*Purple loosestrife (Créachtach):* Abundant from July to September in damp places such as riverbanks, bog margins, on damp roadside verges and the sides of lakes and streams. Whorls of red purple flowers grow on long spikes on stems that can be 100cm high. Pollinated by bees and hoverflies and certain beetles eat its leaves and flowers.

*Bittersweet or Woody nightshade (Fuath gorm):* Frequently seen this month clambering through damp hedgerows. Related to the potato, tomato, aubergine, pepper and tobacco plants. Plants have poisonous leaves and berries. The latter change from green to yellow to bright red. Not as poisonous, however, as the black berries on its near relative, the rare Deadly nightshade.

*Bittersweet or Woody nightshade (Fuath gorm):* Frequently seen this month clambering through damp hedgerows. Related to the potato, tomato, aubergine, pepper and tobacco plants. Plants have poisonous leaves and berries. The latter change from green to yellow to bright red. Not as poisonous, however, as the black berries on its near relative, the rare Deadly nightshade.

**Translations**

Wasp - Foiche	Pollination - Pailniú
Spider - Damhán Alla	Swallow - Fainleog
Web - Líon	House Martin - Gabhlán Binne
Annual flower - Bliantóg	Swift - Gabhlán Gaoithe

**PADDY MADDEN Ed. D works as a Heritage in School specialist. He was a primary teacher and lectured in SESE for many years in the Marino Institute of Education. In 1984 he established the first school wildlife garden in Ireland.**

**His book, *Go Wild at School* has been reprinted three times. Since establishing a new website, [www.engagewithnature.ie](http://www.engagewithnature.ie) in 2020 with Des Murtagh, both he and Des have designed and presented online nature and gardening courses for Education Centres, a course on nature and creativity for the Pushkin Trust and a four-part general nature and gardening course for Kildare Co. Council's Healthy Ireland Programme.**