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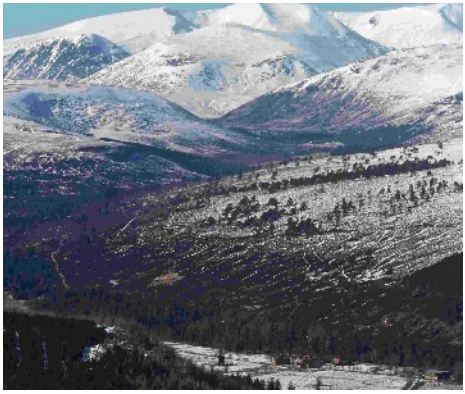
The Mar Lodge Estate NNR species list: over a century of biological recording

Andrew Painting

In 2018 National Trust for Scotland ecologists reviewed the species recorded on Mar Lodge Estate, and there are a lot of them! In this article assistant ecologist Andrew Painting *takes us through some of the notable species found at Mar Lodge, and current biological monitoring and recording projects on Britain's newest National Nature Reserve.*

In 2017 Mar Lodge Estate became the UK's newest, and largest, National Nature Reserve. The estate's 29,380 hectares hosts a vast assemblage of species and habitats, from Caledonian pinewoods, blanket bog and heather moorland along the banks of the Dee, to the sub-arctic tundra, high-level lochs and isolated crags of the Cairngorm Plateau. Mar Lodge Estate is a dynamic environment, managed as



Mar Lodge square © A. Painting

wild land, which makes it a hugely exciting place for biological recording. Between the size of the reserve, its biodiversity and its remoteness, the chances of turning up something truly special here are really high!

The National Trust for Scotland has been managing Mar Lodge Estate since 1995, but biological recording has been going on here for well over a century. In early 2018 (while we were snowed in) NTS ecologists collated all of the species records that we could find for the estate. It was a task made infinitely easier with access to publically available records from NBN, BRC and BSBI, but we didn't stop there. Our eclectic list of sources included the NTS archives, local residents, and even a book of flower pressings from the 19th century!

What follows are stories from a unique and changing environment which is slowly recovering from centuries of heavy grazing. And the total number? You'll have to read on to the end of the article to find out.

Plants (618 species)

There are loads of exceptional plant species lurking around the reserve. In the Caledonian pinewoods and along the burns you can find the likes of Twinflower *Linnaea borealis*, Small Cow-wheat *Melampyrum sylvaticum* and Round-leaved Wintergreen *Pyrola rotundifolia*, while high on the plateau pockets of Highland Saxifrage *Saxifraga rivularis* and Highland Cudweed *Gnaphalium norvegicum* cling to crags in remote corries.

The most exciting botanical stories are evolving at a landscape scale. Much of our ecological work has been focussing on the reserve's Caledonian pinewood, one of the most iconic Scottish habitats. When NTS took on the site in

Twinflower *Linnaea borealis* © A. Painting

1995 our 835 hectares of Caledonian pinewood were at their lowest ebb, having been hit by a combination of centuries of forestry operations and heavy grazing by deer. Twenty years on, through deer management, we have effectively doubled the amount of Caledonian pinewood on the estate. We are now seeing the first new generation of naturally regenerating pines here since the nineteenth century.

With the alleviation of browsing pressure we are regularly finding new and previously overlooked patches of less common species. A significant proportion of our records of Common Twayblade *Neottia ovata* and Globeflower *Trollius europaeus*, for example, come from the last five years, as do newly discovered populations of UK BAP species including Frog Orchid *Dactylorhiza viridis* and Field Gentian *Gentianella campestris*.

Much of our botanical recording is being completed on a landscape level. In 2016-17, in collaboration with Cairngorms National Park, several hundred square kilometres of upland to an altitude of 900 metres (2,950 ft) were surveyed for montane woodland species (a mixture of willows, birches and juniper). This survey has provided amazing baseline data which will inform plans to increase the abundance of this rare and important habitat at a landscape scale.

Insects (1,966 species)

With so many insects on the books the collection of these records is down to a huge number of recorders, to whom we

Scotch Argus © Andrew Painting

are very grateful. Our extensive moth records (412 species), for example, are in no small part down to the efforts of the moth project at Rothamsted Research. Ours is one of 80 traps across the UK which forms part of a survey which has been running since 1964.

New insect species continue to turn up on an annual basis, often in collaboration with external partners. The latest addition is Shining Guest Ant *Formicoxenus nitidulus*, newly discovered in September 2017 following work with the Rare Invertebrates in the Cairngorms project. Back in 2012, the endemic Northern February Red *Brachytera putata* was recorded here by stonefly expert David Pryce, ably assisted by then 6 year old Calan Daniels, who found the insect basking on a fencepost.

Several BAP invertebrate species are subject to annual monitoring. The Narrow-headed Wood Ant *Formica exsecta* is known from less than 10 sites in the UK, so we keep a very close eye on the nests found here. In 2017, volunteers from John Muir Trust found several new nests for this rare species, increasing the known population here by 20%.

Hats off, finally, to a true rarity, the small Empid fly *Heleodromia irwini*. It was only discovered in 1985 and remains only known from Mar Lodge Estate.

Birds (145 species)

A total of 145 bird species, of which around 100-110 are seen annually, may not seem too remarkable for a nature reserve, but the number belies the quality and importance of Mar Lodge as a place for some of the UK's rarest birds. 30% of Britain's red-listed birds regularly breed on the estate, including Hen Harrier *Circus cyaneus*, Merlin *Falco columbarius* and Ring

Ouzel *Turdus torquatus* on the moors, and Spotted Flycatcher *Musciscapa straita*, Tree pipit *Anthus trivialis* and Cuckoo *Cuculus canorus* in the woods. Mar Lodge Estate is one of a handful of places in the country which is home to all four of Britain's grouse species, hosting around 2% of the UK population of Black Grouse *Tetrao tetrix*. The high peaks are home to the red-listed Dotterel *Charadrius morinellus*, along with Snow Bunting *Plectrophenax nivalis* and Ptarmigan *Lagopus muta*.

Mar Lodge Estate is also well-known for its birds of prey. Eleven species of raptors and owls were recorded

Black Grouse © Rob Hume

breeding on the reserve in 2017. Golden Eagles *Aquila chrysaetos* have been monitored on the estate for over a hundred years, making this one of the longest studied eagle population anywhere in the world. Hen Harriers successfully bred here for the first time in living memory in 2016. With RSPB's Hen Harrier Life Project we have been satellite tagging some of these birds.

Snow bunting © Shaila Rao

The project is teaching us a lot about harrier movements and dispersal across the UK. Our first tagged bird, Harriet, tends to spend the winter in the Lake District, but regularly returns here during her spring time forays around the eastern Highlands.

Lichens and bryophytes (1,135 species)

The most interesting sites for these groups on the estate are the montane areas and the pinewood. The high altitude late-lying snow-beds, home to lichens and bryophytes found nowhere else in the country, are a habitat of national importance. The Garbh Coire Mor snow-bed usually holds snow all year round, and hosts specialist byrophytes including *Marsupella boeckii stableri* and *Haplomitrium hookeri*. Time will tell how climate change affects these delicate communities.

Back down at lower altitudes, the UK's largest single population of *Buxbaumia*

viridis was recently discovered very close to the Lodge itself. Other mosses of note across the estate include *Schistidium trichodon*, known to occur frequently only on the crags of another NTS property, Ben Lawers, and

Buxbaumia viridis © Shaila Rao

Sphagnum Austinii, which is reasonably frequent in the upland bogs across the reserve.

Of the lichens, *Cladonia botrytes*, a north-east Scotland speciality, is well-recorded at Mar Lodge. *Pycnora sorophora*, a lichen with a thin distribution across the Highlands, occurs in two of the reserve's glens. Of the liverworts, one of the UK's largest populations of Curled Notchwort *Anastrophyllum saxicola* occurs on the estate.

The Final Number?

As with all species lists, the more you look the more you find. A species list will never be 'complete', but this latest compilation of the species list is an extended snapshot in time, covering over a century of biological monitoring on Mar Lodge Estate, and the efforts of hundreds of recorders. We are happy to say that the Mar Lodge Estate species list currently stands at **5,186 species**, or perhaps more accurately, '**about 5,200 species'**.

Species lists also help us to monitor change and to both pose and answer important environmental questions. Will a resurgence of high altitude woodland bring breeding bluethroats? Will we soon be seeing nuthatches and speckled woods in amongst the pines? What impact can we expect from climate change on our snow-bed moss communities?

There are certainly plenty more species to be found here. For example, we have just 19 records of spiders, so there are probably some new additions to be found for any arachnologists out there.

There is one family of creatures, however, which stands head and shoulders above the rest for its under-representation on our species list. It is ubiquitous: on some visits to Mar Lodge it will be the family you remember the best, but no species have been officially recorded here. It is, of course, Ceratopogonidae: Biting Midges!

Chairman's Column

I write these words while enjoying fantastic weather in southwest Scotland. The last few days have finally given us much warmer air temperatures following long periods of sunshine, with the consequence that the trees are in full leaf, butterflies are on the move, and birds are singing. The shores of Loch Lomond are particularly beautiful at this time, with fresh leaves on trees and a chorus of singing newly arrived Wood Warblers, Tree Pipits, Redstarts and Pied Flycatchers.

We are starting to plan the **BRISC autumn conference**, which will take place in Glasgow at the Kelvingrove Museum. The conference will focus on "Recording Urban Wildlife", and we already have a number of excellent speakers lined up on this topic, including presentations by Cath Scott (Glasgow City Council), Scott Ferguson (Glasgow Seven Lochs) and Suzanne Burgess (Buglife). Cath will describe Glasgow's water voles, which have been in the news recently, which I am sure will be fascinating. We will also have a slot for short talks by students who have received bursaries to attend BRISC sponsored courses, which are always a highlight. The date will be the **13 October 2018,** so please mark this date in your diary. We very much look forward to seeing you in Glasgow.

My reptiles around Loch Lomond have been active for a couple of months now, and in the warm weather have shed skins and undergone courtship and mating. Post-breeding the adders "disappear" moving away to other areas to feed. Apart from a few gravid females I will not see them again until late August, when they return. Now I move onto other projects: at the moment I am waiting for the return of honey-buzzards from Africa. This should be any day now from mid to late May. I have already looked for 14 hours with no honey-buzzards so far, although on one day instead I was lucky enough to have a gorgeous and colourful bee-eater fly over calling "broop…broop" with a group of swallows! Part of the joy of recording wildlife is that you never know what is coming around the corner!

Best wishes, and good recording through 2018

Chris McInerny, May 2018

Deadline for next issue is:

September 7th 2018

Ideas and contacts for chasing for articles are always welcomed.

Articles in Word format (not pdf please) with jpeg photos preferably no larger than 500KB

Please send to saraheno@riseup.net

Editor's column

This issue was saved by the article on Mar Lodge - thank you Andrew. So there is room for the long news from NBN - do read carefully.

Also please keep looking out for leads on articles or news to send me - I don't get far afield these days…!

The weeks are fleeing by and apart from the butterfly transect, I have done no systematic recording. One excitement has been our neighbour finding a lichen on two large ash trees and Brian Coppins confirming it is Lungwort *Lobaria pulmonaria*. It's not common in the Borders, so one job is to check other veteran ashes along the Yarrow Water.

Inspired by Chris's talk at the TWIC conference on his Cashel Forest reptile work, I went up Hangingshaw Burn valley behind my house to put out felt 'tins'. Its a huge area so the chances of success by early May were a bit slim. And so it proved.

Hangingshaw Burn is a south-west facing steep slope of mixed habitats, mostly heather, grass and scree patches. It's

scrubbing up nicely (from some perspectives) after about 20 years no grazing. It has also however, a good breeding population of Northern Brown Argus because of copious Rock Rose, *Helianthemum nummularium.* Although this plant will scramble over competing vegetation, it is slowly losing ground against the more vigorous plants. Without the grazers here to control heather and grass, the question is, do we start managing patches? Strim grass and bracken, cut back some heather, expose some bare soil? Or should we leave it to natural processes?

Sarah Eno, May 2018

Amphibians and Reptiles of Scotland: current research and future challenges

University of Glasgow Graham Kerr Building
Saturday 9th June 2018

Arrival 0900, start 0930 close 1630
Register for your free tickets online with the Glasgow Science Festival

www.glasgowsciencefestival.org.uk/

World experts and young researchers discuss what we know and what we need to find out about Scotland's amphibians and reptiles and the conservation threats they face. Funded by SNH, GNHS, ARC, ARG-UK, BHS and Froglife.

Amazing animals
Brilliant Science
How DNA technology is being used to save Scotland's wildlife.

By Pete Minting

I was delighted to receive a copy of this book because it is informative, attractive and beautifully written. The wonderful artistic illustrations of the 14 species described and some of the writing, were gathered via a schools competition (all winning entries listed) It makes the book very appealing.

"*Parts of your body have been the same for 530 million years".* With that arresting statement the opening chapter describes what DNA is and does. It also includes details on extraction of DNA and a couple of different study methods - satellite and mitochrondrial.

Each species has its own chapter which covers their history, some reasons for their current vulnerability and how DNA has come to be useful. The Beaver story exemplifies this. The decision on the future of the Knapdale trial that had to be made by the Scottish Government was complicated by the large escaped population in Tayside. Where did these come from - Europe or North America? By reading sequences from the 16S rRNA gene (part of the mitochrondrial DNA) they found that for European beavers the base Cytosine is at position 1,971 but is replaced by Thymine for the foreigners! So it turns out they were from from Bavaria and they were Ok'd to stay! DNA analysis - using single nucleotide markers, (SNP) has also shed light on the problems of inbreeding for beavers - the females produce fewer kits. So if more are to be released to help the legal Knapdale population, where should they come from?

I mention the scientific words because Pete rightly does not dumb down this aspect. In fact it is something we could all do with learning more about, as DNA analysis is now so quick and easy in many cases. The Oxford nanopore - tool size of a pen drive - was used in a suitcase-sized field lab, to track Ebola outbreaks in realtime - see https://www.youtube.com/watch?v=xrS1DV_5Ymk for a brilliant talk on Ebola and the future of medicine.

But also intriguing - what are the implications for species ID in our own recording community? Can we use DNA analysis to identify the taxa which get poor coverage? This is being tested - using Great Crested Newt. Here pond water was tested for DNA traces of GCN. There were some questions about reliability arising from Scottish waters - further research needed.

The book is not published, so Pete says "most of the copies are going free to schools, libraries and project volunteers. I should have a few left over that I could sell at a pretty reasonable price". If you want a copy, please email Pete for details.

Email:: Pete.Minting@arc-rust.org

Reviewed by Sarah Eno

Angus & Tayside News

Survey results make spotting marine mammals around Angus's Fantastic Coastline easier

The www.marinelifeangus.co.uk website promotes Angus coastal sites and its amazing wildlife. Angus is perfect for land based cetacean watching and the website has hosted a citizen science project recording whales and dolphin sightings since 2011. Sightings of Bottlenose dolphins, Minke whale, Harbour porpoise, Common dolphin and even Humpback whales have been submitted by visitors.

This collection of data has allowed for the first time, a greater understanding of how species are using Angus waters, and will aid in future conservation. Highlighting the best spots to enjoy land based watching, another important element of the project will also hopefully diversify the wildlife tourism product in Angus.

Where to Watch

Records from the public allowed the mapping of areas on the Angus Coast that are sightings Hotspots. Some spots are better for viewing certain species and different behaviours (see Fig. 1 on website). Elevated spots on headlands and at river mouths are some of the best areas to watch feeding and socialising behaviours. Angus is home to renowned salmonid rivers such as the Rivers North and South Esk and both river mouths are attractive to foraging Bottlenose Dolphin in particular.

What's Been Observed

The data can be broken down and a simple snapshot of behaviours and also human encounters with species can be seen below.

- Most common species recorded, Bottlenose dolphin – 73%
- More sightings submitted from North Angus – 66%
- Most sightings were from 0-100m from shore – 45%
- Most encounters were approximately 15 mins – 34%
- Most common behaviour was travelling – 48%
- Feeding behaviours more commonly seen near river mouths and bays – 59%
- Most common pod sizes are between 1 & 5 animals – 57%

Tayside Local Biodiversity Action Plan

The results of the survey are submitted to the Tayside Biodiversity Partnership's "Marine & Coastal Working Group". Tayside Priority species include Bottlenose dolphin, Harbour porpoise and Minke whale. Working group leader Kelly Ann Dempsey who manages the project said "It is hoped that by raising awareness of cetaceans in Angus waters and learning more about their behaviour we can protect them at a time where Scotland's coastal waters face big challenges. Understanding how species use the water surrounding our coast also allows us to promote

local wildlife tourism opportunities and shows just how accessible our beautiful, varied coast is".

A small publication "Whale & Dolphin Watching on the Angus Coast" was produced by the group and can be found on the website alongside the submit a sightings page at www.marinelifeangus.co.uk.

Contact info@marinelifeangus.co.uk for more information.

Live Now…Map Based Consultation "Wildlife Watching On The River South Esk"

The River South Esk Catchment Partnership are pioneering the online, map based public consultation tool Social Pin Point in the UK.

The Partnership are asking anyone who has watched wildlife in the catchment to use the innovative tool to share where they enjoy watching species.

The consultation also aims to paint a picture of where walking or cycling is a popular means of getting to their favourite spots. The information gathered in the consultation will be used by the Partnership to develop new wildlife tourism projects and to make sustainable travel easier. Please Share your South Esk catchment Wildlife Watching tips here.

Kelly Ann Dempsey

NBN update May 2018

NBN Atlas revisions to Terms of Use and Guidance for Using Data

If you are a registered user of the NBN Atlas, you will have received an email relating to some revisions to our Terms of Use and Guidance for Using Data from the NBN Atlas.

The main change relates to the introduction of a fixed charge notice which can be issued if a data user is found to have breached the Data Partner's Terms, NBN Atlas Terms of Use or the licence conditions associated with data accessed through the NBN Atlas.

As you will be aware, all data on the NBN Atlas is governed by one of four data licences with the CC-BY-NC licence not allowing commercial use of the data.

Downloading or viewing data available on the NBN Atlas under a CC-BY-NC licence, for the purposes of producing a report or advice for which the data user is receiving any sort of payment (including cost recovery), is considered to be a breach of the licence.

You can read further information on the revisions here:

nbn.org.uk/news/nbn-atlas-revised-terms-of-use-and-guidance-for-using-data/

NBN Atlas Scotland Stakeholder Engagement Day 21st June 2018

This is an open invitation to anyone in the biodiversity community in Scotland who is familiar with the NBN Atlas Scotland and would like to learn more about the NBN Atlas and contribute to discussions about its development.

There will also be an opportunity to hear more about the Scottish Biodiversity Information Forum's (SBIF) Review of the Biological Recording Infrastructure in Scotland.

To find out more, or to book, please visit the NBN website nbn.org.uk/news/nbn-atlas-scotland-stakeholder-engagement-day-2/ or contact Christine Johnston c.johnston@nbn.org.uk

NBN Atlas Documentation and Help Portal

We are pleased to announce that a new Documentation and Help Portal for the NBN Atlas has been developed and launched.

The new site brings together information and guidance for users of all of the NBN Atlases, in a clear way, with straightforward navigation to each of the subject areas. It is organised to reflect why you might be using the NBN Atlas, with links to further information.

The new Portal can be found by clicking on the Help link on the top right hand side of each of the NBN Atlases.

Isle of Man joins the 'family' of NBN Atlases

We are delighted to announce that the Isle of Man has come on board with the NBN Atlas Isle of Man. So, we now have NBN Atlas, NBN Atlas Scotland, NBN Atlas Wales and NBN Atlas Isle of Man.

NBN Atlas – one year on

This time last year a major change to how we share data through the NBN took place.

It was the end of an era with the decommissioning of the NBN Gateway on the 31 March 2017. As the NBN Gateway was being decommissioned, we had developed the first phase of the NBN Atlas, which, along with the NBN Atlas Wales, was live and available on 1 April 2017. These two NBN Atlases joined the NBN Atlas Scotland, which had launched the previous year. Despite the tight timescales, we had a functioning biological information management infrastructure up and running, within budget, on time and with a massive 215 million species records available. None of us should underestimate that achievement.

So, what has been achieved in the year since launch? Visit the NBN website for information on this and some key statistics: nbn.org.uk/news/nbn-atlas-one-year/

NBN Trust – new Board members

Following the NBN governance review in late 2017, we are delighted to announce that we have recruited new members to the NBN Trust Board.

These appointments will enhance and extend the range of skills across our Board.

The new Trustees from February 2018 are: Wilma Harper, Neil Hodges, Belinda Howell, Matt Postles, Liz Proctor and Mandy Rudd.

You can find out about all of the Trustees on the NBN website:

nbn.org.uk/about-us/who-we-are/nbn-board/

NBN Conference 2018 - save the date!

This year's NBN Conference will take place on **Wednesday 21 and Thursday 22 November** at the Albert Hall, Nottingham.

Keep an eye on the NBN website for details about the conference theme and format of the event.

David Robertson youth award presented in Millport

The 2017 David Robertson youth award winner, 18 year old Mhairi McCann from Inverclyde, received her award at a special ceremony at Millport in February. Mhairi had been unable to attend the Awards' ceremony in Cardiff in November, so the location of the presentation couldn't have been more apt!

Read more on this story at nbn.org.uk/news/david-robertson-youth-award-presented-millport/

UK Awards for biological Recording and Information Sharing 2018

Information on this year's awards will be released soon on the NBN website, so please keep an eye out for further details if you want to nominate your unsung hero!

SBIF Review - update on the timeline

The writing up of the Review's recommendations is progressing steadily. The current drafting phase, which is being written by the Review Working Group in consultation with the SBIF Advisory Group, is expected to finish in June and publication of the recommendations will follow in July.

The Chair of SBIF, Ellen Wilson, who is leading the Review, recently delivered an update to a meeting of BRISC's committee, and the discussion that followed her presentation has been very useful in providing support and encouragement to the recommendations' authors. It is important to remember that the original idea for SBIF (and the Review) stemmed from BRISC's original petition to the Scottish Parliament, and as such BRISC's continued support for the Review process is crucial for its success.

For further information about the Review please contact Christine Johnston, NBN Scottish Liaison Officer c.johnston@nbn.org.uk