Scottish Invertebrate News

The Scottish Invertebrate Conservation Newsletter

www.scottishinvertebrates.org.uk

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November 2011

Welcome!

Welcome to the fourth issue of Scottish Invertebrate News!

Hopefully you'll all have found time to get out looking for bugs and beasties during the year. With the invertebrate field season coming to a close once more, it's a good time to catch up on this year's new discoveries and conservation updates!

As well as some exciting new finds, this issue includes feature articles on wood ants, Scottish marine invertebrates, projects that are creating habitat for Scottish bugs and a spotlight feature on the Cairngorms National Park— most important area for invertebrates in Scotland

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Inside this issue:

Two New Sites for the Rare Bog Sun-jumper Spider in Scotland!

The extremely rare Bog sun-jumper spider (*Heliophanus dampfi*) has been found at two new sites in Scotland. This spider was previously only known from three sites in the UK.

The Bog sun-jumper is a small but beautiful spider - at just 3mm long it is mainly black but has iridescent palps that shine a stunning metallic green when they catch the sun. It is a raised bog specialist, with recent finds hinting that it may prefer to make its home deep within the base of grassy tussocks.

Bog sun-jumper (*Heliophanus dampfi*) © Lorne Gill / Scottish Natural Heritage

The Bog sun-jumper spider was discovered on 13th July during a Bioblitz at Wester Moss Site of Special Scientific Interest (SSSI), near Stirling. The spider was found by Daisy Shepperd (BTCV Natural Talent Apprentice) and collected by David Pryce (Entomology Officer, Perth Museum and Art Gallery) using a bugvac (modified leaf blower).

David Pryce kept an eye out for the species while surveying other bog sites using the bug-vac, and it wasn't long before he found the species at another new site – Dunmore Moss near Falkirk. Unlike Wester Moss which is one of the better examples of a lowland raised bog, Dunmore Moss has been extensively cut over, and the Bog sun-jumper has survived in a tiny remnant of habitat that has escaped destruction.

The specimens collected at both sites were identified as the Bog sun-jumper by Chris Cathrine (Buglife).

Although many bogs have now been surveyed, the Bog sun-jumper has still only been found on four sites in Scotland – all of which are fragments of a once vast and continuous bog network that has since been destroyed by people.

Sadly, over 90% of UK lowland raised bogs have been destroyed, principally due to the demand for horticultural peat, but they are also threatened by drainage, over-grazing, pollution, climate change and afforestation for commercial timber production. This threatens many species of plant and animal that are entirely dependent on this habitat with extinction.

Daisy Shepperd, *BTCV Natural Talent Apprentice*
Chris Cathrine, *Buglife*

Scottish Invertebrate Discoveries

Every year new invertebrate discoveries are made in Scotland. From amazing ecology, to records of species new to Scotland or science, this section highlights just a handful of these fascinating discoveries!

Beautiful jumper found in Glasgow!

In July, a group of PhD students having lunch in the grounds of the University of Glasgow made an exciting discovery when a red and black jumping spider leapt onto one of their heads!

The male Beautiful jumper (*Philaeus chrysops*) (Poda 1761) is very distinctive, having a scarlet abdomen with a tapering black central stripe, which looks like the Eye of Sauron in *Lord of the Rings.* The female is predominantly brown, again with a tapering black central stripe on her abdomen. The spider was identified by Scott Shanks of Buglife and confirmed by Chris Cathrine of Buglife.

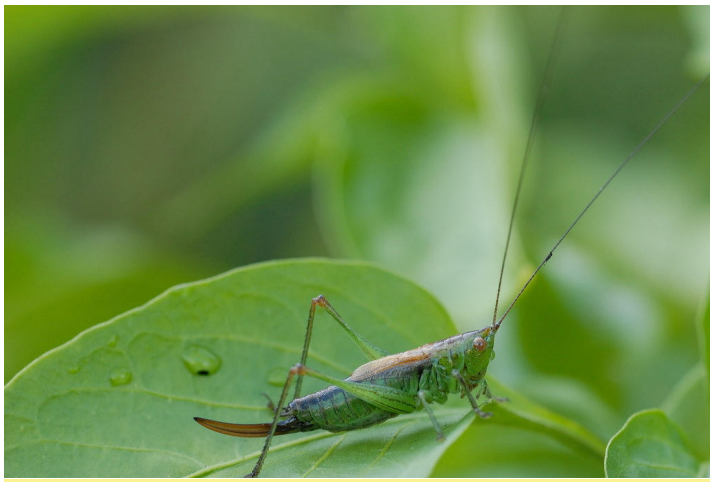
Male Beautiful jumper (*Philaeus chrysops*)
© Scott Shanks

This stunning spider is widely recorded around the Mediterranean, but is classed as threatened in a number of northern European countries including Germany and Poland. There have been a small number of UK records from around London and the south of England, but there is as currently no evidence of it breeding in the UK.

The Beautiful jumper is normally found in warm, stony and rocky habitats, occasionally at quite high altitudes. While it was found on a warm, south-facing mown slope, a resident population in Glasgow appears unlikely. It is presumed that it hitched a lift to the university with one of the many international students who arrived in Glasgow during the summer.

Scott Shanks, *Buglife*

Solway bugwalk surprise!



Female Short-winged conehead (*Conocephalus dorsalis*)
© Keith Kirk

During a Buglife bug walk at Rascarrel Bay on the 22nd August 2011 a new population of Short-winged conehead (*Conocephalus dorsalis*) was discovered by Dumfries and Galloway ranger Keith Kirk. This is only the second record of this species of bush cricket for Scotland and is a new species for Dumfries and Galloway. The increasing range of this species has previously been highlighted by Scottish Invertebrate News (Vol.2, Issue 1 April 2011).

A bat detector can be used when looking for grasshoppers and crickets (Orthoptera) and their songs can be used for identification down to species level. Unfortunately there is little distinction between the song of the Short-winged conehead and the similar Long-winged conehead (*C. fuscus*), but the later is confined to the south of England. There is more information about identifying and recording Orthoptera on the Orthoptera Recording Scheme's website: www.orthoptera.org.uk/

Suzie Bairner, *Buglife*

Dune discoveries during Ayrshire Bioblitz

In early June, a two-day Bioblitz event was organised on the Ayrshire coast at under-recorded site. Skelmorlie in North Ayrshire and Maidens/ Turnberry in South Ayrshire were chosen. A number of experts attended both days of the 'Dunes in June' event and were joined by volunteers to help survey these under-recorded sites. Despite some very wet and windy weather, over 200 species were recorded over the two days.

Invertebrates, including springtails, millipedes, beetles, butterflies, hoverflies, dragonflies and five species of bumble bee were all recorded.

Sand dart (*Agrostis ripae*) © Jessie Wormell

One of the invertebrate highlights of the Bioblitz was finding the Nationally scarce (category B) Sand dart moth (*Agrostis ripae*) in dunes near Turnberry. The Sand dart is a species associated with accruing sand dunes found around the coast of England and up the east coast of Scotland.

A single Sand dart was discovered by Jessie Wormell in a light trap that she'd set up in dunes just south of Turnberry. This is the first record of the species in Ayrshire and only the third record from the west of Scotland.

There are two historic records from the west of Scotland: one from 1905 near Garheugh Rocks in Luce Bay and another from the Isle of Rum in 1955. The Luce Bay record is from a rocky shingle beach which is an unlikely habitat for this species. The site of the record on Rum is on a dune system which is currently badly degraded with overgrazing by red deer. However, it may have been accruing sand and in suitable condition in the 1950s.

Scott Shanks, *Buglife*

Plaited door snail (*Cochlodina laminata*) © Roger Key

Scottish Invertebrate Discoveries Cont.

Rare snails make a slow but welcome return

An isolated population of a rare land snail last recorded in Fife 110 years ago has been rediscovered.

The Plaited door snail (*Cochlodina laminata*) sighting was received by Fife Nature Records Centre (FRNC) –the team responsible for recording biodiversity in Fife and part of the Fife Coast and Countryside Trust – following a report from a member of the public. The snail, which has a distinctive corkscrew shell, was last recorded in west Fife near Oakley in 1901, and this recent discovery near Blairhall is thought to be the only known population in Fife.

The Plaited door snail is found in woodlands and grazes on algae and lichen. The Fife Coast and Countryside Trust is urging nature spotters keen to see the snail for themselves to check tree trunks, although at only 15 – 18mm long and with a dark red-brown shell, it is well camouflaged.

Alexa Tweddle, Information Officer, for Fife Coast and Countryside Trust, said: "The Plaited door snail is only known to occur in a handful of places in Scotland, with the biggest concentration in Perthshire. To have a confirmed recording of a population in Fife for the first time in over 100 years is very exciting."

"Accurate and up-to-date species distribution maps are essential in targeting our conservation efforts. The Trust is always grateful to people out enjoying the countryside to contact us with any wildlife sightings – recording is fundamental if we are to adequately protect our native plants and animals."

Fife's first local biological records centre was founded in 1992 by Fife Council, and in 2008, FNRC became part of Fife Coast and Countryside Trust. FNRC's role has developed over the years, but its main focus remains maintaining easily-accessible, up-to-date and high-quality biological information relating to the local area.

For further information visit www.fifecoastand countryside.co.uk

Heather McLay, *The BIG Partnership*

Scottish Invertebrate Discoveries Cont.

NTS survey uncovers new species

A recently completed survey commissioned by the National Trust for Scotland (NTS) has discovered three species new to Scotland amongst the almost 500 species of invertebrates that were found to inhabit the conservation charity's Dumfries & Galloway estates.

The survey, part-financed by Scottish Natural Heritage (SNH), recommends NTS continues its work of conserving the wet, dry and coastal grasslands which provide an invaluable environmental resource, rich in wildlife, at their Threave and Rockcliffe estates.

"Although most people look on them as 'Creepy-Crawlies', invertebrates play a vital role in ensuring the sustainability of our environment." said Lindsay Mackinlay, Nature Conservation Adviser at NTS.

"However, due to the highly specialised nature of the work, it has not always been possible to investigate the beetles, flies and other insects which populate our estates – and this means the significance of these invertebrates and their habitats has not always been clearly understood. That was why, with the help of SNH, we commissioned the survey at Threave and Rockcliffe, both sites which were thought to support what biologists term 'invertebrates of importance' due to the presence of the fantastic wetlands and coastal grasslands."

Lindsay's hunch certainly paid off as the survey, carried out by expert entomologists between 2009 and 2011, revealed forty species classified as significant in terms of biodiversity and conservation, including an endangered dance fly, three species of fly previously undiscovered in Scotland and an extremely rare ladybird with one of the longest name in any naturalist's lexicon.

24-spot ladybird (*Subcoccinella vigintiquattuorpunctata*) © Roger Key

The official name is *Subcoccinella vigintiquattuorpunctata*, which refers to the 24 spots on its wings, however we're looking to see whether any of our visitors can come up with a more uniquely Scottish, and certainly a much shorter nickname!" said Lindsay

In addition to discovering new species for Scotland, Lindsay hopes the survey will also help increase awareness of the valuable nature conservation work undertaken by the NTS: "A lot of people think the Trust is just about preserving stately homes and, whilst we have some marvellous castles, houses, gardens and museums in our care, its also important to let people know that we're equally committed to protecting and conserving Scotland's natural environment too."

Sarah Cuthbert-Kerr, *National Trust for Scotland*

Four new Scuttle fly species for Scotland!

Four new species of Phoridae flies have been recently identified from Scotland, including three species new to science. The Phoridae are commonly known as Scuttle flies for their habit of running rather than taking flight when disturbed.

Megaselia crellini (Disney 2011) is a newly described species identified from specimens collected near Aviemore and Craigellachie in Moray. It has also been found in Wales and the Isle of Man. *Megaselia basseti* (Disney 2011) is another newly described species indentified from specimens collected by P.J. Chandler from Bridge of Brown in the Cairngorms and Loch Garten near Aviemore. It's also been found in North-West Russia, Sweden and Switzerland.

The first British record of *Triphleba dentate* (Schmitz, 1943) was recently identified from specimens collected in the Lairig Ghru, Inverness by the late E.A. Fonseca. This species has previously been found in Germany, Spain and Switzerland.

Finally, the recently described species *Borophaga bennetti* (Disney 2010), was identified from specimens collected by D.A. Smith at Milltown, Aberdeenshire during 2011. It has previously been found on the Isle of Man.

Dr Henry Disney, *University of Cambridge*

Scottish Invertebrate Discoveries Cont.

Australian landhopper in Glasgow

The Australian landhopper *Arcitalitrus dorrieni* has been found in Glasgow under bushes at the end of the car park on Bunhouse Road. These were first seen in April 2009 amongst leaf litter and under human litter and are still there two years later. Landhoppers become obvious when the surface of the leaf litter is disturbed or exposed.—they jump several centimetres in the air before burying back into the dead leaves. This is typical of the animal and immediately recognisable in the field. When first encountered it may seem these little amphipod crustaceans might have wandered away from the seaside, as they are so similar in appearance to sandhoppers from sandy beaches. Landhoppers, however, are known from only a few sites in Scotland and this appears to be the only urban discovery. The landhoppers seem to be a recent arrival in Glasgow, as several surveys of Glasgow Botanic Gardens, for example, have not revealed them. Known from the British Isles since 1925 they were described as a new species from examples found in gardens in the Scilly Isles before it was realised they were native to Australia. If anyone else has seen landhoppers in or around inland towns or cities please contact: geoff.hancock@glasgow.ac.uk

E.Geoffrey Hancock, Zoology Museum, University

Arcitalitrus dorrieni (an Australian landhopper) © E. Geoffrey Hancock

Habitat Creation for Invertebrates in Scotland

Glasgow Gets Buzzing!

Glasgow is buzzing, it's full of life! We live side by side with nearly 6000 species and as we go about our busy lives, so do they. Bees and other invertebrates such as beetles and flies spend their summer months collecting nectar and pollen, and in the process pollinate our wildflowers, garden plants and crops. All this is exactly what Glasgow's Buzzing, a new project, is all about!

97% of flower-rich grassland has been lost in the UK since World War Two. This has caused massive declines in many invertebrate species, including important pollinators.

Buglife has joined forces with Glasgow City Council to transform mown grassland in urban areas into colourful and wildlife-rich wildflower meadows, over three years funded by the Landfill Communities Fund. These wildflower meadows will benefit a whole range of invertebrates. 80% of plants rely on insect pollination and without these plants, we would not have the air we breathe and food we eat. The media tend to stress the importance of honeybees in food production, but they are only responsible for 5% of pollination—wild pollinators are responsible for the other 95%! Buglife have attended several events within the city to promote Glasgow's Buzzing, including the Glasgow Show, Pollok Family Day and Hogganfield LNR event. Visitors to the Buglife stand made biodegradable paper pots and planted native wildflower seeds so they could take them home to plant in their garden. There was a choice of seed to be planted, Red campion (*Silene dioica*), Teasel (*Dipsacus fullonum)*, Oxeye daisy (*Leucanthemum vulgare*) or Field scabious (*Knautia arvensis*). This activity proved to be very popular with children and several hundred were made altogether.

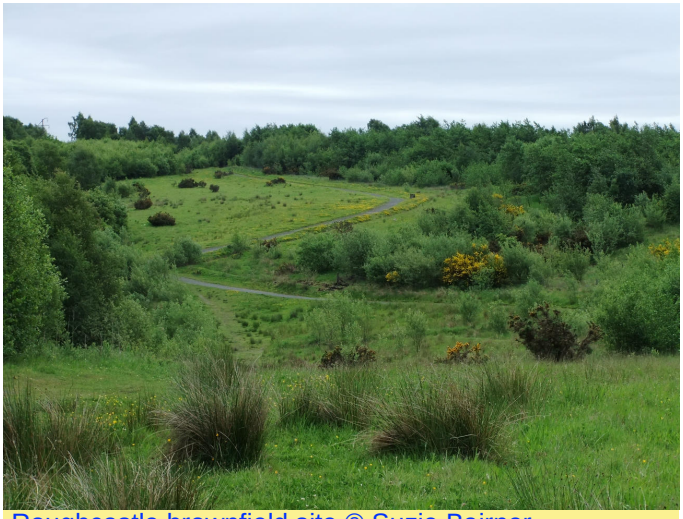
Suzie Bairner, *Buglife*

Cranhill Park awash with colour © Suzie Bairner

Habitat Creation for Invertebrates in Scotland Cont.

Falkirk Stepping Stones Project

Buglife has recently been granted funding from the Co-operative to create and improve wildflower meadows at Roughcastle near the Falkirk Wheel in Camelon. Wildflower meadows are extremely important habitats for many invertebrates as they provide a valuable food source for pollinators such as bees, hoverflies and butterflies and also provide homes for many species as well.



Roughcastle brownfield site © Suzie Bairner

On the 27th of September, 11 volunteers from Green Routes, Enable Scotland, The Co-operative and the Falkirk Ranger service helped Buglife to plant 500 plug plants at Roughcastle. Ten different wildflower species, all of which were native and of local Scottish origin were planted, including: Red campion (*Silene dioica*), Lady's bedstraw (*Galium verum*), Saint John's wort (*Hypericum perforatum*) and Cuckooflower (*Cardamine pratensis*). Planting a range of species will ultimately help improve the floral diversity of the wildflower meadow that is already present at Roughcastle. These flowers will hopefully provide a valuable food source for pollinators next year.

Despite the very wet weather it took us only two hours to plant all 500 plants. Buglife would like to thank everyone who came along for the day. We will be doing more work at Roughcastle in the spring of next year.

Suzie Bairner, *Buglife*

Stirling blooms with wildflowers On the Verge

On the Verge is a project which was set up in October 2011 to tackle the problem of dwindling bee populations by planting areas of nectar-rich, native wildflowers throughout Stirling to provide food sources for pollinators.

During April On the Verge sowed 21 sites totalling 1490 square metres of land with native Scottish wildflower mixes from Scotia Seed. The mix included both annual and perennial species. We worked with 9 schools and 12 community groups in the Stirling area including; churches, care homes, cub/scout packs, housing associations, the Cowane's trust and Stirling Rugby Club. We also handed out enough seed to sow a further 500 square metres of flowers to local gardeners at April's Farmer's Market.

Stirling Council matched our efforts with sowings of their own which totalled 1440 square metres, stretching along Millennium Way, through the Cornton and beyond.

We are grateful for the financial support of local businesses; Superglass, Stomp, Belhaven, Graham's Family Dairy, Value Tyres, Dobbies, Scotia Seeds, United Closures and Plastics and Primary Times which helped fund the purchase of seed for the spring sowings.

We have now completed our autumn sowing programme with four new sites at Kippen, Bridge of Allan and St Modan's and Bannockburn High schools totalling around 300 square metres. In addition we are extended the majority of our existing community group sites. We hope to establish a particularly large area at Stirling County Rugby club over the next three or four years.

We have been awarded funding from Clackmananshire and Stirling Environment Trust and a small grant from the Action Earth programme at Scottish Natural Heritage to fund the second phase of our project. We would welcome any donations towards our work to help us continue into next year and beyond, and we would also like to hear of any suitable sites for sowing up wildflowers and/or any community groups, businesses or organisations who would be interested in getting involved. We can be contacted at leigh.biagi@talktalk.net and the project's progress can be followed on our Facebook page. www.facebook.com/OnTheVergeStirling

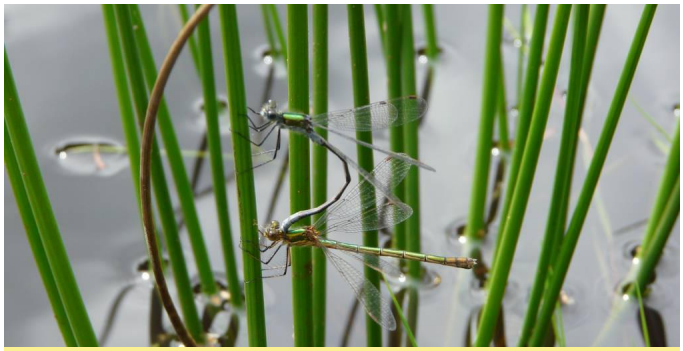
Leigh Biagi, *On the Verge*

New pond gets approval of Emerald damselflies

The North East Ranger Service has been watching damselflies starting to colonise the new pond at Castle Fraser in Aberdeenshire, just five months after it was dug on a snowy day in March.

Pairs of Emerald damselflies (*Lestes* sponsa) have been seen flying together around the pond and then settling on emergent vegetation to lay their eggs.

The neighbouring flight pond at Castle Fraser is home to 10 species of dragonflies and damselflies including the northern damselfly (*Coenagrion hastulatum*), which is a red data book species found in the British Isles only in a few locations in Scotland. They also have the most northern record in Britain of the azure damselfly, which is more common further south.



Emerald damelsflies(*Lestes sponsa*) © Toni Watt

The new pond was created to provide a safety net in case anything happened to the existing populations of these and the other damselflies, and also to allow their populations to hopefully increase.

Toni Watt, *National Trust for Scotland Ranger Service*

Restoring the Small Blue butterfly to SW Scotland

Small blues mating on kidney vetch © Scott Shanks

The Small blue (*Cupido minimus*) is the UK's smallest butterfly (wingspan from 16-27mm). Colonies can be found from the north of Scotland down to the south of England, but it became extinct in south west Scotland in the early 1980s. The reason for the loss of the Small blue from Ayrshire is still unclear, but habitat fragmentation due to development and vegetational succession was likely a major factor. In 2007 it was added to the UK Biodiversity Action Plan species list after suffering a significant decline in distribution.

A project has been initiated between the South West Scotland branch of Butterfly Conservation and the Scottish Wildlife Trust to enhance habitat for the Small blue at a potential reintroduction site on the Ayrshire coast.

The site chosen was Gailes Marsh, a Scottish Wildlife Trust (SWT) reserve just south of Irvine, which is close to suitable natural habitat on the coast and within 1km of the last Ayrshire Small blue record.

The reserve is grazed by horses during autumn and winter, which help create bare patches of ground that are ideal for basking reptiles and invertebrates, and also the germination of the Small blue caterpillar food plant, kidney vetch (*Anthyllis vulneraria*).

In early 2010 five strips of bare ground and turf banks were created within flower-rich grassland in the south of the reserve. These were then sown with kidney vetch seed. Since then, groups of Butterfly Conservation and Scottish Wildlife trust volunteers have taken part in work party days planting kidney vetch plants in and around the reserve, including on Dundonald Links golf course next to the reserve, who are keen to help with the project. A wildlife hedge has also been planted to provide shelter to the site. A project mapping the distribution of kidney vetch along the Ayrshire coast will continue in 2012, with the eventual aim of linking networks of natural habitat

During 2011 the kidney vetch flowered spectacularly on the reserve. A study of the habitat strips was initiated looking at invertebrates using the habitat strips compared to the surrounding grassland. It's still early days, but bumblebees in particular seem to be drawn to the habitat strips.

If all goes well, butterflies from a site threatened with development will be introduced during May/ June 2012.

Scott Shanks, *Butterfly Recorder for SW Scotland*

Spotlight on the Cairngorms National Park: Important Area for Invertebrates

Strathspey (Cairngorms National Park) holds populations of more species of rare invertebrates than anywhere else in Scotland, and perhaps the UK. Despite this, rare species are threatened by development. This section shines the spotlight on the bugs from this Important Area for Invertebrates.

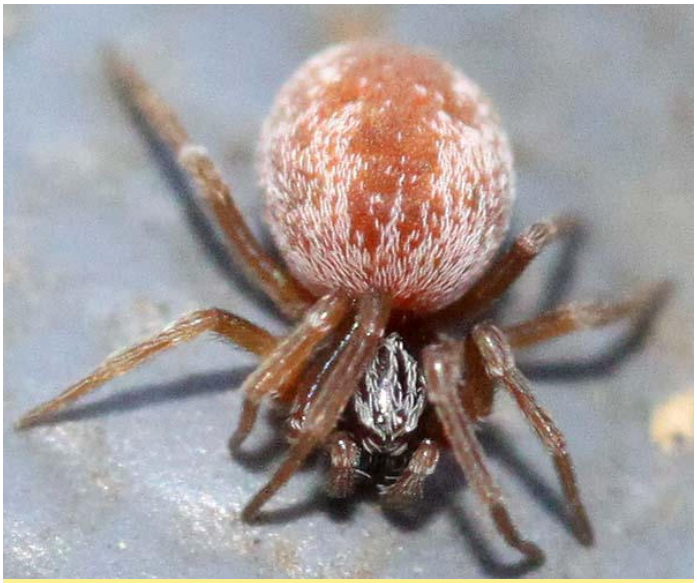
Rare spiders at An Camas Mor

A survey of a lowland heath called An Camas Mor in May 2010 found 57 species of spider in just a single visit! This increases the preliminary spider list for the site to 78 species, taking an earlier report from 2008 into account. Species of particular interest include the Minute maro (*Maro minutus*), the Caledonian sac-spider (*Clubiona subsultans*) and the Small mesh-weaver (*Dictyna pusilla*).

The Minute maro was found during the survey in 2010, and has been proposed as a Vulnerable species due to a national decline. Little is known of this tiny spider's ecology and habitat requirements, and further research and survey is required to better understand this species.

The Small mesh-weaver has only been recorded in slightly over ten 10km squares in Scotland, and four of these are in the Cairngorms area. The Small mesh-weaver was found on a range of microhabitats, including under pine, in pine scrub and particularly associated with Juniper – anywhere that offers the structure necessary to construct its web.

Surveys in 2007 revealed that the Caledonian sac-spider occupied the site – a rare Red Data Book species considered to be closely associated with Caledonian pinewoods. This spider has a restricted distribution with its stronghold being the Cairngorms National Park.



Small mesh-weaver (*Dictyna pusilla*)
© Gus Jones / BSCG

The lowland heath habitat at An Camas Mor is threatened by a proposed development of 1,500 new houses, which would have a serious impact on the invertebrates found here. There is little doubt that further survey at this site could reveal even more interesting spiders as well as other invertebrates, while also helping improve our understanding of the habitat requirements of these rare species.

Gus Jones, *Badenoch & Strathspey Conservation Group (BSCG)*

Oil beetles and solitary bees found at threatened site

Oil beetles in the UK are all in decline. They are dependent on bees that are vulnerable to habitat loss. The lowland heath at An Camas Mor is known to support a wealth of solitary bees and now Violet oil beetles (*Meloe violaceus*) have been discovered there too! Triungulin larvae of oil beetles have been photographed on the Sweat bee (*Halictus rubicundus*) at the site in both 2010 and 2011. The larvae hitch a lift to the bee's nest where they feed on its food store and eggs. In late March 2011 an adult Violet oil beetle was also photographed at the site.

Female Sweat bee (*Halictus rubicundus*) with Meloidae triungulini at An Camas Mor © Gus Jones / BSCG

The bee *Andrena dorsata* is known from a single location in Scotland, on South Uist in the Western Isles. All the other records are from the south of England and Wales. However, in 2008 an invertebrate survey undertaken on the proposed new town site at An Camas Mor recorded this species and a photograph taken at the end of May 2011 has been identified as *Andrena dorsata*!

Gus Jones, BSCG

Challenges facing conservation of a rare damselfly and stonefly in the Cairngorms

The Northern damselfly (*Coenagrion hastulatum*) is listed as endangered on the Odonata Red Data List for Great Britain 2008 and most of its known UK breeding sites are in the Cairngorms National Park. As one of our most endangered damselflies it also appears on the Scottish Biodiversity List.

In 1996 the Northern damselfly was confirmed as breeding at 21 of 26 historic sites. Of these, only 10 were found to be producing more than 100 adults. A high proportion of these were on the RSPB's Abernethy Reserve.

Two additional sites for the species have recently been identified, one of which has historic records of Northern damselfly up until 1914. However, it is a both are currently threatened as they are within the footprint of proposed developments: a large new town, An Camas Mor, on Rothiemurchus Estate (the other side of the River Spey from Aviemore) and a supermarket car park for a new Tesco store in Aviemore.

Understanding the factors that limit the dispersal of the Northern damselfly could guide conservation efforts for the shrinking semi-natural habitat around Aviemore. If breeding lochans are saved, attention will need to be given to the management of nearby scrubby-ground that is used for foraging and during maturation of recently emerged adults.

Following the discovery of the newts at the site, a survey for Tesco found a significant assemblage of invertebrates in the nearby Aviemore/Milton burn, including the Northern February red stonefly (*Brachytera putata*). This species is now extinct in England and Wales, and is endemic to Scotland, where it is restricted to the higher reaches of rivers in the north. It is not found anywhere else in the world! It is threatened by climate change, which has resulted in a loss of suitable habitat and reduction of its range, making every remaining population extremely important for its survival.

Gus Jones, *BSCG*

Northern Damselfly (*Coenagrion hastulatum*) © David Pryce

Slender slugs make welcome showing in Strathspey

The colourful Lemon or Slender slug (*Malacolimax tenellus*) feeds on fungi and lichens and is considered to be an indicator of ancient woodland. It is scarcer than its larger relative the Ash grey slug (*Limax cinereoniger*) another ancient woodland indicator. The Slender slug is recorded on the National Biodiversity Network (NBN) from some six 10 kilometre squares in the Cairngoms area and less than fifty in the whole of Scotland.

This October this elegant and distinctive slug has been found in Scots pine woodland at School wood Nethybridge, An Camas Mor and Boat of Garten. All these finds plus recent records at Carrbridge are in woodland on the Ancient Woodland Inventory that are threatened by development. In the case of School Wood which is entirely on the Ancient Woodland Inventory, a congregation of five Slender slugs were found together at one spot feeding on a group of fungi.

Gus Jones, *BSCG*

The Slender slug (*Malacolimax tenellus*)
© Gus Jones / BSCG

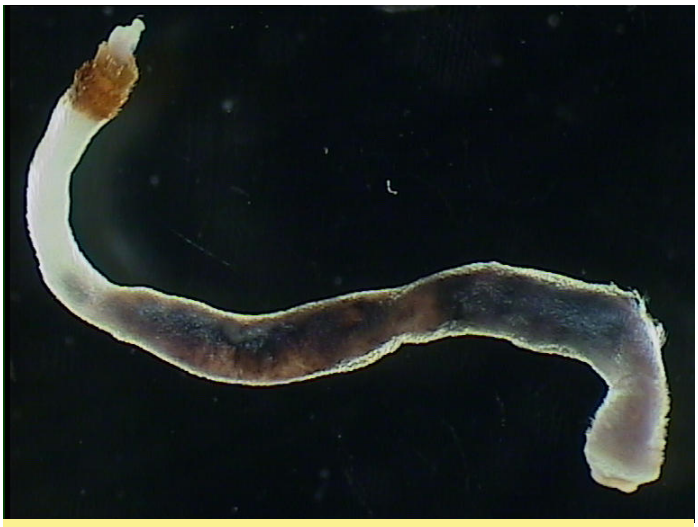
Badenoch & Strathspey Conservation Group and the Cairngorms Campaign need your help!

The Cairngorms Campaign is currently fundrasing to mount a legal challend to the planned housing developments in the Caringorms National Park. Under current plans, these developments will cause unnacceptable damage to the National Park, and are contrary to the first and underpinning aim of the park—to conserve and enhance natural and cultural heritage. However, legal action is serious and expensive: we need to raise £50,000 to cover the cost of the court hearing, which is scheduled for January 2012. Please visit the BSCG website for more information: **www.bscg.org.uk/**

Scottish Marine Invertebrate News

It ‘s easy to forget that our seas hold a plethora of weird and wonderful invertebrate species, which receive even less attention their terrestrial cousins. This special section includes new marine discoveries, as well as on an important yet overlooked invasive invertebrate —the Japanese skeleton shrimp.

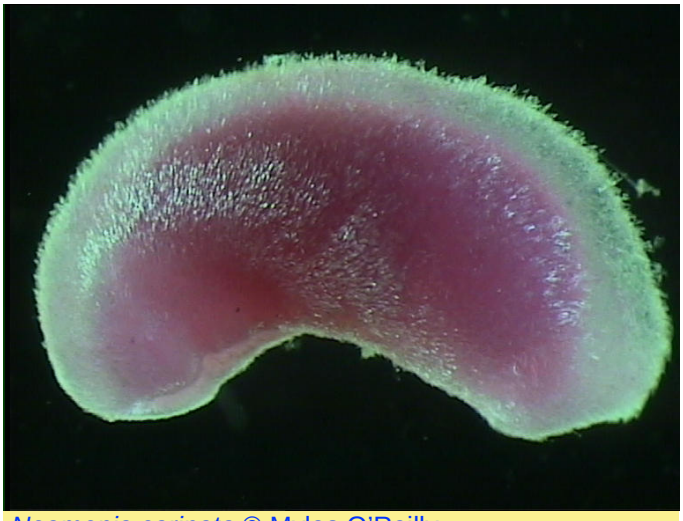
Focus on File Slugs in Scottish Seas



Falcidens crossotus © Myles O’Reillys

File Slugs, or Aplacophorans, are a small group of rather odd looking marine molluscs. They are worm-like in shape, just a few centimetres long at most and are covered in small fine needle-like spines called ‘spicules’ which give the general resemblance of an abrasive file. They are amongst the most primitive of molluscs, although few students of marine biology would even recognise them.

In the seas around the British Isles there are known to be nine species among two sub-groups – the Caudofoviates and Solenogastres. They live burrowing in soft mud or feeding on hydroids. Although records are rather scarce they do occur in sediment samples collected by the Scottish Environment Protection Agency (SEPA).

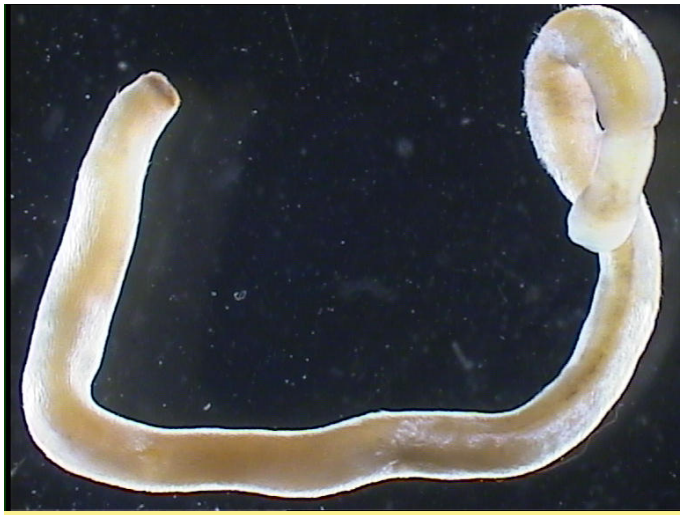


Neomenia carinata © Myles O’Reilly

The most widespread species, *Chaetoderma nitidulum*, has a cylindrical shaped body and has been found in shallow water muds around most of the Scottish coast.

A second species, *Falcidens crossotus*, characterised by its tapered tail end with an orange tip and small protruding gills, is much scarcer with most records from far offshore in the northern North Sea. SEPA scientists have also observed it in the Minches and more recently at a new site in deep water in the Sound of Jura.

Another scarce species, *Neomenia carinata*, which is more slug-like in appearance, has also recently been found in a SEPA survey where several young specimens were collected in a sediment sample from the outer Firth of Clyde. It is also known from the northern North Sea and a few scattered records on the west coast of Scotland.



Chaetoderma nitidulum © Myles O’Reilly

As with so many marine groups, there is no doubt much more to be learned about these fantastic animals, and there may be new species yet to be discovered in Scottish waters.

Myles O’Reilly,
Scottish Environment Protection Agency (SEPA)

Invasive Non-native Japanese Skeleton Shrimp Spreads on the East Coast

The alien Japanese skeleton shrimp (*Caprella mutica*) has already spread widely over the west coast of Scotland over the last 10 years occurring at many marinas and finfish farms. It frequently attaches to mooring ropes, buoys, or boat hulls along with other fouling organisms all of which facilitates its distribution. To date records on the east coast have been fewer with finds by the Scottish Association of Marine Science (SAMS) in 2006 at marinas in Peterhead, Lossiemouth, and Port Edgar. It now appears to be extending its range on the east coast with hundreds of shrimps found by the Scottish Environment Protection Agency (SEPA) attached to an environmental monitoring buoy moored over August and September 2011 at Gunnet Ledge, approximately 4.5km north of Edinburgh seafront. Modelling of currents in the Firth of Forth by SEPA scientists indicate that larval shrimps attached to drifting weed could easily be transported to the Fife coast around Burntisland and Kinghorn, and also potentially to the vicinity of Leith docks on the Edinburgh side. Although its ecological impact is not fully understood it is bigger and more robust and more aggressive than our native skeleton shrimps.

Japanese skeleton shrimp (*Caprella mutica*) © Myles O'Reilly

Myles O'Reilly, *SEPA*

Lancelet—the Fish that Never Was—Found in Scottish Waters

The Lancelet (*Branchiostoma lanceolatum*) is one of our more obscure marine invertebrates. It is a vaguely fish-like creature, a few centimetres long that lives buried in sand or coarse sediments. It has small mouth surrounded by a hairy beard (groups of small hairs, known as 'cirri') that it uses to help it filter organic matter from the surrounding water when feeding. It has no paired fins, nor eyes or even a proper head. The Lancelet does have a dorsal notochord (a primitive spinal chord—the evolutionary precursor to vertebrate spinal chords) and segmented muscle blocks like a fish allowing it to swim in a sinusoidal fish-like manner. However, as it has no backbone, it is an invertebrate. This amazing animal belongs among Chordates (which include all vertebrates) but within its own sub-Phylum called Cephalochordata— as close as you get to being a vertebrate without actually being one.

Lancelet (*Branchiostoma lanceolatum*) recovered during routine fish farm monitoring by SEPA Laxfirth Voe, Shetland, July 2011© Myles O'Reilly

Lancelets represent the evolutionary precursor of fish—they are a real 'missing link' between invertebrates and vertebrates. Similar organisms, called *Pikaia* are known as fossils from the famous Burgess Shale fauna in Canada from the Cambrian period, before any fish or vertebrates evolved. In that sense they could be regarded as "living fossils". As such, Lancelets have been an important subject for university students studying evolution (under their older name of *Amphioxus*) but other than that they are very poorly known.

A single species is known to occur in British waters but it was inadvertently omitted from the *Species Directory of Marine Fauna & Flora of the British Isles* (Howson & Picton, 1997). In UK waters they are considered a southern species with many records from south-west England and Wales. However they have also been recorded off eastern England and Northern Ireland.

They have been regarded as scarce in Scottish seas though they are mentioned as far back as the late 1800s with one find from the stomach of a cod caught near St Andrews.

In recent years survey work in the North Sea has revealed their presence off the north-east coast of Scotland and around Orkney and Shetland. These enigmatic creatures are probably more widely distributed in appropriate habitats in Scottish seas.

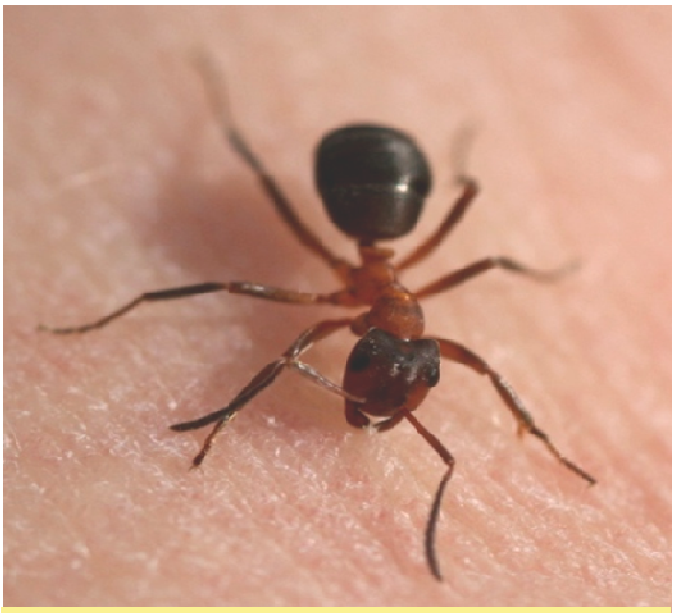
Myles O'Reilly, *SEPA*

Focus on Wood Ants

Nest discovery boosts known population of rare narrow-headed ant (Formica exsecta)

97 new nests of the rare and threatened Narrow-headed ant (*Formica exsecta*) have been found at the RSPB's Abernethy reserve!

The Narrow-headed ant (*Formica exsecta*) is on the British Red List as a category 1 species, being found only at one site in Devon and in three counties in Scotland. The ant is also a Priority



Narrow-headed ant (*Formica exsecta*) worker © Hayley Wiswell. Showing disctinctive 'scoop' out of top of the head

Species on the UK Biodiversity Action Plan and is on the Scottish Biodiversity List. The Abernethy, Glenmore and Rothiemurchus forests in the Cairngorms National Park are the stronghold for the UK population.

Although a woodland species, this ant requires sunny conditions found at the edge of woodland and in open glades. Unlike its wood ant relatives, it cannot produce metabolic heat to boost nest temperature and needs high levels of sunshine to keep nest temperatures high enough for brood development. Once the habitat becomes too shaded (either through overgrowth of ground vegetation or increasing tree canopy cover) the nests relocate if suitable habitat exists close by, or simply die out. The ants are believed to only disperse up to 10m away from the original nest site, queens choosing to move on foot although they have wings. This makes isolated colonies even more vulnerable once habitat conditions become unfavourable because long distance dispersal is unlikely to occur.

Although not a true wood ant, the narrow-headed ant is a mound-building ant and constructs thatched mounds. The core of the nest is actually underground and this is where the queen or queens (there can be more than one!) reside with the brood. The thatch acts as a solar panel and umbrella, warming the nest and keeping it dry. Compared to wood ant nests, the materials used to construct the thatch are usually finer and almost always contain dried grass. With experience, the ants can be identified with the naked eye, having a distinctive narrow face with notch at the top (see photo), hence their name.

A survey for nests of the Narrow-headed ant was carried out on Tulloch Moor during August and September 2011, an area of dry heathland also containing bog, birch woodland and juniper scrub on the RSPB's Abernethy Forest National Nature Reserve. The number of nests and their distribution was needed in order to inform management plans for the heathland, which includes muir burning and scrub removal. Only eight nests of the narrow-headed ant had previously been recorded on Tulloch Moor and the Hairy wood ant (*Formica lugubris*) was also known to exist in the area.

The survey of Tulloch Moor involved walking transects across suitable habitat (so bog and close-canopy woodland was excluded) at approximately 10m spacings in order to cover as much ground as possible while increasing the chances of finding nest sites. Any nests found were photographed and their location using GPS was noted. A total of 92 new nests were found on Tulloch Moor, indicating a large population in this area. This is a significant find, given that the remaining population at Abernethy stands at around 150 nests. It seems likely that nests could exist on the heath land south of the Tulloch Moor road on private land but further survey work is needed to confirm this.

The nests varied hugely in size, ranging from a few centimetres wide to 30cm across. Materials used in the thatch included heather, grasses, moss, Cowberry, occasional pine needles (when pine trees are close by) and even pieces of lichen.

Nests were located in a variety of microhabitats

Two different Narrow-headed ant nests © Hayley Wiswell. On the left: one made of heather & crowberry leaves. On the right: one made mostly from dried grasses.

including grass hummocks, amongst heather, on fringes of bogs and in open more patches of moss and blaeberry.

A further five narrow-headed ant nests were found in early September 2011 during a brief walk-over survey at the edge of pine woodland between Ryvoan pass and the River Nethy, also on the Abernethy National Nature Reserve. Further survey work is needed to establish if more nests exist in this area.

Current forest expansion schemes in the Cairngorms National Park do not favour the rare Narrow-headed ant due to its requirement for open habitat with short vegetation created by grazing. In many areas, this type of habitat is under threat from tree regeneration and monitoring is essential in order to highlight high risk areas where management may be needed for nests to persist in the long term.

Raising awareness of this species and its habitat needs could help to bring more nests to light, particularly in areas where detailed survey work has not been conducted. Further work is needed in order to monitor the status of the current population over time. Such work is currently being carried out for nests at Glenmore Forest, Highlands and at Mar Lodge Estate, Aberdeenshire but some isolated populations are not being monitored at all. Research is still needed to understand how far we can "push" the ants into new habitat and how the ants will respond to changing habitat conditions.

The specific habitat needs of the Narrow-headed ant, its relatively poor dispersal ability and the changing habitat in which it lives, continue to make it a species of great concern both in the present day and in the future.

Hayley Wiswell, *BTCV Natural Talent Apprentice*

Wood ant study in Culbin forest

The efficacy of red wood ants (*Formica aquilonia*, and *F. lugubris*) as soil-builders has been investigated in a study at Culbin Forest, Moray, where soil is still developing on sands afforested within the last century.

Samples were taken from nests abandoned by the ants, and compared with samples from the neighbouring forest floor for moisture content and invasion by fine roots. The centres of abandoned nests (but not their peripheries) were significantly ($p<0.05$) moister than the surrounding soil. Fine roots of vascular plants were not in evidence in either set of samples, but rhizoids of mosses were significantly ($p<0.01$) more abundant, by weight, in samples from nest centres than elsewhere. Vegetation on both abandoned and active nests proved to be sparse compared with that of the neighbouring forest floor, and to consist almost entirely of sand sedge *Carex arenaria*.

There appears to be no justification for claiming that the ants are influential as soil-builders in Culbin. It is suggested that the microbial communities of the nests should be investigated.

Annie Lamb

Wood ant nests in Culbin Forest, Moray © Annie Lamb

Focus on Under-Recorded Areas

The Outer Hebrides Recording Project

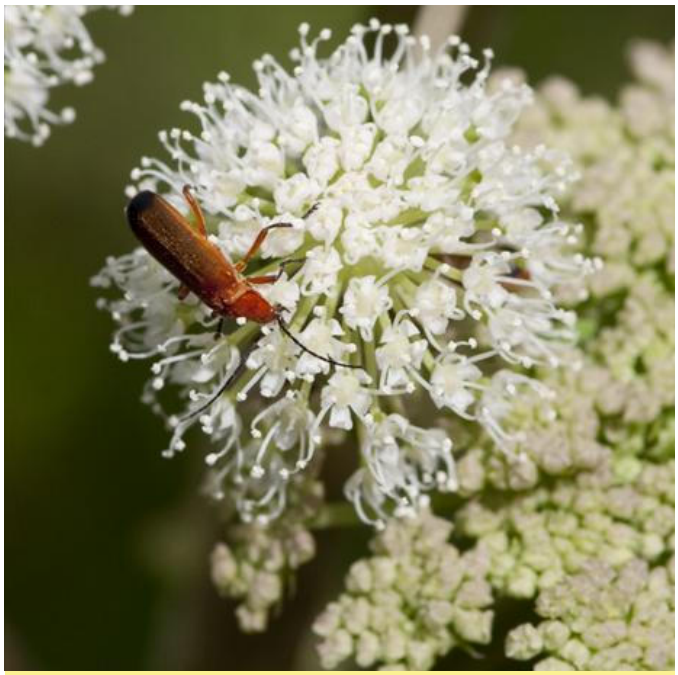
The next time you happen to be browsing the National Biodiversity Network Gateway have a look at the distribution maps for some reasonably common invertebrates, excluding the popular taxa such as Lepidoptera, Odonata and Syrphidae, and look at the Outer Hebrides. You might be forgiven for thinking that this archipelago of islands on the western edge of the North Atlantic is a faunal desert. It is true that the geographical position and limited range of terrestrial habitats would suggest that the invertebrate fauna might be rather more restricted in terms of species composition than the Scottish mainland. However, this does not explain the paucity of records for common and widely distributed invertebrates. The answer to this conundrum is rather more prosaic; apart from certain groups the invertebrate fauna is under recorded. In some respects this could be predicted for an island group with a small resident population, however the Outer Hebrides are internationally recognised for the value of some of their habitats, especially the machair, which have been subject to a number of ecological and biodiversity surveys. Unfortunately these have never been put onto the NBN Gateway, and if it has been published it is extremely difficult for most people to access.

The need for a mechanism to make at least some of this information easily accessible and to collect and collate biological records for the islands has been recognised for many years. It was not until October 2010 that a sub-committee of Curracag (Outer Hebrides Natural History Society) met to consider whether the establishment of a Biological Records Centre for the Outer Hebrides was feasible. By May 2011 we had conducted a feasibility study and persuaded Comhairle nan Eilean Siar (Western Isles Council), LEADER Innse Galle, RSPB Scotland and Curracag to fund the establishment of the Outer Hebrides Biological Recording Project (OHBRP) and employ a Database Development Officer for 6 months. OHBRP is in reality no more than a laptop, some software and a very small group of volunteers. We may be the smallest biological recording scheme in Scotland, but our ambition is enormous, fuelled by enthusiasm and determination.

Ultimately the success of this project depends on our ability to make individuals, groups and organisations aware of the project and persuade them to allow us to make their data available through NBN Gateway. Through Biological Recording Activity Days and regular features in the local press we are working to raise awareness of the importance of documenting the islands' biodiversity amongst the local communities. Recruiting new recorders is difficult and we have a long way to go to convince them that bugs and "creepy crawlies" are not impossible to identify and are as fascinating as birds or wild flowers. The number of resident, active recorders is very small so engaging one or two more can make a significant contribution to our productivity.

The OHBRP website should be on-line shortly (www.ohbr.org.uk) so you can keep up-to-date with our progress. It will be a while before we begin to put our records on-line but slowly you should begin to see an increase in the number of dots on the NBN maps for the Outer Hebrides.

Christine Johnson, *OHBRP*



Common red soldier beetle (*Rhagonycha fulva*) © Christine Johnson. One of the many under recorded invertebrate species in the Outer hebrides.

Bursaries available to study Scottish wildlife !

BRISC (Biological Recording in Scotland) & GNHS (Glasgow Natural History Society) are together offering 4 bursaries towards attending a training course in natural history field studies skills. The bursaries will be for up to £200 or 75% of the cost of the course, whichever is lowest.

Courses should be run by FSC www.field-studies-council.org or similar professional development courses run by universities. For non-FSC courses, full details must be provided.

The closing date for applications is Friday the 6th January 2012, and courses should be completed before 31st October 2012.

Applications for topics where there is a shortage of taxonomic expertise will be looked on preferentially.

For further information and an application form see: www.brisc.org.uk/bursaries/Bursaries.htm or www.gnhs.org.uk /bursaries

The successful candidates will be required to write a short article (300-400 words) on their course experience for *BRISC Recorder News* and/or the *GNHS Newsletter*. £15 of each bursary will be held back until receipt of the relevant article.

Richard Weddle, *GNHS*

Two new faces in the Stirling Buglife office

New Buglife Project Officers: Suzanne Bairner & Scott Shanks.

Since the last edition of Scottish Invertebrate News, the Buglife office in Stirling has acquired 2 new Project Officers.

Suzanne Bairner joined in July after completing her BTCV Natural Talent apprenticeship on brownfield ecology and biodiversity, which was hosted by Buglife. Suzie has been using expertise gained during her apprenticeship to assist with a number of projects around Scotland including assessment of brownfield sites and invertebrate surveys of vegetated shingle along the Solway.

Raising awareness of Invertebrates during planning

Invertebrates represent 98% of all higher life (including animals, plants and fungi) found in Scotland! They provide the foundation for the ecosystems that support all other animals through their interrelationship with plants. However, despite their importance, they are often overlooked when assessing the impacts of developments, and may not even be surveyed.

Invertebrates threatened by development include this fantastic Timberman beetle (*Acanthocinus aedilis*) © Chris Cathrine

Development without consideration for its impact on invertebrate species may also result in negative effects on other animals, such as birds, mammals, reptiles and amphibians.

Although not as well protected under UK law as other groups of animals, there is a requirement that they be considered in any assessment of potential ecological effects during the planning application process. Buglife works to ensure that suitable legislative and policy requirements are met for invertebrates during the planning process.

If you are aware of any proposed development that may impact on invertebrates, please contact Chris Cathrine (Planning Casework Officer) at chris.cathrine@buglife.org.uk, and Buglife will do whatever we can to support you to protect threatened species and communities of invertebrates of conservation concern.

Dr Scott Shanks joined the Stirling office in August as a part-time Project Officer. Scott is switching from a background in academic research to follow his passion for conservation and ‘wee beasties’. He is the chairman and butterfly recorder for the Glasgow & SW Scotland branch of Butterfly Conservation. Scott will be assisting with projects and events around Scotland including the ‘Glasgow’s Buzzing’ pollinator project.

Invertebrate Talks and Events Programme

With fewer opportunities to get out looking for bugs during the next couple of months, why not attend one of the fantastic talks arranged by local groups such as the Aberdeen Entomological club and Edinburgh Entomological club. All talks are free to attend and open to all. All events are open to all, but there may be a fee—full details are available from the contacts listed under 'Further Information'. If you have a talk or an event you would like to publicise in Scottish Invertebrate News please contact scotland@buglife.org.uk

Date	Event/ Talk	Location	Further Information
Part 1: 03-04/12/11 & Part 2: 08-09/09/12	Hoverfly Workshop in two parts (one in December 2011 and the second in September 2012). Organised by Dipterists' Forum, Hunterian Museum at Glasgow University, Glasgow Natural History Society, and Glasgow Museums Biological Records Centre.	Part 1: Glasgow & Part 2: Rowardennan	info@gnhs.org.uk
06/12/11	'The use of insect remains in archaeological interpretations: an example from northern Iceland' by Veronique Forbes, University of Aberdeen (Aberdeen Entomological Club)	Aberdeen	jenni.stockan@hutton.ac.uk
14/12/11	Biological records centre: Engaging people in biological recording' by Helen Roy (Edinburgh Entomological Club)	Edinburgh	http://www.edinentclub.org.uk
10/01/12	'Soil Invertebrates' by Hannah Urpeth, BTCV (Aberdeen Entomological Club)	Aberdeen	jenni.stockan@hutton.ac.uk
18/01//12	'Sampling and monitoring *Formica exsecta*: experiences from Mar Lodge and Abernethy' by Hayley Wiswell, James Hutton Institute / BTCV (Edinburgh Entomological Club)	Edinburgh	http://www.edinentclub.org.uk
07/02/12	'Saproxylic Diptera' by Ian MacGowan, SNH (Aberdeen Entomological Club)	Aberdeen	jenni.stockan@hutton.ac.uk
15/02/12	'Soil microarthropods in moorland and montane habitats' by Hannah Urpeth, James Hutton Institute/ BTCV (Edinburgh Entomological Club)	Edinburgh	http://www.edinentclub.org.uk
06/03/12	'Phenological changes in the insect world' by Gabor Pozsgai, The James Hutton Institute (Aberdeen Entomological Club)	Aberdeen	jenni.stockan@hutton.ac.uk
21/03/12	The history of the Francis Buchanan White Hemiptera collection and introduction to the Scottish bug fauna' by David Pryce, Perth Museum (Edinburgh Entomological Club)	Edinburgh	http://www.edinentclub.org.uk
18/04/12	'Scottish Spiders' by Chris Cathrine, Buglife (Edinburgh Entomological Club)	Edinburgh	http://www.edinentclub.org.uk
21-28/07/12	Dipterists Forum Lagganalia Centre Field Meeting	Kingussie	roger.morris@dsl.pipex.com

Help Chris Cathrine raise money for Buglife by supporting him to give up all bought tea and coffee from October 2011 until at least New Year 2012. Go to **www.justgiving.com/CHRIS-CATHRINE**

Credits and Information

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 and Chris Cathrine (Editors)

scotland@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 on behalf of the Initiative for Scottish Invertebrates (ISI) by Buglife – The Invertebrate Conservation Trust.

www.scottishinvertebrates.org.uk

The European Year of Volunteering 2011

ISI Initiative for Scottish Invertebrates

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