National Museums Scotland

May 2021

BIODIVERSITY
2018-2020

Introduction

National Museums Scotland is actively involved in research on biodiversity and its Natural Sciences collection represents an important library of biodiversity in Scotland.

Under the Nature Conservation (Scotland) Act (2004), all public bodies in Scotland are required to further the conservation of biodiversity when carrying out their responsibilities. The Wildlife and Natural Environment (Scotland) Act (2011) requires public bodies in Scotland to provide a publicly available report every three years.

Here we highlight some of the activities the museum staff have been involved with both in research and public engagement between January 2018 and December 2020.

Collections and research

In the last three years, hundreds of external researchers and citizen scientists accessed specimens and samples from our collections to support their research, including for the purposes of understanding biodiversity and environmental changes. We also support Scotland's biodiversity through a diverse programme of collaborative research with partners from throughout the UK and overseas. These include investigating the impact of different diets on the jaws of red squirrels, hybridisation between wildcats and domestic cats, infectious diseases in polecats, investigating historic declines of bumblebees and habitat requirements of mayflies.

A selection of specific initiatives is below:

- In 2019 we established Scotland's first zoological biobank as part of the BBSRC-funded *CryoArks* project.

- We are a key partner and chair of the Steering Group of the Scottish Wildcat Conservation Action Plan, which led a NLHF-funded multidisciplinary project, *Scottish Wildcat Action*, to determine that the wildcat is now critically endangered and functionally extinct in Scotland.

- We participate on the Steering Group of the Scottish Marine Animal Strandings Scheme (SMASS), which monitors the marine environment through recording strandings and carrying out post-mortem examinations on whales, dolphins, porpoises, basking sharks and marine turtles.

- We work on the Advisory Board of the Scottish Biodiversity Information Forum.

- Together with Scottish Natural Heritage, Royal Botanic Gardens Edinburgh and the University of Edinburgh we are founding partners of Edinburgh Conservation Science which runs events for conservation scientists.

-We are a partner of the National Biodiversity Network and the Biological Records Centre, becoming a depository for voucher specimens collected on surveys. These have included a

survey of the West Shetland Shelf with the Joint Nature Conservation Committee and Marine Scotland Science (MSS), and a survey of the continental shelf-slope to the west of the Hebrides with MSS.

-As a partner of the Biological Records Centre our staff help coordinate the Silphidae Recording Scheme (carrion beetles) and support numerous other schemes through supplying specimen data and facilitating collections access. Other such schemes include the National Moth Recording Scheme; Scarabaeoidea Recording Scheme (dung beetles); Aquatic Coleoptera Recording Scheme (water beetles); and many vice-county insect recorders around Scotland. We also host a number of these groups at the Collection Centre each year to conduct identification workshops (including the Bees Wasps & Ant Recording Society and Butterfly Conservation), arming volunteers with the skills required to successfully record and monitor target groups.

-Staff also engage regularly with local naturalists, including members of Edinburgh Entomological Club and Edinburgh Natural History Society delivering talks, tours and leading field meetings. We maintain the Scottish Insects Records Index which is one of the most important data resources in the collection. It contains all published records of Scottish insects from the early 1800s to the present, and it is used extensively by biodiversity recorders and researchers.

Engagement

-Peer training

We regularly conduct a *Care of Entomological Collections* training course for curatorial staff of Scottish museums and students of natural history. Our staff help coordinate the Royal Entomological Society's (RES) Outreach Programme, which organises bi-annual National Insect Week events, and promotes biodiversity and entomology through RES webinars.

-Visitor programming

At the National Museum of Flight, family activities have focussed on birds and the biodiversity of species in East Lothian, using our taxidermy handling collections. At the National Museum of Rural Life, for Easter 2019, we had beekeepers undertaking demonstrations for families and talking about the importance of bees for local areas. A storyteller also engaged young children and families through interactive stories about bees, and as part of the session planted a wildflower meadow to enhance the local habitat.

During October 2019 half-term activities, we had a focus on 'future foods' and included biodiversity through activities about using seaweed as food, foraging outside for food and entomophagy (eating insects).

As part of our regular family programming, we ran short handling sessions and games, looking at reintroduction of species to Scotland and teaching about the biodiversity of various natural environments. In February 2020, we ran a weekend of activities for World Wetlands Day, focussing on beaver reintroduction in Scotland.

We have developed and run sessions on biodiversity, using museum collections, for our regular visually impaired and D/deaf family groups, using tactile props and sensory aids where appropriate.

-Exhibitions and gallery engagement

Our permanent galleries, *Animal World*, *Animal Senses*, *Survival and Beginnings* present a wide diversity of the world's and Scotland's biodiversity to more than two million visitors each year. We

explain the threats that our biodiversity faces as well as the conservation actions that will help it to recover and sustain it.

We have commenced a major project to redevelop our gallery for young children *Adventure Planet* seeking to increase hands-on engagement with biodiversity issues and habitat protection. This gallery is due to open to the public in 2021.

In 2019/20 we presented a special exhibition on *Scotland's Precious Seas* which explored the diversity of life on the coasts and in the seas of Scotland, as well as the threats it faces and how the museum's collections support biodiversity research and conservation. This exhibition also supported VisitScotland's themed year of *Scotland's Coasts and Waters*.

Using blogs, Twitter and other social media as well as traditional media, we frequently present our collection and research to the widest audiences.

Covid-19 impact and local working

In response to the pandemic we shifted survey work and monitoring of biodiversity to areas around Edinburgh. One of our most important collections of insects was made by Edward Pelham-Clinton in the 1900s with many of the biodiversity collecting sites being local. Over the past year Dr. Blagoderov, Principal Curator, Invertebrates, has started to return to many of Pelham-Clinton's exact same collecting localities to re-sample them. This can be used to record how changing land use has impacted on biodiversity in our own 'backyard'.

Centred at the National Museums Collection Centre (NMCC) some of the Natural Scientists, Learning and Engagement and Collections Services teams are collaborating with local community groups, schools, the Royal Botanic Gardens and National Galleries Scotland to increase awareness of urban biodiversity. The team have begun a baseline biodiversity survey with plans to continue recording seasonal variations. As part of the community engagement programme, we aim to demonstrate the role of modest interventions in enhancing local biodiversity and to celebrate the urban environment.

Below is a small selection of some of the residents at the NMCC site in West Granton.

Grey dagger moth caterpillar, *Acronicta psi*.

Patchwork leaf-cutter bee, *Megachile centuncularis*

Kestrel, *Falco tinnunculus*.

7 spot ladybird larva, *Coccinella semptempunctata*

We have begun the planning phase for a similar baseline survey of the different environments at National Museum of Flight. This will help determine whether some modest interventions can be incorporated to enhance biodiversity. This is being done as part of the wider capital development of this site.

The pandemic severely interrupted our ongoing collaborations with partners on the systematic surveying and collecting of species in our waters, essentially bringing it to a halt. Only one marine recording programme continued, albeit curtailed. Some collecting by SMASS continued throughout last year, but processing of this material was severely restricted. Of note was one unusual discovery - the stranding of an Ocean Sunfish, Mola mola, at Rosemarkie in September 2020: https://www.nms.ac.uk/exhibitions-events/online-event/national-museum-of-scotland/revealing-the-secrets-of-the-rosemarkie-sunfish/)

Natural Sciences Team

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