Scottish Invertebrate News

Volume 5 Issue 2 November 2014

Welcome to the tenth issue of Scottish Invertebrate News!

It's been a great summer for getting outside to see and record Scottish invertebrates, and hopefully you've all managed to see some of the special species Scotland has to offer.

With the field season coming to a close once more, it's a good time to catch up on this year's new discoveries and project updates.

As well as *exciting new Scottish finds, this issue features articles on the 2014 Scottish Entomologists' Gathering, the launch of a new Scathophagidae (dung fly) recording scheme, and a number of articles on new habitat projects that will benefit Scottish species.*

Ayrshire Discovery is third New Bee for Scotland from Ardeer Brownfield Site!

Buglife's Entomologist Steven Falk took a number of trips to Scotland this year to see what entomological treats he could find.

2014 saw me return to Scotland from the deep south and, as usual, many fine discoveries came my way. Highlights from a visit to the Ardeer Peninsula near Stevenston in Ayrshire included the digger wasp *Oxybelus mandibularis* on the dunes (first Scottish record for many years), the scarce and massively declined Black-headed leafcutter bee (*Megachile circumcincta*) was fairly frequent throughout the peninsula accompanied by its 'cuckoo bee' the Dull -vented sharp-tail (*Coelioxys elongata*). Males of the Northern Colletes bee (*Colletes floralis)* were seen in various places, including patrolling Giant hogweed flowers. We also saw this last species on the dunes at Irvine, which are apparently threatened by a development proposal.

Orange-vented Mason bee (*Osmia leaiana*) male © *Steven Falk*

Yet another bee was added to the Scottish list from Ardeer, the Orange-vented mason bee (*Osmia leaiana*), a species we don't usually get too excited about down south. On the Diptera front, the tiny and rather scarce Flea beefly (*Phthiria pulicaria*) was common on the Ardeer dunes and there were also numerous encounters with the scarce Sheep's bit bulb-fly (*Eumerus sabulonum),*a phytophagous

Photo credits: Narrow-headed ant © Gus Jones, Flame shells © Calum Duncan, Great yellow bumblebee © Martin Scott (RSPB),

Scotland's buzzing with a new bee cont..

hoverfly which is associated with Sheep's-bit. The Ayrshire coast seems to be a major stronghold for this species.

Following the Ardeer brownfield survey, I did two day's surveying at Shewalton Sandpits in Irvine for the Scottish Wildlife Trust. The list of hoverflies was quite impressive and included *Platycheirus scambus, europaeus and occultus*; also *Neoascia geniculata* – species that I don't see too often.

The site used to be an active sand quarry with much sandy ground and wet mud. Now it is a mix of secondary woodland, scrub, carr, tall herb and lushly-vegetated pools. It is very different to what it was yet amazingly rich in a different sort of way. What conservation priorities do you set under these situations?

I really enjoyed the valley of Glen Tilt, Perthshire - and saw the Deer warble-fly (*Hypoderma diana*) for the first time and lots of queens of the Broken-belted bumblebee (*Bombus soroeensis*) foraging on Raspberry. Some sheltered Snowberry blossom at the village end of the valley was attracting lots of hoverflies including the bee-mimic hoverflies *Criorhina berberina* and *C. floccosa*, which I gather are not too common in Scotland; also the drone fly *Eristalis rupium*, a very rare species in England.

Hoverfly (*Criorhina berberina*) male - Glen Tilt, 2014 © *Steven Falk*

I'm hoping I can make it back to Scotland in 2015!

Steven Falk, Entomologist, Buglife

Making a Splash

Genevieve Dalley a Trainee Ecologist with the RSPB shares her experiences of Insh Marshes and finding a new caddisfly for Scotland.

Genevieve Dalley, Trainee RSPB Ecologist,at Insh Marshes © David Tompkins

For the last 7 months I have had the great fortune of visiting beautiful places in every corner of Scotland whilst indulging in my passion for freshwater invertebrates. This was made possible by the Heritage Lottery Funded position of Trainee Ecologist with RSPB Scotland. I have since trekked from the Isle of Coll to Forsinard Flows and many more places in search of interesting freshwater species and habitats, and I wasn't disappointed. Just one of the incredible sites I visited was RSPB Insh Marshes, and was treated to a whole host of rare habitats and species.

RSPB Insh Marshes is a stunning reserve with beautiful undisturbed lochs, marsh and grassland. I spent a week in June surveying at the site to discover some of the aquatic invertebrate species utilising this precious array of habitats. A number of localised species were found, including the Nationally Scarce caddisfly *Limnephilus borealis,* which lives in lochs as a larva among rushes and reeds, and the Nationally Notable water beetle, *Acilius canaliculatus*. I also had my first view of the endangered Northern damselfly (*Coenagrion hastulatum*) with breeding pairs spotted at two locations on the marshes. However, the star find at Insh was the caddisfly *Molanna angustata* – a new species to Scotland. This is a fascinating animal which spends its larval life underwater encased in a tube made of sand particles held together with silk. It has an unusually shaped case with an overhanging plate on top which perfectly

Making a Splash cont..

camouflages the insect against its background. The larvae then pupates and, chewing its way free from the case, swims to the surface to fly away. This record has led to more questions than answers – what is it doing all the way up at Insh when the nearest known location is in Yorkshire? There are a few possible explanations: perhaps this species has always been in Scotland and has previously been overlooked. There is a Scottish counterpart, *Molanna albicans*, which superficially looks identical to *M.angustata*. It is therefore possible that *Molanna angustata* has hitherto hidden amongst the population of *M.albicans*. Alternatively, it could be that the population of *Molanna angustata* is moving north, something which has been noticed in other invertebrate populations in recent years. This is a small insight into some of the work I have been involved in on reserves since starting this position in April. I have been continually helped along the way by RSPB ecologists, site staff and volunteers, as well as my entomological surveying assistant, David Tompkins, and experts outside of the RSPB. It is hoped that knowing more about such illusive species and understudied habitats will give us a greater ability to manage for them in the best possible way on reserves. Freshwater invertebrates are powerful indicators of the state of freshwater habitats. However, more than that, their incredible life-histories and subtle beauty makes them as worthy of study and protection as any other group of species in Scotland. I feel privileged to have been a small part of their ongoing story and I hope to continue to work with these fascinating habitats and creatures in the future.

New caddisfly for Scotland, *Molanna angustata* - Insh Marshes © Genevieve Dalley

Genevieve Dalley, *RSPB*

Increasing Oedemeras

The flower beetle (*Oedemera virescens)* is an attractive beetle which appears to have been extending its range in Scotland in recent years. Because of a dramatic increase in records of *Oedemara* in Scotland, many questions have been raised about the reasons for its spread. It appears never to have been particularly common in any part of Britain, so why has it spread so widely in Scotland in a fairly short time? It could possibly be attributed to climate change with a general trend of southern species moving north with increasing temperature, however, there is little scientific literature on this as yet. It could also be that there are more recorders now than in the past. *Oedemera virescens* is a fairly easy species to identify. At around 8-9mm it is a reasonable size and its dull, sage green colour is fairly distinctive. It seems that it has a preference for resting on yellow, open flowers and this makes it easy to spot. So, if you are out for a walk in the countryside from May to July keep an eye out for the slim green shape of an *Oedemera* in a buttercup or other flower. Once you have seen one you will see plenty more and I would be delighted to receive all of your sightings. Send Bruce Philp a note of the date, grid reference (6 figures preferably), location and habitat (eg buttercup flower etc) at brucephilp@tiscali.co.uk

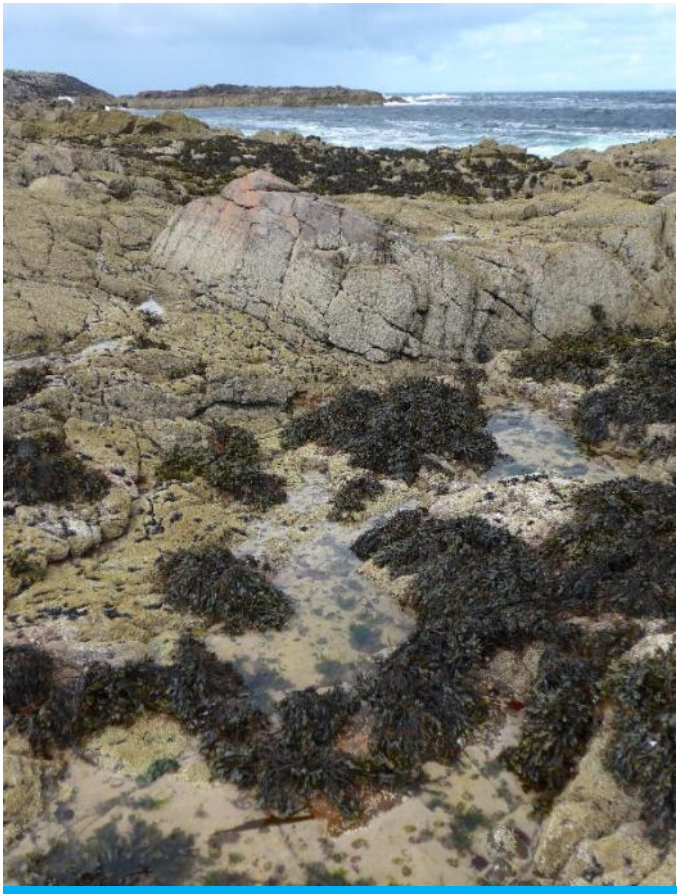
Flower beetle (*Oedemara virescens*) © Wikimedia commons - Jeffdelonge

Bruce Philp

Buoy barnacle discovery brightens the shores of Portskerra!

Goose barnacles turn up frequently on the north and west coasts of Scotland, usually attached to floating debris such as logs. The most commonly observed individuals belong to the genus *Lepas*. In mid-September 2014 I attended a seashore safari at Portskerra, organised by Highland Council Rangers and the Highland Seashore Project. Participants found large numbers of a very different species, the Buoy barnacle (*Dosima fascicularis*) stranded on the shore.

The find was sufficiently unusual for us to make our discovery known via social media and the responses we received and observations on ISpot revealed contemporary finds all along the north coast of Scotland (from Durness to Murkle) and on Orkney (Burray, Ronaldsay). Subsequent contacts with biological recorders on the Western Isles indicate a similar stranding there.



Portskerra seashore © Mike Kendall

Compared to their acorn-barnacle relatives, the biology of goose barnacles is poorly known as most species spend much of their lives out at sea, floating close to the surface. We tend to only see them when stranded on the shore or on the hulls of ships that have undertaken long passages. The Buoy barnacle is easily separated from other species of goose barnacles; the thin translucent shell has a characteristic bend, and the bare stalk and tends to be shorter than the head. The most obvious identifiable feature is the float at the base of the stalk, which has the appearance of a seashore sponge or piece of polystyrene.

Buoy barnacle (*Dosima fascicula*) © Keith Hiscock

Its larvae are planktonic and initially attach to algal fragments, pieces of plastic or tar particles, before the barnacle begins to make its float. Several animals may settle together and their floats merge into a single large float that may hide the original material they settled on. Nevertheless, many of the individuals that we collected at Portskerra were clearly growing on intertidal brown algae that didn't seem to have been detached from the shore for too long. Buoy barnacles are opportunistic with a short life span and rapid growth and are probably out-competed by similar species.

Previous records of Buoy barnacles in the UK tend to be from the south and west of England and Wales but there are also many records from the west of Ireland, Norway and the Faroes. ISpot has records from 2012 of strandings in South Uist, Harris and Lewis and specimens are regularly collected from the Skaggerak, Norway. Mass strandings appear to be comparatively unusual, however in 1986 and 1987 large numbers were washed ashore around Dingle on the west coast of Ireland. There is also a record from the mid-19th century when considerable numbers appeared on beaches around the mouth of the River Tyne. Elsewhere, this species has a worldwide distribution, most commonly in warmer temperate

Buoy barnacles cont..

waters, and nearly every literature reference to Buoy barnacles refers to a record from the back of a sea snake in Mexico.

In many ways, the Buoy barnacle is something of a mystery, while we know something of its basic biology from laboratory culture, we don't seem to know much of its ecology. It is seldom seen in any numbers except when it is washed up on the shore, but even then, records depend on the presence of observers. Occasionally there are anecdotes of large numbers encountered by yachtsmen but none of these has ever been substantiated. Maybe our records from the north of Scotland document an unusual event where a successful season of reproduction and growth has been followed by strong onshore winds but on the other hand it might simply be a case of recorders being in the right place at the right time.

Mike Kendall (Highland Seashore Project) & Murdo Macdonald (Highland Biological Recording Group)

European rhinoceros beetle in Glasgow

Male European rhinoceros beetle (*Oryctes nasicornis*) © Scott Shanks

In late May Buglife Scotland were contacted by staff at Anniesland College about an unusual beetle that had been causing panic in a shop near the college. The beetle turned out to be a male European rhinocerous beetle (*Oryctes nasicornis*), which appears likely to have arrived accidentally with a delivery from the Continent. This species is absent from the UK, but there was a stir earlier in the year when a female specimen was found in a Worcestershire back garden, raising questions on whether the species is breeding here.

The European rhinoceros beetle is found throughout mainland Europe; as far north as Scandinavia, across to Pakistan and down to North Africa. Although found in a large number of countries, in some areas it is considered rare and has been given legal protection.

Rhinoceros beetles are some of the strongest beetles in the world, able to life up to 850 times their own body weight.

European rhinoceros beetles are generally between 2cm and 4 cm in length, but can reach an impressive 6 cm, making it one of the largest and heaviest beetles found in Europe. The Glasgow specimen was just over 2.5 cm long.

The wing cases are a dark brown with a glazed appearance giving it the impression of a shiny conker and the legs and the underside of the body are covered with long red hair. The larvae live on dead, rotten wood and can be found in rotting tree stumps and in sawdust. The larval stage lasts around two years. Adults emerge in the spring, flying around at dusk. The adults do not feed and can survive until the autumn. The Glasgow specimen survived until early September.

Buglife are currently investigating whether the European rhinoceros beetle is breeding in the UK and are asking members of the public to submit any sightings to info@buglife.org.uk.

Download Buglife's Rhinoceros beetle ID guide to help with identification.

Scott Shanks, *Buglife*

Female European rhinoceros beetle (*Oryctes nasicornis*) © Angie Hill

Leaf beetle 'spotted' at Insh Marshes

Speyside has long been a favourite destination for UK entomologists on account of the number of Scottish and British rarities to be found there. With such a well visited and surveyed area, you might not expect to find any new species - or so I thought when I went to visit RSPB Insh Marshes back in June.

I went to Insh hoping to "get my eye on" a few groups of species but I didn't anticipate finding a new species of beetle for the reserve. Whilst looking around an area of heathland and open aspen woodland, I saw what I thought was a ladybird. This being a group I am trying to familiarise myself with, I potted it. I quickly realised it was too big to be a ladybird with 10 spots but I thought nothing of it until I returned to base and had a look through my books.

Ten-spotted leaf beetle (*Gonioctena decemnotata*)© Kirsty Godsman

As it turns out, it was *Gonioctena decemnotata*, a leaf beetle with a peculiar distribution. It has a very south-western distribution in the UK but is also found locally in the Spey area It has never been recorded at Insh Marshes and hasn't been found in the Highlands for a decade. Before 2014, it was last recorded in the 1970's – which is rather sporadic documentation. Hopefully this indicates a decline in recorders rather than a decline in the beetle itself. *

G. decemnotata has a preference for Aspen in open situations and adults can be found from April to August. It is 5-7mm in size (around the same size as a 7-spot ladybird), usually with 10 black spots. You can separate it from other species of the same genus by its red legs and black head.

Due to its local distribution in Scotland, most people might not be able to go in search of *G. decemnotata*. If this is the case, I would highly recommend turning your attention to ladybirds instead. As well as being able to contribute to the Ladybird Survey, you never know what other exciting things you might find.

Kirsty Godsman, *RSPB Trainee Ecologist (beetle specialist)*

** Entomologists Steven Falk & Tim Ransom report finding good numbers of this species on Aspen foliage at Insh Marshes in 2013 (personal communication).*

Searching for the Lesser searcher

A casual walk in the woods can, if you keep your eyes open, provide some great finds. In May, I was walking through a wood in Argyll when a large, slightly iridescent ground beetle ran onto a nearby stump. Even a quick glance was enough to recognise it is *Calosoma inquisitor*, the Lesser searcher or Caterpillar-hunter. It may have been easy to identify but it was very unexpected; *Calosoma* is fast declining species In the UK with very few Scottish records. It is a specialist of old oak woodland where it hunts arboreal caterpillars in the canopy and is usually found either running up oak trunks or sometimes in pitfall traps. As a large and recognisable beetle there can be no doubt that it is scarce and it appears that its distribution matches that of the old coppiced oak woodland of western Scotland.

The Lesser searcher beetle (*Calosoma inquisitor*) © Steven Falk

A search through the records turned up four previous sites from Loch Lomond in the south to Beasdale in the north. There is an erroneous record on the NBN (National Biodiversity Network) for the far north west but this is a transcription error in the grid reference and it actually refers to Spean Bridge.

Bruce Philp, Ayrshire beetle specialist

Dipterists Forum spread their wings in Kingussie

In early June 2014, members of the Dipterists Forum went on a short expedition to Kingussie with the hopes of finding some exciting and interesting fly species.

On route to Kingussie, a stop at Glenshee was rewarded by finding the cranefly *Tipula varipennis* on the mountainside at over 2200 ft. This is a species usually found to be in lower woodlands.

Mating pair of *Tipula varipennis* © Roger Key

The journey continued on via the River Dee, near Braemar and Crathie, and a stop off was taken at a Limestone Quarry west of Tomintoul – a priority location for craneflies. Here, the cranefly *Tipula cheethami* and the rock cranefly (*Dactylolabis sexmaculata*) were discovered on a wet rock face and the quarry floor. Additionally, the simple-veined craneflies *Dicranomyia occidua* and *Molophilus propinquus* were spotted near sparsely vegetated calcareous mud.

After a rewarding journey, we successfully reached our final destination, the Spey Valley. At the margins of Loch Morlich and nearby ground 7 species of *Tipula* craneflies were identified. Following this, we visited a very different loch, at Kinrara, which is situated in a big hollow in a glacial drift, and connects narrowly with the River Spey. Some very unusual cranefly species for the Spey Valley were found here, including the simple-veined cranefly *Helius pallirostris* (among reeds and sedges at aquatic margin), *Tipula pierrei* (in a limited area where muddy peat was present) and *Phylidorea longicornis* (seepage on poor fen). Following this, the large, yellow hairy-eyed cranefly *Pedicia littoralis*, was spotted upon a hillside overlooking Aviemore at Craigellachie NNR. This stream-associated species appears to be uncommon in the Spey valley.

Aspen hoverfly (*Hammerchmidtia ferruginea*) © Stuart Ball

In addition to the exciting cranefly finds, three Aspen hoverflies (*Hammerschmidtia ferruginea*) were also seen on Rowan blossoms at the Northern edge of Insh Marshes, quite a distance from their known breeding site.

A total of 158 species of fungus gnats were also identified, including a species new to Britain – *Phronia bicolor*. In Aspen woodland at Boat of Garten, the fungus gnat *Mycetophila mohilevensis,* was recorded for the 5th time ever in Britain and a *Sciophila rufa* larva was collected from woody fungi (*Fomes sp.*) and spun a cocoon the next day. A female gnat emerged the following week, see below.

***Sciophila rufa female* © Chris Spilling**

The Dipterists Forum are have a meeting in Carlisle on 22-23rd November, please see the events page for more details. Everyone welcome.

Dipterists Forum

Scottish Entomologists' Gathering 2014: Dumfries and Galloway

The 2014 Scottish Entomologists' Gathering (SEG) was held on the last weekend of June (27-29th June) and attracted a group of 24 invertebrate enthusiasts to the Solway in Dumfries & Galloway.

Much of the weekend's activities focused on the reed beds and salt marsh habitats near the Wildfowl and Wetlands Trust (WWT) Caerlaverock reserve and the nearby Caerlaverock NNR, with field trips to Mabie Forest (Butterfly Conservation reserve) and the raised bog and woodland at Kirkconnell Flow NNR.

A number of us stayed in the main farmhouse at WWT Caerlaverock, which we shared with the resident poppulation of the Daddy long-legs spiders (*Pholcus phalangioides*). After setting up moth traps each night we were rewarded with great views of a curious young badger exploring the garden.

Daddy long-legs spider (*Pholcus phalangioides*)
© Sven Siegmund

Over 500 records have already been submitted by attendees, with hopefully more still to come. Species highlights included seeing juveniles of the rare Tadpole shrimp *(Triops cancriformis),* which was first found in temporary freshwater pools at Caerlaverock in 2004; Tree bumblebees (*Bombus hypnorum*), which are recent arrivals that have been successfully spreading northwards in recent years, were seen in a number of locations around the Caerlaverock reserve and also at Mabie Forest.

Good numbers of the reed bed and salt marsh-specialist moths were also found including: Round-winged muslin (*Thumatha senex*), Dog's tooth (*Lacanobia suasa*) and the Southern wainscot (*Mythimna straminea*), which has only recently colonised from England.

Tree bumblebee worker (*Bombus hypnorum*)
© Steven Falk

Extensive searching of the saltmarsh on hands and knees rewarded one of our attendees with the discovery of parasitised caterpillars of the Sea aster-mining micromoth, *Bucculatrix maritima* containing the target species for an on-going taxonomic study: specimens of the braconid wasp *Pholetesor maritimus*. Newly emerged Natterjack toads were also seen by a few attendees while exploring the reserve.

During the weekend we were joined by WWT staff keen to learn more about invertebrates and by the British Plant Gall Society, who came along on Saturday the 28th to record around Caerlaverock.

If you fancy a fun weekend of bug-hunting next year, the 2015 Scottish Entomologists Gathering will be held on the weekend of the 26th – 28th June, with the location still to be confirmed (suggestions welcome).

Scott Shanks, *Buglife*

Rescuing the UK's smallest butterfly - the Small blue (*Cupido minimus*)

Small blue butterfly (*Cupido minimus*) © Iain Cowe

Along with the rest of the UK, Angus in North East Scotland has suffered butterfly declines. However, there are still isolated populations of the UK's smallest butterfly the Small blue (*Cupido minimus*). Surveys have been carried out at locations along the coastline since the late 1970's (see figure 1) and although records of Small blue are numerous, important data on the distribution of its host plant Kidney vetch (*Anthyllis vulneraria*) have been missing.

The distribution of Small blue records along the Angus coast based on records ranging from 1982 to 2013

Since 2012 Butterfly Conservation Scotland and the Tayside Biodiversity Partnership have worked together to facilitate annual volunteer surveys of both the butterfly and the host plant along the coastline. In the figure below you can see the that data collected by volunteers has been mapped and shows the 2012-13 distribution of both species (where the Small blue was once found).

The distribution of Small blue and Kidney vetch along the Angus coast based on records generated by volunteer effort from 2012 and 2013

A Masters research project carried out in 2013/14 examined historical data and more up to date 2012/13 records to identify the locations where both species still coexist. An investigation of land use practices along the coastline and landowner receptiveness to collaborative restoration works will hopefully enable work that can reconnect isolated populations. Reassuringly, 79% of those landowners approached would consider managing land for wildlife a priority, especially if practical habitat enhancement works can be funded and implemented by a third party.

During 2014, as an in-kind contribution to the project, Scotia Seeds arranged with local landowners to collect Kidney vetch seed and are drying and cleaning the seed in anticipation of the Partnership being able to cultivate them. Looking to projects such as the joint Butterfly Conservation and Scottish Wildlife Trust Small blue project at Gailes Marsh will guide us in best practice on how best to carry out restoration work at our chosen site in the future.

Kelly Ann Dempsey, Environmental Strategy Project Officer, Angus Council

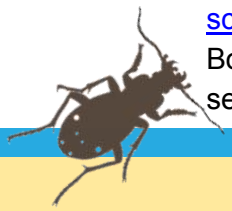
Scathophagid Recording Scheme

The small fly family Scathophagidae has 55 British species. They are often known as “Dung flies”, but this is not a very good name for the family because only about five or six species of the genus Scathophaga are actually associated with dung. It probably comes from the Common yellow dung-fly (*Scathophaga stercoraria*) - which does breed in mammalian faeces and the furry yellow males are often seen sitting on cow pats, sheep droppings, etc.

Common yellow dung-fly (*Scathophaga stercoraria*) male on horse dung © Stuart Ball

It is also one of our most abundant and ubiquitous flies! However, the rest of the family is very diverse in life styles with leaf and stem miners, larvae living in seed capsules of grasses and other plants, larvae that are aquatic predators and larvae which feed on other fly larvae in a variety of situations.

I have been interested in the family for many years and have produced a new illustrated key. The last published key work was by J.E.Collin in 1958 (Transactions of the Society for British Entomology, 13, 37-56) and is now very out-of-date with 11 additional species and innumerable name changes since it appeared. My key has been tested by two Dipterists Forum spring workshops and found to work reasonable well. In March this year I launched a recording scheme and established a web-site at



scathophagidae.myspecies.info. Both the key and a rather preliminary set of 10km square distribution maps can be downloaded from the web-site.

The scathophagids are a very northern family with the greatest number of species found in the tundra and taiga belts. Indeed, only five species are known from Earth’s southern hemisphere out of about 400 species worldwide. Within the British Isles, central and northern Scotland are the best areas with the most species and nearly all of the rarities.

I would welcome records and am happy to assist with identification. If you want help with identifications, then send photos by email. I am also willing to give talks or run training courses - so, if your organisation is interested, get in touch via stuart.ball@dsl.pipex.com.

Stuart Ball, *Dipterists Forum*

***Pogonota dung fly* (*Pogonota barbata*) © Stuart Ball**

Submitting Records

The best way to submit records is to put them in a spreadsheet with one row per observation with fields like: species name; date; grid reference; location name; vice-county number; sex or stage (e.g. adult, male, female); number observed; and comment. Send the spreadsheet to stuart.ball@dsl.pipex.com as an email attachment.

Create your Own Solitary Bee Home!

There have been some 270+ species of bee recorded in the British Isles, and around 90% of them exhibit solitary or non-social behaviour. The British bee fauna has suffered in recent years, particularly due to drastic declines in both nesting sites and forage for food.
Many species are ground nesting and will appreciate an area of south-facing bare sand in full sunshine.

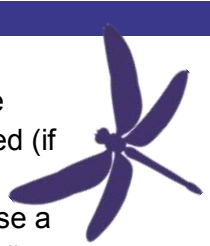
Patchwork Leaf-cutter bee (*Megachile centuncularis*) © Steven Falk

An effective way to help cavity-nesting bee species is to provide them with nesting sites, or bee homes. Various species of leaf-cutter bees (*Megachile* sp.) and Mason bees (*Osmia* sp.) can be attracted to such homes.

Choosing a location for your bee home
To create homes for cavity nesting bees you can follow a few simple guidelines:
1. Put the nest box in a quiet area to encourage shier species
2. Place the nest box in an area near wood (a pile or a wooden shed)
3. It is good to keep nests a metre or more off the ground
4. Bee homes are best situated in a sheltered south or southwest facing position

How to encourage bees to use your nest
If you provide them with the right tubes, then some bees will create 'cells' containing an egg and food for their young.
Different species may prefer different tubes, but we have a few simple guidelines:

The optimal tube length is generally15-20cm with an optimum diameter of 7-9mm. The tubes should have one end blocked (if you are cutting plant stems, you can cut them close to a node or use a bit of garden mud to block one end).



If the nest tubes are too short, the emerging offspring will be heavily sex-biased in favour of males, as the females tend to lay male eggs near the tube entrance (and provision them less well).

Bundle the stems together, with closed ends all at the same end, or load them into a wooden structure, and put them up at your chosen site. Having a grill covering the open ends of the tubes is a good idea to prevent birds from pecking out the larvae. A particularly nice homemade design can be found here: http://solitarybee.com/.

Solitary Bee Home © Paul Bee solitarybee.com

For mason bees, a patch of damp mud close to the nest allows the female to stay near by to guard against intruders and predators whilst sealing up each of her nest cells

After care
You can increase winter survival rates of larvae in nest tubes by putting them in an unheated shed or outhouse from late September until early spring. Newly emerged bees will fly the nest the following spring/summer, leaving bits of dirt and old cell walls behind. It is important to ensure that you change used tubes for fresh ones after they have been vacated otherwise they are unlikely to be used the following year and if they are used, the new larvae will be more susceptible to bacterial/ fungal attack. If you stick to this simple house keeping then there is every chance that the bees will keep coming back year on year!
Harry Woolner, Buglife

Glorious Green Roofs

Glorious Green Roofs is an exciting project within the Inner Forth Landscape Initiative (IFLI) that will create up to 200m^2 of 'living roofs' for wildlife within the Inner Forth area. This project is funded by Heritage Lottery Fund and the contribution of the LIFE financial instrument of the European Community.

Green Roof on Abbey Hive community building, London
© Claire Dinham

Green roofs offer enormous benefits not only for wildlife but also for the building itself including improved insulation and increased roof lifespan. Over the last ten years there has been increasing interest in the use of green roofs to support conservation targets and mitigate for habitat loss because of development. Green roofs can act as important 'stepping stones' that allow the movement and mixing of individuals and species and have been identified as being particularly important for invertebrates in an urban area.

Through this project, Buglife will work with industry partners to create a network of green roofs at industrial sites, predominantly in Grangemouth, but potentially further afield around the IFLI area. Business employees will learn the importance of green roofs for invertebrates and other wildlife, how green roofs can benefit the building and employees, and how they can support local and rare species including Local Biodiversity Action Plan priority species.

Through promoting this project to local industry, we hope to work with them to create up to 200m² of green roof space that will feature various habitats such as wildflower species-rich meadow, wood piles, ponds and bug 'hotels'.

Suzanne Bairner, *Buglife*

Fife's Buzzing

Wildflower species-rich grassland provides an important habitat for invertebrates, especially pollinating insects, to nest and feed. In Fife, there has been a significant loss of species-rich grassland to urbanisation, industrialisation and agriculture. Many of the remaining grassland areas are managed strictly support very little wildlife and few plant species. To improve this situation Buglife have joined forces with Fife Council to create and enhance 16 wildflower meadows totalling over 12 hectares across the Kingdom of Fife to create more healthy functioning ecosystems for invertebrates and for people. As well as being important for wildlife, meadows also offer enormous benefits for people.

Planting wildflowers at Dunnikier Park
© Suzanne Bairner

The meadows will improve the quality of greenspace which enhances people's health and well-being. Additionally, they will also be used as an educational tool by community groups and schools. Through the meadow creation events, bug walks and other activities, these meadows will bring communities together.

Fife's Buzzing will use native wildflower seed and plug plants and introduce wildlife-friendly management to enhance the size, distribution and connectivity of species-rich grassland. Surveys to record pollinating insects and other invertebrates will be carried out every year to record species using the meadows. If you're interested in volunteering on the Fife's Buzzing project or attending events please contact: Suzanne.bairner@buglife.org.uk-

Suzanne Bairner, *Buglife*

Healthy bogs are better for bugs and the environment

Buglife Scotland is excited to announce the launch of a new Scottish bog restoration project after receiving over £300,000 of funding to restore lowland raised bogs in the Central belt.

Hieroglyphic ladybird (*Coccinella hieroglyphica*) © Steven Falk

Our peatlands provide unique habitats for many rare and specialist invertebrates including the Bog sun-jumper spider (*Heliophanus dampfi*), the Bog bush-cricket, (*Metrioptera brachyptera*)**,** the Large Heath butterfly (*Coenonympha tullia*) and the Hieroglyphic ladybird (*Coccinella hieroglyphica*). Healthy, undamaged raised bogs absorb large amounts of water and help to prevent flooding and importantly, store huge amounts of carbon, preventing the release of billions of tons of greenhouse gases.

Bog bush cricket (*Metrioptera brachyptera*) © Roger Taylor

In the past 200 years there has been a dramatic decline in the area of lowland raised bogs in the UK. In Scotland, it is estimated that over 91% of raised bog habitat has already been damaged or lost, and that the majority of the remaining bogs are in poor condition due to historical, and in some cases current, detrimental management activities such as agricultural intensification (drainage), afforestation and commercial peat extraction. Without intervention and restoration, further habitat loss is likely due to the gradual desiccation of bogs damaged by previous attempts at drainage.

Buglife's new bog restoration project will focus on Fannyside Muir, a large area of peatland in the Slamannan Plateau, near Cumbernauld. The area has been subject to drainage for commercial peat extraction and conifer plantations.

The new project will build on bog restoration work previously undertaken by project partners North Lanarkshire Council on a small area of Fannyside Muir which demonstrated that restoration work in the area is achievable and will have great ecological benefits. Other partners include Forestry Commission Scotland and the SWT.

Bog sun-jumper (*Heliophanus dampfi*) © Lorne Gill

Much of the work will be carried out by specialist contractors, but we would like to encourage the local community and anyone with an interest in conservation to come along to our volunteer work party days in 2015 and 2016 to help remove invasive scrub from the bogs and also block the network of drainage ditches across the site.

It is anticipated that this project will bring at least 183 hectares of degraded lowland raised bog into conservation management, improving the overall peatland functioning and connectivity across the area and benefit many species .

The project will make a significant contribution to the targets of the North Lanarkshire Bogs Action Plan and to the programme of bog restoration proposed in the Scottish Biodiversity Strategy.

The Slamannan bog restoration project is funded by the WREN (Waste Recycling Environmental Limited) Biodiversity Action Fund, Scottish National Heritage and the contribution of the LIFE financial instrument of the European Community.

Scott Shanks, *Buglife*

Managing meadows for bugs and biodiversity

The wildflower meadows that we know and love can be classified as types of grassland habitat. The majority of the existing grasslands and wildflower meadows that we see today will have been managed either directly or indirectly by humans in the past. For thousands of years humans have shaped the landscape, cutting down forests for fuel and materials, with the resulting grasslands managed for livestock and agriculture. The loss of wildflower-rich grasslands has greatly accelerated in the last century, with over 97 % of our wildflower meadows lost in the last 50 years.

Green tiger beetle (*Cicindela campestris*) © Roger Key

Without intervention, the gradual accumulation of nutrients and the process of successsion leads to the conversion of grasslands into woodland. Therefore, if a wildflower meadow or grassland site is to be preserved, it generally needs to be managed. This can be done either by grazing, cutting, or burning. This also means that any small meadow patch we create at home will need to be managed to ensure the wildflowers in it have a chance of growing back in subsequent years. There are a variety of managment regimes that can be used to maintain your meadow depending on the type of meadow you wish to create. One of the easiest is to do a single cut as late in the year as possible, so as to ensure that the bugs that are living there get a chance to complete their life cycles. You can then remove the cuttings from your patch (in the past these would often have been used to feed livestock). If you do not remove the cuttings, you will find that over time, the nutrient level in the soil increases and thicker grasses will invade and begin to outcompete many of the wildflowers.

Every site is different, but If you are able to create a system that works really well for your wildflower patch year on year, you will be well on the way to encouraging all sorts of important and beautiful bugs to the area.

Ensuring your wildflower patch has some areas of bare ground is important if you want to attract predators such as the Green tiger beetle (*Cicindela campestris*) and other ground beetles that will help to keep some of the typical garden pests in check.

Harry Woolner, *Buglife, Parks and Pollinators Trainee*

The Scottish Naturalist & The Western Naturalist - free online access

Over the years the *Scottish Naturalist* and the *Western Naturalist* have published many important papers and notes documenting the history and development of Scottish natural history. However, access to the journals has been difficult for anyone without a nearby library. The full run of the journals is to be made available online through the Biodiversity Heritage Library (www.biodiversitylibrary.org) whose main partners in the UK are the Natural History Museum and the Royal Botanic Gardens at Kew. The BHL has become the world's main free archive of digitised natural history literature, and has established itself as a leading online research library. It offers free access to a vast amount of historical books and journals, including the *Scottish Naturalist* and the *Annals of Scottish Natural History* through to 1922, the *Proceedings of the Glasgow Natural History Society,* rare books by Pennant, Harvie-Brown, MacGillivray and much more.

By adding the rest of the *Scottish Naturalist* (after 1922) and the short run of the *Western Naturalist* to the BHL we hope this will allow more people around the world to find and read these journals and appreciate their contribution to natural history.

We believe that most copyright holders would be happy to see their work reaching new and wider audiences to the benefit of Scottish natural history. However, if any copyright holder does not wish to have their material included in free digital access, they are asked to contact mail@the-soc.org.uk as soon as possible, preferably before 01/12/2014.

Dr Alan Knox, *University of Aberdeen*

Scottish Invertebrate Talks/Events - Winter/Spring

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 gabrielle.flinn@buglife.org.uk

Date	Event	Cost	Location	Further Information
11th November	**Aberdeen Entomological Club** Roy Neilson Talk on 'Flatworms and nematode control of insects'	Free	The James Hutton Institute, Aberdeen	Jenni.stockan@hutton.ac.uk Tel. 01224 395239
19th November	**Edinburgh Entomological Club** Alison Karley Talk on 'Aphid resistance to parasitoid wasps and the role of microbial endosymbionts'	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
22- 23rd November	**Dipterists Forum Weekend in Carlisle**	Free	Tullie House Museum, Carlisle	Duncan Sivell d.sivell@nhm.ac.uk
9th December	**Aberdeen Entomological Club** Rose Toney Talk on 'Biodiversity begins with a B - North East Biodiversity Partnership's invert projects'	Free	The James Hutton Institute, Aberdeen	Jenni.stockan@hutton.ac.uk Tel. 01224 395239
17th December	**Edinburgh Entomological Club** Angela Lloyd Talk on 'Vulnerability and Resilience of Insect Pollination in the UK Fruit Industry'	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
13th January	**Aberdeen Entomological Club** Katie Murray Talk on 'The March of the Harlequin Ladybird'	Free	The James Hutton Institute, Aberdeen	Jenni.stockan@hutton.ac.uk Tel. 01224 395239
21st January	**Edinburgh Entomologist Club** Peter Macdonald Talk on 'Photographing Insects'	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
17th February	**Aberdeen Entomological Club** Iain Lawrie Talk on 'Insect Photography: macrophotography skills and techniques in the field'	Free	The James Hutton Institute, Aberdeen	Jenni.stockan@hutton.ac.uk Tel. 01224 395239
18th February	**Edinburgh Entomological Club** Ewan Campbell Talk on 'Honeybee health:a mitey problem'	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
10th March	**Aberdeen Entomological Club** Catriona Mcintosh Talk on 'Cat fleas: a new approach to a familiar pest	Free	The James Hutton Institute, Aberdeen	Jenni Stockan Jenni.stockan@hutton.ac.uk Tel. 01224 395239
18th March	**Edinburgh Entomological Club** Lesley Lancaster Talk on Damselflies and climate change: Life on the range limits	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
9-12th April	**British Myriapod and Isopod Group** field meeting and AGM) (cost inc. B&B,lunch, dinner)	£60 a Day	The Lowport Centre, Linlithgow	Duncan Sivell d.sivell@nhm.ac.uk
15th April	**Edinburgh Entomological Club** Scott Shanks Buglife.Talk on 'Brownfield Invertebrates of the Ardeer peninsula'	Free	University of Edinburgh	Keith Bland Tel. 0131 667 7013 (evenings)
13th - 18th April	**Field Studies Council Course:** Special Spring Moths	£265 - £400	FSC Centre, Kindrogan	enquiries.kd@field-studies-council.org

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: Gabrielle Flinn (Editor) gabrielle.flinn@buglife.org.uk or scott.shanks@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