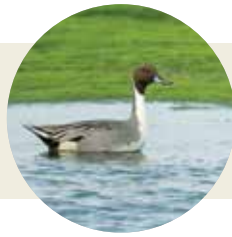


wild about NOVEMBER

Pintails are building on marshes



Woodcocks are arriving when the moon is full



TINY & WILD ROSS PIPER

Surviving the freeze

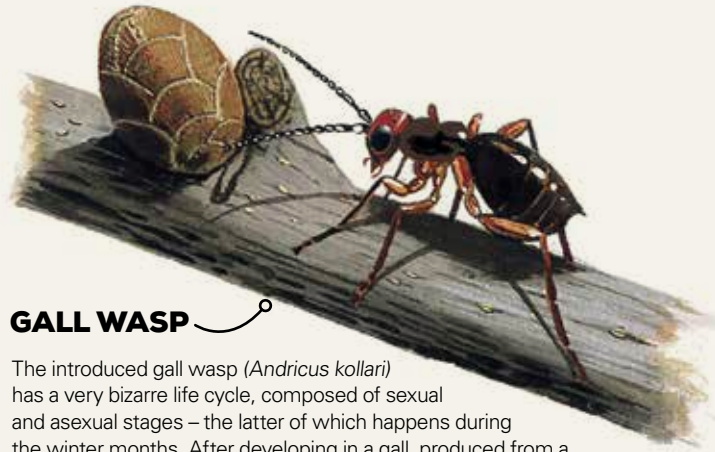
Most insects vanish in winter – but where do they all go?

This year's long, hot summer was extraordinary and many animals, especially insects, made the most of the balmy conditions. The vast majority of insects synchronise their activity with the warmer weather as their ability to move, feed and reproduce is governed by the ambient temperature.

As autumn gives way to winter, most insects retreat from public life and use various strategies to see out the coldest months. All the species we see in the warmer months are still around, it's just they're less conspicuous – in both appearance and behaviour. Many survive the coldest months as dormant eggs or larvae concealed in the leaf litter, soil or under bark, just waiting for the warmth of spring. Still more are able to tolerate the cold weather as adults, again entering a state of suspended animation until warmer conditions return.

With that said, plenty of insects remain active during the winter. Rummage around in the leaf litter, delve into some grassy tussocks or dip a few ponds and you'll find plenty of small animals. In some of these microhabitats the insulation provided by the overlying vegetation or water takes the teeth from winter's bite, and the temperatures may remain high enough for activity to continue.

In those species that do enter a state of suspended animation, ice is the enemy. Ice crystals rupture and



GALL WASP

The introduced gall wasp (*Andricus kollari*) has a very bizarre life cycle, composed of sexual and asexual stages – the latter of which happens during the winter months. After developing in a gall, produced from a fertilised egg, the asexual female appears in September and lays an unfertilised egg. These galls then develop over the winter, with sexual adult wasps emerging in the spring. Look for the small oval winter galls between the leaf bud scales of oaks.

destroy delicate cells and tissues. To keep the ice crystals at bay, many over-wintering insects produce anti-freeze chemicals that enable them to become "super-cooled". These chemicals work up to a point, but in very low temperatures (rarely experienced here) ice crystals form and the insect perishes.

There are a few unusual insects that are busy with courtship and mating during the winter. Notable examples that you've probably seen are winter moths (*Operophtera brumata*) and winter gnats (*Trichocera annulata*, pictured above).

Male winter moths are commonly seen in the glare of car headlights when driving near woods and hedgerows from late autumn through to February.



The peculiar female with tiny, useless wings is more difficult to find, but look on various broad-leaved trees and shrubs such as oak, birch, hawthorn and heather. The eggs they lay on these plants hatch in early spring. Winter gnats can often be seen lekking in the depths of winter and are able to take to the air in temperatures just above freezing thanks, again, to anti-freeze chemicals.

Winter is a time of deprivation for most life, including insects, but the cold conditions can also be a friend to these small animals as it can kill harmful fungi that exploit dormant larvae and eggs.



Dr Ross Piper is an entomologist, zoologist and explorer. His book, *Animal Earth*, is a cutting-edge introduction to animal diversity. Find out more at rosspiper.net

WHAT'S ON NOVEMBER

Forest bathing

Saturday 17 November

Immerse yourself in nature at this RSPB Lake Vyrnwy, Powys, mindfulness event. £12 (£15 non-members) via vyrnwy@rspb.org.uk or **01691 870278**

Digital Darkroom

Saturday 17 November

Get expert advice from photographer Mike Malpass at RSPB Leighton Moss, Lancashire. £20 (£25 non-members), book via **01524 701601**.

Nature awards

Thursday 22 November

Hosted by Kate Humble and Euan McIlwraith, this year's Nature of Scotland Awards will be a glittering affair at Edinburgh's Sheraton Grand Hotel. £85–£100, book via awards@rspb.org.uk.

Dawn goose watch

Various dates

Few sights can compare to the early morning take-off of thousands of pink-footed geese at RSPB Snettisham, Norfolk. £10 (£12.50 non-members), book via **01485 210779**.

GET HANDS ON

Go foraging

Gather sweet chestnuts and roast them. These differ from inedible horse chestnuts (conkers) by having pricklier cases. Cut a cross-shape in the shell top and roast in the oven for 30 mins. Peel and eat, or add to cakes, stews, soups or stuffing.