



# Scottish Invertebrate News

Volume 5 Issue 1

April 2014



<b>Welcome!</b>	<b>1</b>	<i>Welcome to the ninth issue of Scottish Invertebrate News!</i>
<b>Scottish Invertebrate Discoveries</b>	<b>1-6</b>	<i>After a very wet and cold winter, Spring is finally here - and with hopefully, a lot less rain! Queen bumblebees, ladybirds, butterflies and many other insects are starting to re-appear after their long winter hibernation.</i>
<b>Invertebrate surveys</b>	<b>7-9</b>	<i>This issue covers fascinating new Scottish discoveries as well as a</i>
<b>Species spotlight: Scottish Wood ants</b>	<b>10-11</b>	
<b>British Dragonfly Society get their first Scottish Officer</b>	<b>12</b>	
<b>Talks and events</b>	<b>13</b>	

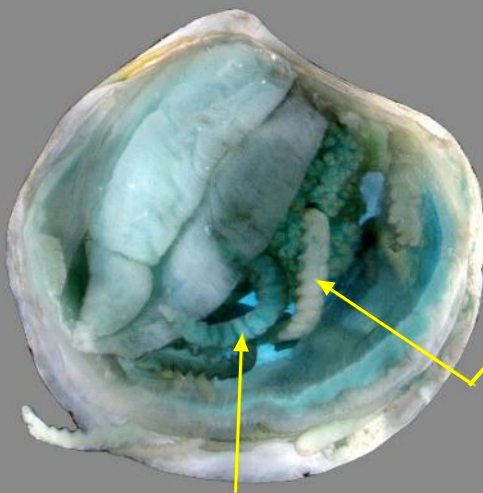
feature on saline lagoon surveys in the Uists, a species spotlight on Wood ants, and of course information on exciting upcoming events, surveys and workshops.

Good luck with all projects, surveys and bug hunting this year! Fingers crossed for a warm and sunny spring and summer, and lots of great new finds!

## The Secrets of the Scottish Seas

Deep sea surveys around the Rockall plateau, off the west coast of Scotland have discovered four new sea creatures previously unknown to science. Marine Scotland, who conducted the survey in the North Atlantic, were astonished at the diversity of finds, including a new species of large sea snail named *Volutopsius scotiae*, two species of clam (*Thyasira scotiae* and *Isorropodon mackayi*) and a currently unnamed species of *Antonbrunnia* marine worm.

The finds may indicate the presence of a cold seep at Rockall. A cold seep is an area of the sea bed where a mix of hydrocarbons are released, providing an energy-rich basis for microbial communities to thrive.



**Antonbrunnia sp. worms found inside *Thyasira scotiae* clam © Graham Oliver**



**Head of Antonbrunnia sp. worm © Graham Oliver**

The bacteria then act as an important food source for many marine invertebrates.

Marine Scotland were particularly excited about the discovery of the new species of marine worm, which was found within one of the new species of clam (see pictures above). The discovery was made by international bivalve expert Dr Graham Oliver. Marine Scotland Science hope to continue investigating this area in the future.



## Scottish Invertebrate discoveries

### Another new Scottish sighting for the Tree bumblebee

Dumfries and Galloway added a new species to its list of wildlife at the end of last summer, with the arrival (and second Scottish sighting) of the Tree bumblebee (*Bombus hypnorum*).

Tree bumblebees first colonised Britain only 10 years ago, and have since been spreading rapidly northwards. The first confirmed Scottish sighting of the species was recorded in June 2013 in Lennoxton, East Dumbartonshire by a member of the Bumblebee Conservation Trust (BBCT) (see Scottish Invertebrate News Vol 4. Issue 2 for original article).

The Dumfries and Galloway Environmental Resource Centre (DGERC) had previously hoped to find evidence of the bee as part of their [Bugs in Gardens](#) survey, which highlighted this species as one to look out for. The distinctive black, ginger and white pattern is unlike most other bumblebees in the UK. Unfortunately, the poor summers of 2011 and 2012 failed to produce any confirmed sightings of the species.

Raising public awareness of the species was not wasted though, as when keen local wildlife recorder Alison Robertson spotted the distinctively marked bumblebee on flowers in her garden (in



**Tree bumblebee (*Bombus hypnorum*)**

© Steven Falk

Glencaple), she recognised the newcomer and photographed it as a record of her sighting.

This is a species to look out for during the summer as it is likely to spread further in the region. Please report any sightings within Dumfries and Galloway along with photographs to the DGERC website <http://www.dgerc.org.uk/>.

BBCT is also keen to track its spread. If you see one elsewhere in Scotland, please take a photo and upload it for free to BeeWatch, BBCT's photo survey tool - <http://bumblebeeconservation.org/get-involved/surveys/>.

Rebecca Cairns, *Buglife*

### Small blue returns to Ayrshire

June 2013 saw the return of the UK's smallest butterfly, the Small blue (*Cupido minimus*) to the Ayrshire coast, after a gap of over 30 years.

The reintroduction was part of a joint project between the Glasgow & South West Scotland branch of Butterfly Conservation and the Scottish Wildlife Trust.

After many years of planning and hard work by SWT and BC volunteers, 30 adult Small blues were released into an expanse of



**Small blue (*Cupido minimus*)** © Ian H Leach

had been translocated from a monitored site on the Moray coast, and will hopefully have made good use of the plentiful flowering Kidney vetch

(*Anthyllis vulneraria*) present at Gales for laying their eggs.

On a visit to the site 11 days after their initial release, there were still a number of Small blues flying around the Kidney vetch banks and habitat strips that were created and sown at the reserve in 2010. It is hoped that 2014 will see the emergence of the first Ayrshire-bred Small blues since 1982.

Scott Shanks,

*Glasgow & SW Scotland branch of Butterfly Conservation*

wildflowers at the SWT Gales Marsh reserve, south of Irvine. The butterflies

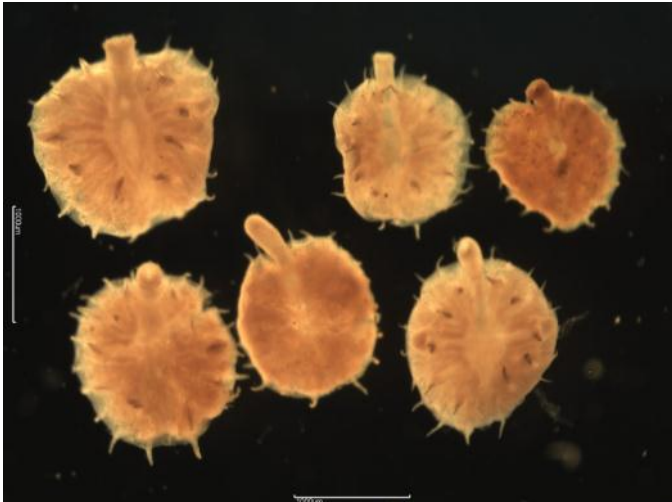


## Scottish Invertebrate discoveries

### Feather Stars reveal their bugbears

Marine ecologists from SEPA recently came across dozens of peculiar little discs with marginal cirri (thin tendrils along the edge), among the sieve debris of a sediment grab sample collected in Loch Ryan. At first these were thought to be detached scales from scale-worms which are quite common in sea-bed samples recovered for assessment of invertebrate communities (see Scottish Invertebrate News Vol.1 Issue 2).

However closer examination revealed the discs, each a little over 1mm in diameter, had little trumpet shaped sucking mouths. The same sample also contained a handful of feather stars (*Antedon bifida*) and it was soon realised the disc-like creatures were feather star lice (*Myzostoma cirriferum*) which had been dislodged from their



**Feather star lice from Loch Ryan**  
© Myles O'Reilly

hosts. Feather star lice are actually polychaete worms, but are highly transformed due to their unusual parasitic mode of life. They cling on to their hosts with minute hooked chaetae and steal food particles collected by the feather star's arms. They are rarely recorded due to their small size



The RSPB Nature of Scotland Awards is inviting entries from individuals and organisations across the country that go the extra mile to protect Scotland's wildlife and the natural environment. Whether you are a volunteer, a member of a community group, involved in a conservation organisation or a public



and clandestine nature. The National Biodiversity Network gateway shows only a single Scottish record from Loch Sunart.



However it is likely that they are simply overlooked by most marine ecologists.



**Mini sea lilies (larval stages of Feather Stars from Loch Ryan)** © Myles O'Reilly

Feather stars themselves are fairly widely distributed along the western seaboard of Scotland. They look similar to brittle-stars found on sea shores but actually belong to a related group of echinoderms called crinoids or sea-lilies which dominated the seas millions of years ago. Crinoid fossils are often abundant in carboniferous limestone of Scotland. Recent crinoids mostly occur in the deep sea and typically attach to the sea-bed by a long stalk. Feather stars are usually found in shallower seas and are un-attached but they have a stalked larval stage resembling their deep sea crinoid cousins and ancient forebears. A number of these "mini sea-lily" larvae, just a few mm long, were also found attached by little stalks to debris in the sample from Loch Ryan.

Myles O'Reilly - Scottish Environment Protection Agency (SEPA)

sector initiative, we invite you to enter the Nature of Scotland Awards and look forward to learning more about your work.

The closing date for entries is Friday 30 May 2014. To find out more or submit an entry to the Nature of Scotland Awards, please visit: <http://www.rspb.org.uk/natureofscotland>.

Leianna Padgett, RSPB

## Scottish Invertebrate discoveries

### Hobo spider (*Tegenaria agrestis*) new to Glasgow!

Buglife visited Govan Graving Dockyards in October 2013 as part of a plant and wildlife survey of the site organised by students from the University of Glasgow. During the day several large funnel-web spiders were observed under brick rubble and were identified as the Hobo spider (*Tegenaria agrestis*); this was later confirmed with a collected specimen.

All specimens seen were identified as being female and were within a web under the brick rubble, as in the photo below.

This is the first confirmed record of the species in the Glasgow area, as the few previous records have been from the east of Scotland, in West Lothian (2 locations), Falkirk (2 locations) and Clackmannanshire (1 location).

The Hobo spider is similar in appearance to its larger and more widespread relatives: the Common house spider (*T. domestica*), the Fierce house spider (*T. saeva*) and the Giant house spider (*T. gigantea*), but unlike them is rarely recorded indoors and this may be due to possible competition with its larger relatives.



Hobo spider (*Tegenaria agrestis*) hidden amongst its web at Govan Graving Dock  
© Suzanne Bairner

In Scotland, this species appears to favour brownfield sites, although in England and Wales it has been recorded in other habitats. Brownfield sites with rubble and an open mosaic of habitat provide ideal conditions for this species and we were not surprised to find the Hobo spider in Glasgow.



Previously, the most westerly records of the Hobo spider were from Alloa (NS884920) and



Carronshore, near Larbert in Falkirk (NS879826). While brownfield sites are known to provide refuges for many rare invertebrate species, they are not often surveyed for wildlife and it is thought that this species may be more widespread throughout the central belt.

Suzanne Bairner, Buglife



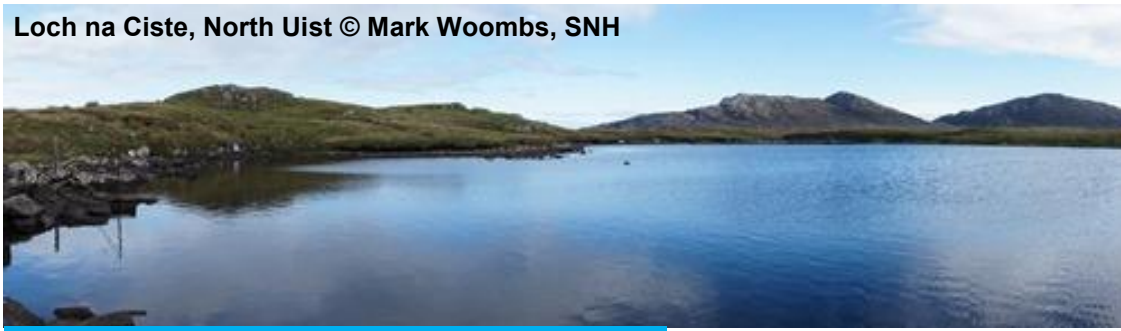
Female Hobo spider (*Tegenaria agrestis*)  
© Steven Falk

### Did you know?

**Fun funnel-web facts:** There are 6 species of *Tegenaria* funnel-web spiders (also known as house spiders) in Scotland. The most widespread are the Common house spider (*T. domestica*), the Giant house spider (*T. gigantea*) and the so called 'Fierce' house spider (*T. saeva*), which are all frequently found in buildings; while the Hobo spider (*T. agrestis*), the Woodland house spider (*T. silvestris*) and the Irish house spider (*T. atrica*) have more restricted distributions, possibly due to more specialized habitat requirements.

Identification of house spiders can be problematic due to the similarity of some species and frequent inter-breeding!

House spiders can take 2 years to reach maturity, with males dying after mating, but females can live for up to 3 years. Males are often encountered indoors in autumn while searching for a mate.



**Anemonia viridis**  
© Mark Woombs

## Scottish Invertebrate discoveries

### The hardy invertebrates thriving in Scotland's saline lagoons

Saline lagoons are shallow bodies of brackish water that are wholly or partially separated from the nearby sea by narrow channels, underwater sills, culverts, sluices or banks of shingle. In larger lagoon systems there is often a gradient from almost marine habitats, through brackish water habitats, to almost freshwater habitats as distance from the influence of the sea increases. In some lagoons the salinity of the enclosed



**Lagoon cockles (*Cerastoderma* sp.) in Oban a' Clachain** © Stewart Angus, SNH

water can fluctuate dramatically with tidal cycles and in response to seasons and rainfall.

This physiographically diverse but scarce habitat type has priority status ('in danger of disappearing') under Annex I of the European Habitats Directive and is recognised in UK conservation legislation. Some lagoon sub-types (e.g. silled lagoons which are found mainly in the Outer Hebrides) have a very restricted distribution and consequently a high proportion of the UK extent of lagoons has been included in Special Areas of Conservation and Special Sites of Scientific Interest.

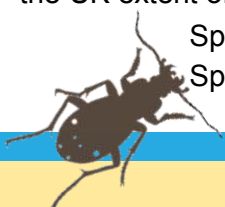
The associated biological communities vary according to the physical characteristics and salinity regime of the lagoon but usually only a limited number of species are present compared to other marine habitats. However, hardy lagoon specialists, tolerant of environmental fluctuations, thrive in conditions that would cause intolerable stress in their saline or freshwater counterparts.

In September 2012 Scottish Natural Heritage commissioned a team, including marine biologists from National Museums Scotland (NMS), to survey the biodiversity of saline lagoons in the Uists, Outer Hebrides. Taxonomic confusion within a number of phyla had led to doubts in some existing species records, and without access to the original specimens the records could not be verified. By incorporating recent NMS and Heriot-Watt University research on the morphological and molecular identification of mud snails (Hydrobiidae) and the morphological identification of lagoon isopods this survey has clarified the distribution of lagoon specialists in the Uists; these results will be used to plan a monitoring strategy.



**Opossum shrimp, *Praunus flexuosus***  
© Bill Crighton, NMS

Two hundred and forty-three species were recorded during the surveys, including the lagoon specialist isopods *Idotea chelipes* and *Lekanesphaera hookeri* and the gastropods *Hydrobia acuta neglecta* and *Ecrobia ventrosa*. The Lagoon cockle *Cerastoderma glaucum* was confirmed from 3 sites in Loch Bi and the nationally rare Foxtail stonewort *Lamprothamnium*



### The hardy invertebrates thriving in Scotland's saline lagoons (continued)...

*papulosum* was rediscovered in five lagoons. The results, which will be published in an SNH Commissioned Report, illustrate the complexity of the network of freshwater, brackish and marine lagoons in the Uists.

Almost 600 jars of preserved zoological specimens (including material for molecular analysis) have been incorporated into the Invertebrate Biology collections at NMS. The specimens will be cared for in perpetuity and are accessible to external researchers via our loans scheme.



Lagoon isopods, *Idotea chelipes* (left) and *Lekanospaera hookeri* (right) © Bill Crighton, NMS

Fiona Ware, *Curator of Invertebrate Biology, National Museums Scotland*

### If you glow down to the woods today...

Last summer saw the launch of Buglife's Scottish Glow worm survey. Glow worms (*Lampyris noctiluca*) are nocturnal beetles that are able to produce a greenish glow through biochemical reactions inside their bodies. The larvae feed on snails for up to 3 years before pupating and emerging as an adults in summer. The adults don't feed and live for only a few weeks, spending their evenings looking for a mate. The flightless females glow each night when it becomes dark, to attract winged males. If she isn't successful after a few hours, she switches off her bioluminescence until the following night.



Female glow worm (*Lampyris noctiluca*) © Norman Still

During 2013, records of Glow worms (both current and historic) were received from across southern Scotland. Most of the records of adults were from June and July. Habitats ranged from coastal sites at Sandgreen in Dumfries & Galloway, Colintrave in Bute & Argyll and Farland point on Great Cumbrae in the Clyde, to upland sites such as at Ettrick in the Scottish Borders.



Glow worm larva (*Lampyris noctiluca*) © Suzanne Bairner

The most northerly record from 2013 was of the glowing females seen during Buglife's Glow worm walk and moth night near Aberfoyle on the 5th July. In addition to the lovely glowing ladies, we also had a treasure-trove of fantastic moths, bats and an inquisitive slow worm too.

There is mounting evidence to suggest that the Glow worm is in decline across the UK. Issues include increasing light pollution from roads and urban areas that can distract and confuse males looking for a mate, use of pesticides and herbicides, habitat fragmentation and the mowing of road verges when adults are active in the summer.

Please look out for adult female Glow worms from late June through to September (often after 11pm before its dark in Scotland), or the distinctive larvae (that have pale spots along their sides) that can be found under logs and stones throughout the year. It is possible to survey for the winged males using a green LED (wavelength ~565 nm) connected to a battery, which mimics a glowing female.

Please submit your records online via [www.buglife.org.uk/glowworms](http://www.buglife.org.uk/glowworms).

Scott Shanks, *Buglife*

## 2014 Survey for the Bordered brown lacewing at its last remaining UK site

Arthur's Seat (the 250m high hill) in Edinburgh is thought to be the last remaining site in the UK for the rare Bordered brown lacewing (*Megalomus hirtus*). However, this small lacewing has not been recorded at the site since 1982, meaning its continued existence as a British species is in question, with an urgent need to re-search.

While volunteering with Buglife in Scotland, I learned of the conservation issues surrounding the Bordered brown lacewing and have applied for funding to hopefully organise and lead a survey for *Megalomus hirtus*, focussing on Arthur's Seat in Edinburgh. If successful other historic record sites in the east of Scotland will also be investigated.

There is little information known about the ecology of the Bordered brown lacewing. Previous observations in the UK and in mainland Europe have indicated that there may be an association between the Bordered brown lacewing and wood sage (*Teucrium scorodonia*). Although the association is still partially unclear, it is thought that *M. hirtus* feed upon aphids and other prey larvae that use wood sage as their food plant. Part of my proposed project will involve studying this relationship in more detail, primarily by

surveying for and identifying potential prey species found within wood sage vegetation.



If *M. hirtus* is still extant in the UK, I hope to produce a habitat management plan for Arthur's Seat and for other potentially suitable sites that I visit, to aid in the long-term conservation of the Bordered brown lacewing in the UK.

Rebecca Cairns, *Project Scotland Volunteer, Buglife*



Bordered brown lacewing (*Megalomus hirtus*)  
© Peter Duelli

## Ladybird spotting in Scotland

Since the launch of the Scottish ladybird survey in 2013 we have received over 300 postcards and online records of ladybirds from across Scotland. This is a significant increase compared with only 10 Scottish records in 2012, and 8 Scottish ladybird records in 2011!

The familiar Seven-spot ladybird (*Coccinella septempunctata*) unsurprisingly took 'top-spot' on the list of sightings, but records were also received of the Two-spot, Ten-spot, Eleven-spot, Fourteen-spot, Striped, Cream-spot, Orange, Heiroglyptic and the Small red

ladybird - which is spotless!



Unfortunately the non-native invasive Harlequin ladybird was also reported from a number of Scottish locations in 2013.

The Scottish Ladybird survey will continue in 2014 - so please send your records in via the BBC Breathing Spaces Ladybird survey page <http://www.ladybird-survey.org/bbc/>

[ladybird.php](http://www.ladybird-survey.org/bbc/ladybird.php) , or you can enter them directly through iRecord website (which allows you to upload photographs too): [www.brc.ac.uk/irecord](http://www.brc.ac.uk/irecord)

Scott Shanks, *Buglife*



## Seashells, seashells, on the seashore...

This year Buglife are hoping to encourage people to make a day-trip to the beach to take part in the Scottish Seashell Survey.

The Scottish Seashell Survey is a new citizen science project that will encourage members of the public to record molluscs and other seashore invertebrates they find around the Scottish coastline. This information will be used to help improve knowledge of the distribution of a variety of species found around our coasts, and help monitor the spread of invasive alien species such as the Slipper limpet (*Crepidula fornicata*).

Marine and coastal species are increasingly threatened by the accumulation of plastic and other non-biodegradable waste in our seas and oceans. Recent studies in the Clyde have revealed small plastic particles in many marine species including sandhoppers and langoustines, which have likely mistaken the fragments for food.

Other issues affecting coastal species include the removal of seaweed and strandline floatsum during mechanical beach cleaning, which destroys habitat required by a variety of specialist invertebrates.

The survey will hopefully collect valuable information on the changing distributions of coastal species, identify biodiversity hot-spots and help to promote the importance of keeping our beaches and shoreline plastic and pollution-free.

### How to take part...

1. Download the free seashell identification guide from: [www.buglife.org.uk/seashell-survey](http://www.buglife.org.uk/seashell-survey). (see example below!)
2. Record the seashore species that you see the next time you visit the coast
3. Submit you sighting online (along with a photograph if possible) to the same webpage: [www.buglife.org.uk/seashell-survey](http://www.buglife.org.uk/seashell-survey).

Download your free copy and start recording today!

Rebecca Cairns, Buglife

## Scottish Seashell Survey

Next time you visit the coast, look out for these fantastic seashore creatures and let us know what you find!



**Common periwinkle**  
Shell spiraled into whorls at side, dark grey-greenish colour



**Flat periwinkle**  
Flattened whorled shell, with bright colour variations



**Common mussels**  
Dark blueish - purple colour



**Common whelk**  
Ridged surface



**Red whelk**  
Smooth surface and red tinge inside



**Dog whelk**  
Small whelk most commonly white, although colours do vary



**Painted topshell**  
Perfectly conical shape, usually pinky-orange colour



**Grey topshell**  
Ash grey colour with greyish-brown bands



**Flat or purple topshell**  
Yellow-greenish colour with thick purple-red stripes



**Common limpet**  
Steeply conical with rough ridges, usually a green-brown colour



**Blue-rayed limpet**  
Translucent limpet with bright blue rays, most commonly found on large kelp



**Slipper limpet**  
Commonly found in stacks of up to 10 individuals



## Scottish Seashell Survey



**Common cockle**  
Oval white shell with around 24 ridges



**Spotted cowrie**  
Small, glossy shell with many ridges and three dark spots



**Pelican's foot**  
Small shell with flared lip resembling a bird's foot



**Curved Razor shell**  
Evenly curved at each side



**Straight Razor shell**  
Long, straight shell



**Tower or Anger shell**  
Sharply pointed shell in the shape of a narrow tower



**Queen scallop**  
Pinky-red in colour with around 20 ridges



**Cuttlefish bone**  
Hard, brittle remains of the common cuttlefish



**Sea potato shell**  
Shell of the heart urchin

**How to take part:** Please send us records of any of these species that you see and upload photographs via the buglife website: [www.buglife.org.uk/seashellsurvey](http://www.buglife.org.uk/seashellsurvey).

- The Seashore Code!**
- ★ Take care! The seashore can be a slippery, rocky place - watch your step, and check the tide times before exploring!
  - ★ Observe and record seashore creatures, but leave them and their habitat as you found them. Only collect empty shells, and leave plenty as homes for hermit crabs!
  - ★ Always leave the seashore as you found it. Carefully replace rocks and seaweed in rockpools. Make sure you take your rubbish home.

Photo credits: Common periwinkle, Common whelk, Red whelk, Dog whelk, Grey topshell, Common limpet, Common cockle, Straight razor shell, Tower/Anger shell, Queen scallop © Rebecca Cairns; Flat periwinkle © Sara Bally; Common mussel © Tricia Davies; Painted topshell © Carolee; Flat/purple topshell © Peter Barfield; Blue-rayed limpet © Sarah Hiscock; Slipper limpet © GBRNCS; Spotted cowrie © Steve Atkinson; Pelican's foot © Sabrina Barrow; Curved razor shell © Iwan Williams; Cuttlefish bone © Christine Matthews; Sea potato shell © Cambridge. With thanks to Martin White, GBRNCS, The Conchological Society & iWildmedia Commons.

Buglife - The Invertebrate Conservation Trust, (Scottish office) Balalain House, 24 Allan Park, Strirling, FK8 2QG.  
Registered in England at Bug House, Ham Lane, Orton Waterville, Peterborough, PE2 5UJ.  
Registered charity number 1092293, Scottish charity number SC040004, Company number 4132695.  
Scottish office telephone no. 01786 447504. Follow us on Twitter @buzz\_dont\_sweet



## Buglife's new trainee is buzzing to get started

Hello, my name is Harry Woolner and I have started as the TCV Natural Communities Trainee with Buglife for 2014. I will be working as the Parks and Pollinators Officer, mainly focused in Glasgow and Stirling. I will be engaging with local groups and trying to get people enthused and engaged with their local bugs and plants. I have come to Buglife on the back of a Masters degree in Ethnobotany, a discipline which looks at cultural knowledge and uses of plants. I specialised in gardeners' and beekeepers' knowledge of bee plants and bee declines, hence my love of bees and other Hymenoptera, a love which has brought me to Buglife.

During my studies I investigated a wide range of cultures and their knowledge and beliefs relating to bees: for instance the modern day Palawan people of the Philippines believe that bees originate from a celestial plane and report to a forest spirit known as the 'Master of the Bees'; while in the Amazon, beekeepers rear various species of stingless bees such as the Mandaçaia (*Melipona quadrifasciata*) and True-uruçu (*Melipona scutellaris*) for honey.

This year, I am hoping to build on my knowledge base to learn more about other invertebrates such as beetles and spiders, focusing on important pollinators such as hoverflies, bees and butterflies.

## Scottish Entomologist Gathering 2014

The 2014 Scottish Entomologist's Gathering will take place the weekend of the 27th to 29th June in Dumfries and Galloway.

The weekend normally starts with a gathering on the Friday evening to hear a bit about the area, key habitats and species that might be of interest. A selection of light-traps and pitfall traps are often set nearby on the first night, and depending on the weather, keen attendees have been known to stay out until the wee hours recording winged visitors!

Saturday normally involves a number of site visits, with groups splitting-up depending on interests.

On Saturday evening, we gather again for a group meal before dispersing to reset moth traps, look over the day's finds, or catch-up over a pint or well deserved



I will be working with many different community groups, delivering bug walks, attending open days to enthuse people about invertebrates and showing people why they should be growing wildflowers in their gardens and allotments for pollinating insects.



**Harry Woolner, TCV Natural Communities Parks and Pollinator Officer**

I am excited to learn more about our native invertebrates, their life-cycles and habitats and, above all, how we can protect the myriad of species that live right on our doorsteps. I hope to see you at one of my bug walks soon!

*Harry Woolner, TCV Natural Communities Parks and Pollinators Officer*

cup of tea! If you fancy coming along this year, or have some suggestions for sites (exciting or under-recorded) to visit, please do get in touch.



**A Solway speciality: the snail shell-nesting Gold-fringed mason bee (*Osmia aurulenta*) © Steven Falk**

*Scott Shanks, Buglife*

## Species Spotlight: Wood ants

In the UK there are three species of wood ants, two of which are found in Scotland: the Scottish wood ant (*Formica aquilonia*) and the Hairy wood ant (*Formica lugubris*). The Red wood ant (*Formica rufa*), is found in England and Wales.

### Habitat

As their name suggests, wood ants inhabit woodland and can be found in Scots pine forest, birch woodland and even non-native spruce plantation. They are dependent on aphids which feed in the tree canopy, and farm them for the sweet 'honeydew' they produce. During the summer, when there are larvae in the nest and more protein is required, ants can be observed carrying lots of insect prey back to the nest, including moth caterpillars and spiders.

The distinctive nests of wood ants can be huge, complex structures. As well as the visible mound, there are networks of underground tunnels that can spread up to 3 m away! The pine needle thatch on top of the mound helps to waterproof the nest, and is also a giant solar panel, absorbing the sun's rays which keeps the nest and its inhabitants warm. The nest is kept scrupulously clean, and workers collect pine tree resin which has anti-bacterial and anti-fungal properties.



Scottish wood ant (*Formica aquilonia*) nest  
© BSCG

### Biodiversity

The wood ant's home is also a haven for other insects. The rare Shining guest ant (*Formicoxenus nitidulus*), named



for its glossy exoskeleton, is a 'guest' inside wood ant nests, having its own quarters and food supply. The Shining guest ant



has a distasteful coating which prevents the wood ants from devouring it and because they do little harm in the nest, the wood ants ignore them. (See Shining guest ant picture on the following page).

The Four-spot pot beetle (*Clytra quadripunctata*) is associated with wood ant nests. Its larvae live in a 'pot' made of soil and excrement, which may keep them safe as they feed on nest debris and on the surface of the thatch.



4-spot pot beetle (*Clytra quadripunctata*)  
© Jane Bowman

There are many other examples of 'guests' in wood ant nests, including specialised woodlice, chafer beetles and even moths. Some are harmless to the ants, feeding on detritus and waste inside the nest, while others such as small predatory rove beetles feed on the ant's larvae and food supply.

### Reproduction

In common with most social insects, queens are much larger than workers and spend most of their time deep inside the nest. When a new queen emerges, she has fully-developed wings which she uses to disperse and start a new colony. Once mated, she loses her wings. This amazing individual is then responsible for producing all of the other ants in the colony. All of the workers she produces are female. Males are produced later in the year and live short lives looking for newly-emerged queens to mate with. Wood ant colonies can sometimes have several queens present at the

## Wood ant article continued...

same time. Queens have been known to survive for up to a decade or more and a single colony can survive 50 years, with one queen succeeding another.

Wood ants are territorial and defend their nests aggressively by biting intruders (including humans that get too close!). They can spray formic acid several centimetres, and although not strong enough to be very harmful, it can make the bite area sting. Some species of birds are known to provoke the ants to spray formic acid at them, which may help to repel feather mites and lice.

### Keystone species

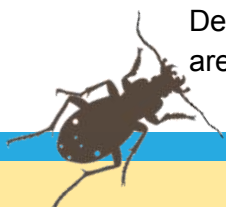
Not only are wood ants fascinating and beautiful insects in their own right, but they perform a number of important roles in the forest ecosystem, earning them the status of 'keystone' species.



**Hairy wood ant (*Formica lugubris*) © BSCG (Badenoch and Strathspey Conservation Group)**

Wood ants interact with organisms in the soil, at ground level and all the way up to the tree canopy, therefore having an impact across the whole of the forest. They could be considered to be the largest predator in the forest due to their biomass - one nest can contain 10,000 individuals and there could be several nests within a hectare of woodland. Through their interactions with aphids feeding on tree sap, and their predation on herbivores such as moth caterpillars, the ants can influence tree growth.

Despite being a top predator, they are themselves a valuable food



source for a variety of other forest animals including Badgers and birds such as the Capercaillie.



**Shining guest ant (*Formicoxenus nitidulus*) with its host, the Hairy wood ant (*Formica lugubris*) © Stewart Taylor**

### Protection

An open woodland structure is important for wood ants, and dense commercial plantations are generally not suitable. The Scottish wood ant is considered to be more shade tolerant than its relative the Hairy wood ant and can survive canopy closure as long as sunny gaps remain. The Hairy wood ant is generally found closer to the woodland edge or within younger, early succession forests.

Another species related to wood ants is the Narrow-headed ant (*Formica exsecta*). This mound-building species is considered endangered in the UK and is dependent on open woodland and woodland edges and glades.

For more information on wood ants visit [www.woodants.org.uk](http://www.woodants.org.uk).

Hayley Wiswell, *Cairngorms National Park*



**Narrow-headed wood ant (*Formica exsecta*) © Gus Jones**

## British Dragonfly Society get their first Scotland Officer

I was lucky to start as Scotland Officer with the British Dragonfly Society in October, just as I had finished working on a Swift Conservation Project in Perthshire. Growing up in rural Angus, I was always fascinated by nature and wildlife which led to me studying Environmental Science at Aberdeen University, followed by training as an ecological surveyor with the Scottish Wildlife Trust. I have worked for the last fifteen years or so as a wildlife guide and countryside ranger, with the last eleven years in Perth and Kinross.

I first became interested in dragonflies when working as a Seasonal Ranger at Crombie Country Park, in Angus. Crombie is a fantastic place to easily see dragonflies and damselflies at a number of ponds, and we're running a couple of training courses there in early August 2014. I would hope that we will be able to observe at least seven species.



Common blue damselfly (*Enallagma cyathigerum*)  
© Iain Lawrie

My role as Scotland Officer is to raise the profile of dragonflies in Scotland through engaging with local communities and volunteers to promote dragonfly recording and conservation. We have lots of events coming up across Scotland over the summer; see the Dragonfly Events in Scotland webpage for more details.

The first ever **Scottish Dragonfly Conference** will take place on Saturday 12<sup>th</sup> April at the Perth Museum and Art Gallery, 78 George Street, Perth, PH1 5LB. The programme will include updates on

the Dragonfly Atlas, dragonfly and damselfly recording in Scotland, dragonfly survey training in Scotland

and news about the Northern Damselfly and Azure Hawker surveys.



Daniele Muir, Scottish Officer for the British Dragonfly Society

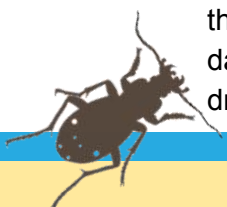
Check the BDS website for up to date information <http://www.british-dragonflies.org.uk/content/first-scottish-dragonfly-conference>, and to book your place please contact me on [scotland@british-dragonflies.org.uk](mailto:scotland@british-dragonflies.org.uk) or 07749 768 117.

I currently work 1 day a week for the BDS (usually a Friday), rising to two days from April. I look forward to working closely with both dragonflies and dragonfly volunteers and hope to see you soon!

Danielle Muir, *BDS Scotland Officer*



Male Beautiful demoiselle (*Calopteryx virgo*)  
© David Pryce



## Scottish Invertebrate Talks/Events - Spring/Summer

From the beginner to the expert, there are talks/events for everyone! This section pulls together many invertebrate events into a single calendar. If you have an event you would like to publicise in Scottish Invertebrate News please send the details to [scott.shanks@buglife.org.uk](mailto:scott.shanks@buglife.org.uk).

Date	Event	Cost	Location	Further Information
12th April	<b>Scottish Dragonfly Conference.</b> A day of talks covering recording, the Dragonfly Atlas, and conservation projects in Scotland.	Free	Perth Museum & Art Gallery, Perth	Danielle Muir. <a href="mailto:Scotland@british-dragonflies.org.uk">Scotland@british-dragonflies.org.uk</a> Tel. 07749 768 117.
16th April	Strategy for Scottish Invertebrate Conservation: the first 5 years. Craig Macadam, <i>Buglife</i> .	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
4th May	John Muir Bioblitz at Lionthorn Woods. Help required with identification and recording of invertebrates.	Free	Lionthorn Woods, Falkirk	Dan Jackman <a href="mailto:d.jackman852@btinternet.com">d.jackman852@btinternet.com</a> Tel. 07508838652
21st May	Edinburgh Entomologist Club AGM, ISI reports and update on conservation strategy.	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
23rd May	Kelvingrove Park Bioblitz. Help required with identification and recording of invertebrates.	Free	Kelvingrove Park, Glasgow	Sarah-Jayne Forster. <a href="mailto:Sarah-Jayne.forster@rspb.org.uk">Sarah-Jayne.forster@rspb.org.uk</a> . Tel. 0141 331 9802
24th May	Bugwalk at Kinneil Foreshore, Bo'ness	Free	Kinneil near Bo'ness	Suzanne Bairner. <a href="mailto:suzanne.bairner@buglife.org.uk">suzanne.bairner@buglife.org.uk</a>
28th May	John Muir event and Bugwalk at Duchess Wood, Helensburgh.	Free	Duchess Wood Helensburgh	Suzanne Bairner. <a href="mailto:suzanne.bairner@buglife.org.uk">suzanne.bairner@buglife.org.uk</a>
22nd June	Bugwalk at Frigate Park, Edinburgh	Free	Frigate Park, Edinburgh	Suzanne Bairner. <a href="mailto:suzanne.bairner@buglife.org.uk">suzanne.bairner@buglife.org.uk</a>
27th–29th June	Scottish Entomologists Gathering 2014. Will be held in Dumfries & Galloway.	Free	Various sites in D&G.	Scott Shanks. <a href="mailto:scott.shanks@buglife.org.uk">scott.shanks@buglife.org.uk</a>
4th July	Evening Glow worm walk and moth night at Doon hill and Faery Knowe, Aberfoyle. Meeting at 9pm.	Free	Aberfoyle, Trossachs	Scott Shanks <a href="mailto:scott.shanks@buglife.org.uk">scott.shanks@buglife.org.uk</a>
6th July	Whitelee Windfarm Bugblitz. Help required with identification and recording of invertebrates at the Bioblitz.	Free	Whitelee wind farm, Renfrewshire	Rennie Mason <a href="mailto:Rennie.Mason@eastrenfrewshire.gov.uk">Rennie.Mason@eastrenfrewshire.gov.uk</a> . Tel. 0141 577 3169
3rd-5th July	National Moth night. Various moth recording-related events from Thursday evening to Saturday morning. Woodland theme for 2014.	Most often Free	Across the UK	<a href="http://www.mothnight.info">http://www.mothnight.info</a>
19th July-10th August	Big Butterfly Count. Spend 15 minutes recording butterflies in your garden, park or countryside and then submit your results online.	Free	Across the UK	<a href="http://www.bigbutterflycount.org">www.bigbutterflycount.org</a>

If you would like to write an article for *Scottish Invertebrate News*, suggest a topic to be discussed, or would like any further information, please contact: Scott Shanks (Editor) [scott.shanks@buglife.org.uk](mailto:scott.shanks@buglife.org.uk), or Rebecca Cairns (Co-Editor) [rebecca.cairns@buglife.org.uk](mailto:rebecca.cairns@buglife.org.uk)




This newsletter is produced as part of the 'Action for Scottish Invertebrates' project. This project is grant-aided by Scottish Natural Heritage and delivered by Buglife – The Invertebrate Conservation Trust.

[www.scottishinvertebrates.org.uk](http://www.scottishinvertebrates.org.uk)



Scottish Natural Heritage  
All of nature for all of Scotland

[www.buglife.org.uk](http://www.buglife.org.uk) Tel: 01786 447 504  @buzz\_dont\_tweet

Buglife—The Invertebrate Conservation Trust, Balallan House, 24 Allan Park, Stirling, FK8 2QG

Buglife—The Invertebrate Conservation Trust is a company limited by guarantee. Registered in England at Bug House, Ham Lane, Orton Waterville, Peterborough, PE2 5UU.