

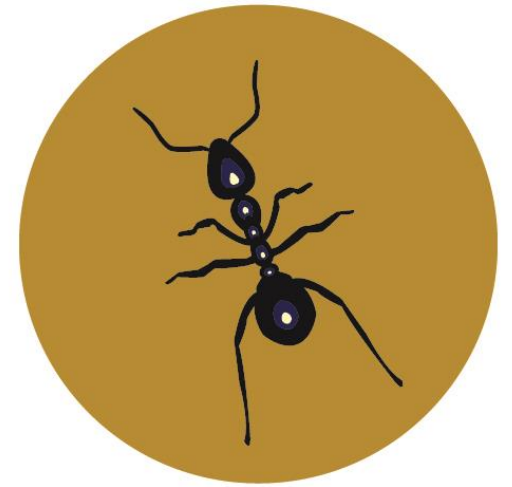
Atlas of Living Scotland



**New data infrastructure for
research and citizen science**

John Sawyer and Rachel Stroud
CEO NBN Trust, j.sawyer@nbn.org.uk

Who is the National Biodiversity Network?



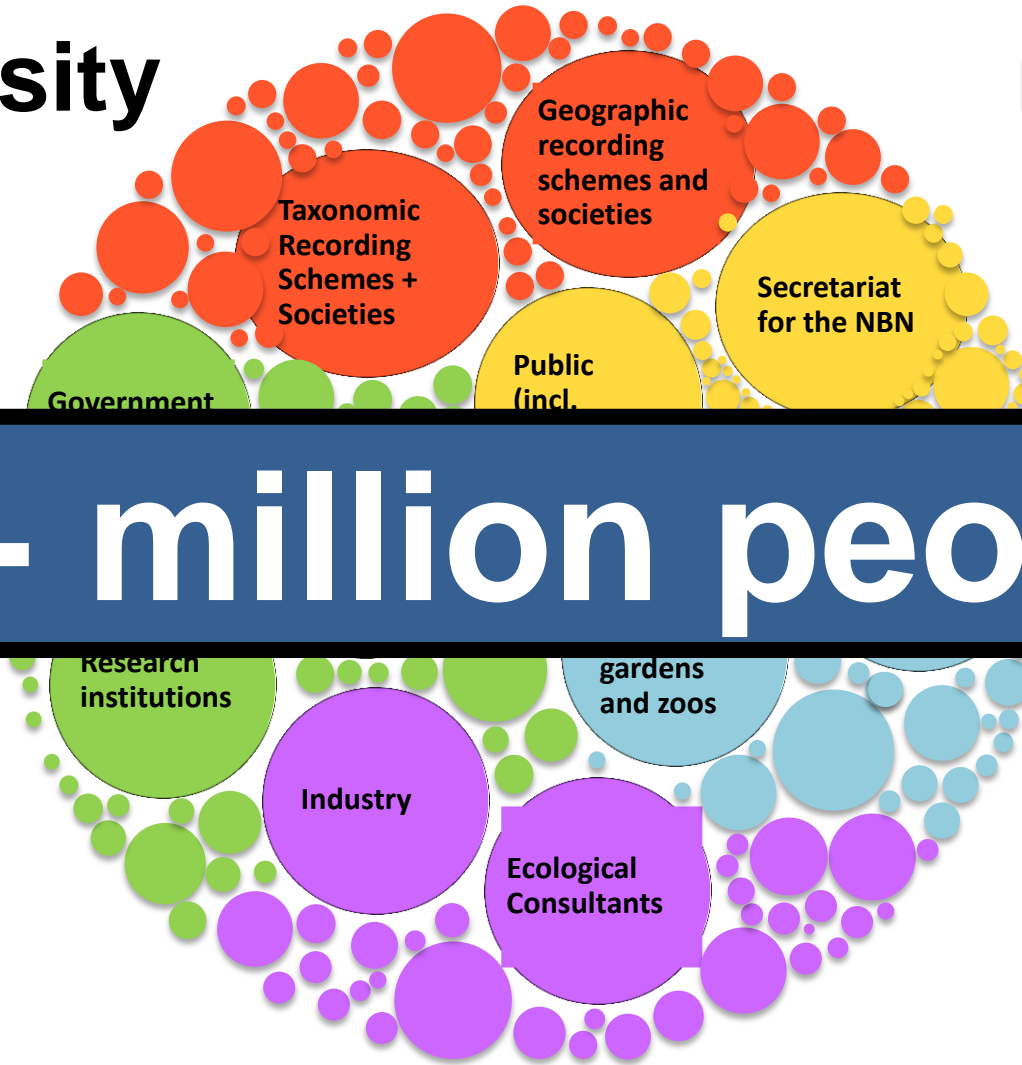
NBN Trust

**The National Biodiversity
Network is the UK's largest
partnership for nature**



The National Biodiversity Network

140+
members



7+ million people

848
datasets

180+
Data Partners

NBN Vision

“Biological data collected and shared openly by the Network are central to the UK’s learning and understanding of its biodiversity and are critical to all decision-making about nature and the environment”

Five Strategic Aims

**COLLECTING
AND SHARING
BIOLOGICAL DATA
TO EDUCATE AND
INFORM**

NBN STRATEGY 2015-2020



NBN DATA FLOW PATHWAY

Record & Collect

- Capture
- Enter
- Digitise
- Transcribe
- Translate

Quality Assurance

- Check
- Verify
- Validate
- Clean

Curate

- Describe
- Standards
- Meta-data
- Archive

Aggregate

- NBN Gateway
- Collate
- Webservices
- Online maps

Analyse

- Model
- Smooth
- Integrate
- Overlay
- Atlas maps

Use

- State of Environment
- Monitoring
- Policy and planning
- Research
- Natural Capital
- Offsetting

Investment needed in all stages of data flow

data.nbn.org.uk

[NBN Gateway Home](#)

[The NBN](#)

[Browse Datasets](#)

[Browse Species](#)

[Browse Sites](#)

[Browse Designations](#)

[Documentation](#)

[Forum](#)

Welcome to the NBN Gateway

100 m
Read

dataset.

B.N.F.N.

Explore
uted

ated

Please post your comments and suggestions on the [NBN Forum](#).

Gateway Technical and User Review

January 2015
Report prepared by
The NBN Trust



Conclusions...

Complex technical data infrastructure in UK

112 million biological records aggregated via NBN Gateway is an extraordinary achievement

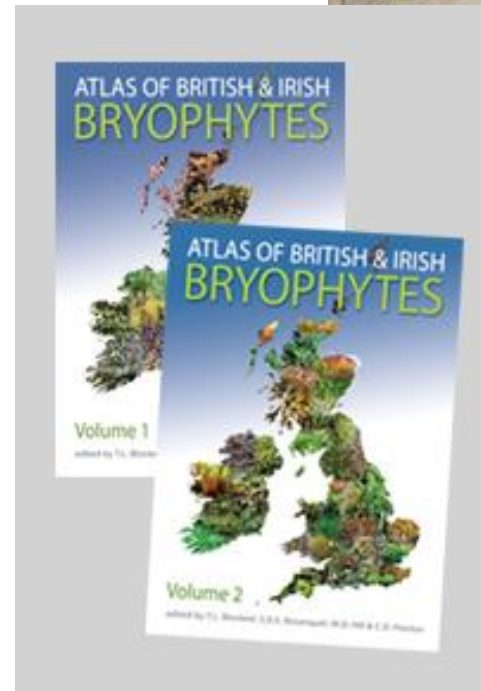
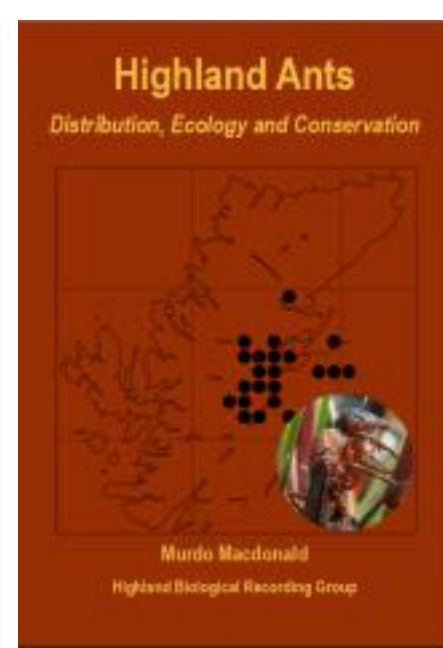
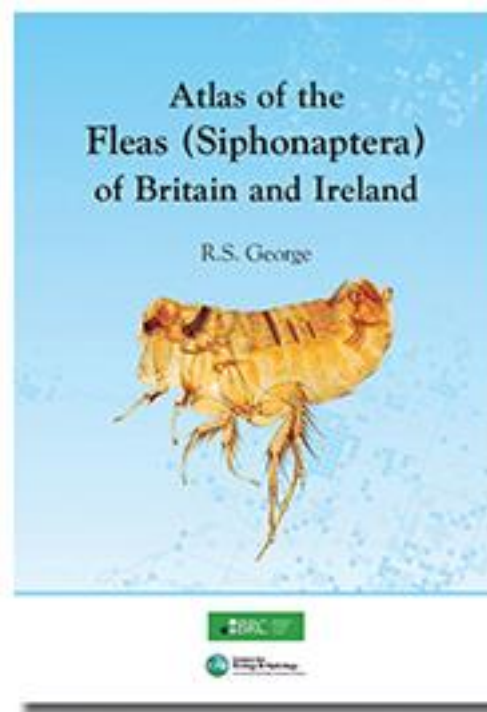
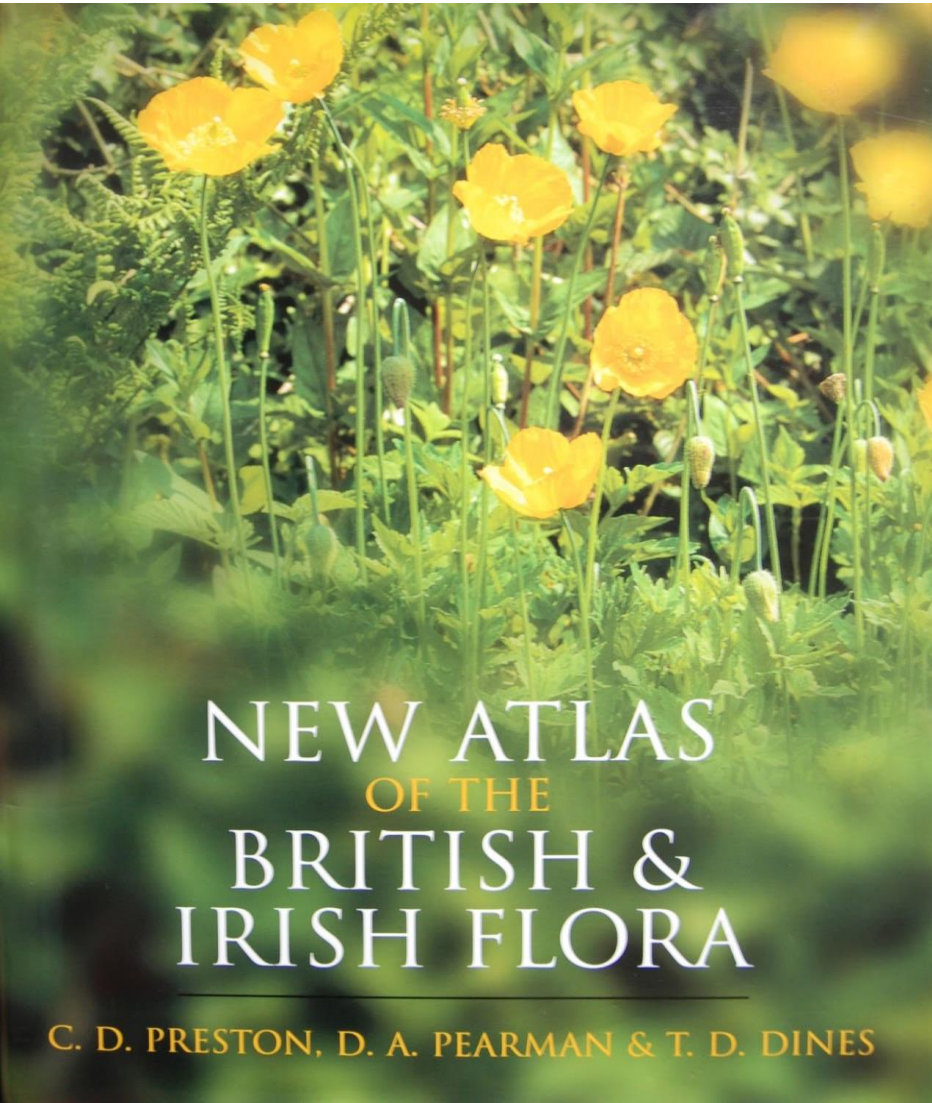
Existing data infrastructure not fit for future purpose

Strong support to improve the data infrastructure and share biological data

**We need new data infrastructure
to support research and citizen
scientists, to engage larger
audiences and increase the
power of our marine and
terrestrial data**



We are nature Atlas Capital of the World



Atlas of Living Australia

£25 million investment
since 2009

6 billion downloads
since 2009!

Open Source!

Our objectives

Provide:

- A trusted portal for Scottish biodiversity data
- Access to raw biodiversity data and information
- Data mapping, analysis and visualisation tools
- Access to data collection, management and research tools

Educate:

- People about Scotland's biodiversity

Promote:

- The value of our collective biodiversity data
- Improved decision-making about the environment
- All partners involved in collecting and curating biodiversity data in Scotland

SEARCH



CONTACT US

LOG IN

CHOOSE ATLAS

ATLAS
OF LIVING SCOTLAND

SPECIES

LOCATIONS

HABITATS

ANALYSE

GET INVOLVED

DATA PARTNERS

ABOUT

The Atlas of Living Scotland is your gateway to learning about Scotland's natural world

Search the Atlas of Living Scotland



SEEN SOMETHING?

Identify, learn and record your own observations



VIEW IMAGES

View the Atlas image gallery



EXPLORE YOUR AREA

Search the atlas for information about a place



ANALYSE DATA

Undertake your own analyses of atlas data



www.als.scot



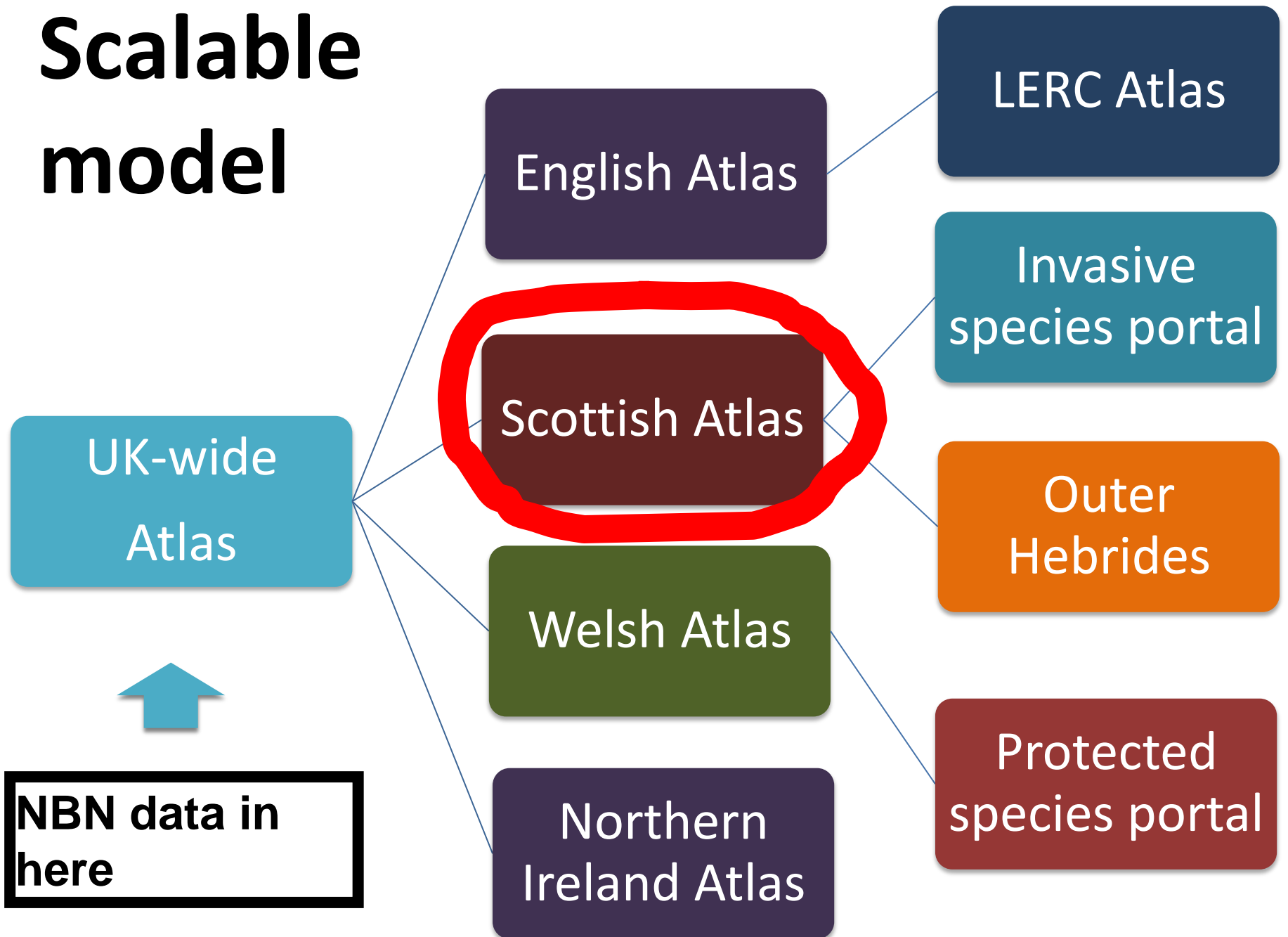
Scotland's Environment Web (LIFE) Project and European LIFE funding programme

A daughter site for Scotland's Environment Web



The screenshot shows the website's layout. At the top left is the logo and tagline. To the right are social media icons (Facebook, Twitter, Instagram, YouTube, RSS, SA) and a note 'In partnership with' followed by the LIFE logo. Below this is a navigation bar with links: Home, Get Informed, Get Interactive, Get Involved, Get Communicating, and About us. The main content area features a search bar and a 'What are you interested in?' section. On the left, there's a 'News about Scotland's environment' section with a list of recent news items and a 'Read more news' button. On the right, there are several circular icons representing different services: State of Environment Report, Land Information Search, Project Finder, Map View, Discover Data, Climate Change Survey, Scotland's environment Ecohack, 2015 International Year of Soils, and SA Scotland's Aquaculture. At the bottom, there are links for Terms & Conditions, Privacy Policy & Cookies, Accessibility, Site Map, and Contact Us, along with a newsletter sign-up form and a 'Subscribe' button. The 'natural scotland' logo is also present in the bottom right corner.

Scalable model



[Species](#)[Locations](#)[Habitats](#)[Records](#)[Data Providers](#)

Biota > Animalia > Chordata > Vertebrata > Aves > Galliformes > Phasianidae > Tetrao > Tetrao urogallus

Tetrao urogallus Linnaeus, 1758

Capercaillie SPECIES Name authority: SNH List of Gaelic Names

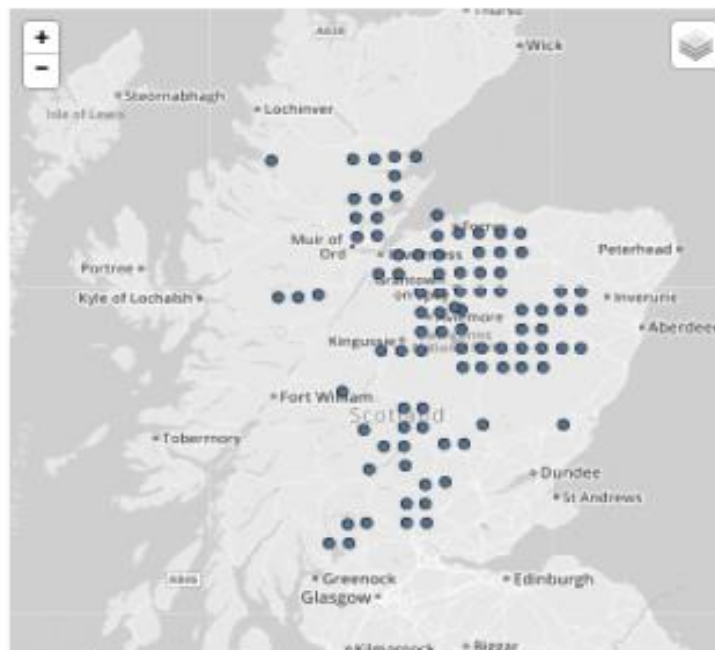
[Overview](#)[Gallery](#)[Names](#)[Classification](#)[Records](#)[Literature](#)[Sequences](#)[Data Providers](#)

Encyclopedia of Life



Description

The male capercaillie is a game bird, and the largest member of the grouse family resembling, to some people, a turkey. Males are slate-grey over most of their bodies, and have reddish-brown upper wings with a prominent white shoulder (carpal) flash. The head, neck and breast have a blue sheen, with the eye surrounded by a ring of bright red skin. Male birds have a 'beard', especially noticeable when they are displaying, and a long tail, held upright and fanned out during their displays. Females are much smaller birds and lack the flamboyant plumage of the male. They resemble females of the other members of the grouse family in the UK



Leaflet | [\\${raw\(grailsApplication.config.skin.orgNameLong\)}](#), Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox

[View Interactive Map](#)[View Locations](#)[Record a sighting](#)[Submit a photo](#)[Download a fact sheet](#)[Receive alerts when new](#)[Start a topic about this species on the forum](#)

Taxon information

- Map
- Images
- Sound
- Video
- Names
- Genetic sequencing
- Reference library
- Links to get involved

NBN UK Gateway UK Wildlife Portal Consultants Portal NBN Forum

Atlas of Living Scotland

Started Examples of Use Documentation NBN

Search everything...


[Species](#) [Locations](#) [Habitats](#) [Records](#) [Data Providers](#)

Biota › Animalia › Chordata › Mammalia › Carnivora › Mustelidae › Neovison › Neovison vison


Neovison vison (Schreber, 1777)

American Mink SPECIES Name authority: SNH List of Gaelic Names

[Overview](#) [Gallery](#) [Names](#) [Classification](#) [Records](#) [Literature](#) [Sequences](#) [Data Providers](#)



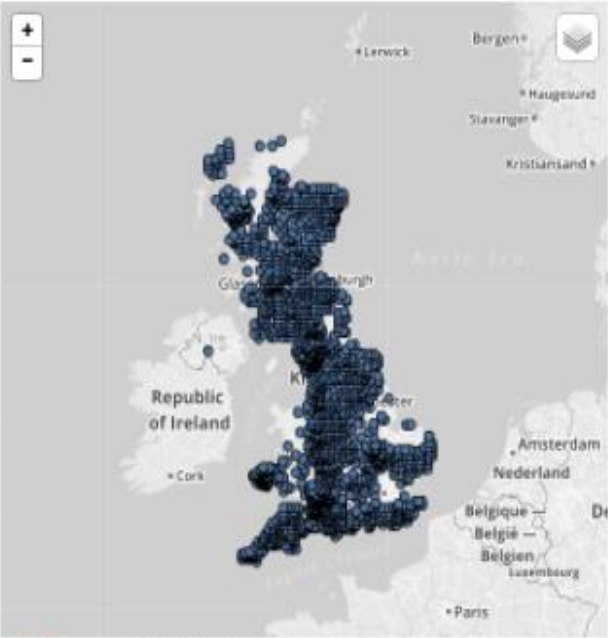
Encyclopedia of Life



American mink

This article is about animal. For the trademark of the same name, see [American Legend Cooperative](#).

The **American mink** (*Neovison vison*) is a semiaquatic species of mustelid native to **North America**, though human intervention has expanded its range to many parts of **Europe** and **South America**. Because of range expansion, the American mink is classed as **Least Concern** by the IUCN.⁽¹⁾ Since the extinction of the **sea mink**, the American mink is the only extant member of the **genus** *Neovison*. The American mink is a



Leaflet | [\\$|raw\(grailsApplication.config.skin.orgNameLong\)](#), Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox

[View Interactive Map](#) [View Locations](#)

[Record a sighting](#) [Start a topic about this species on the forum](#)

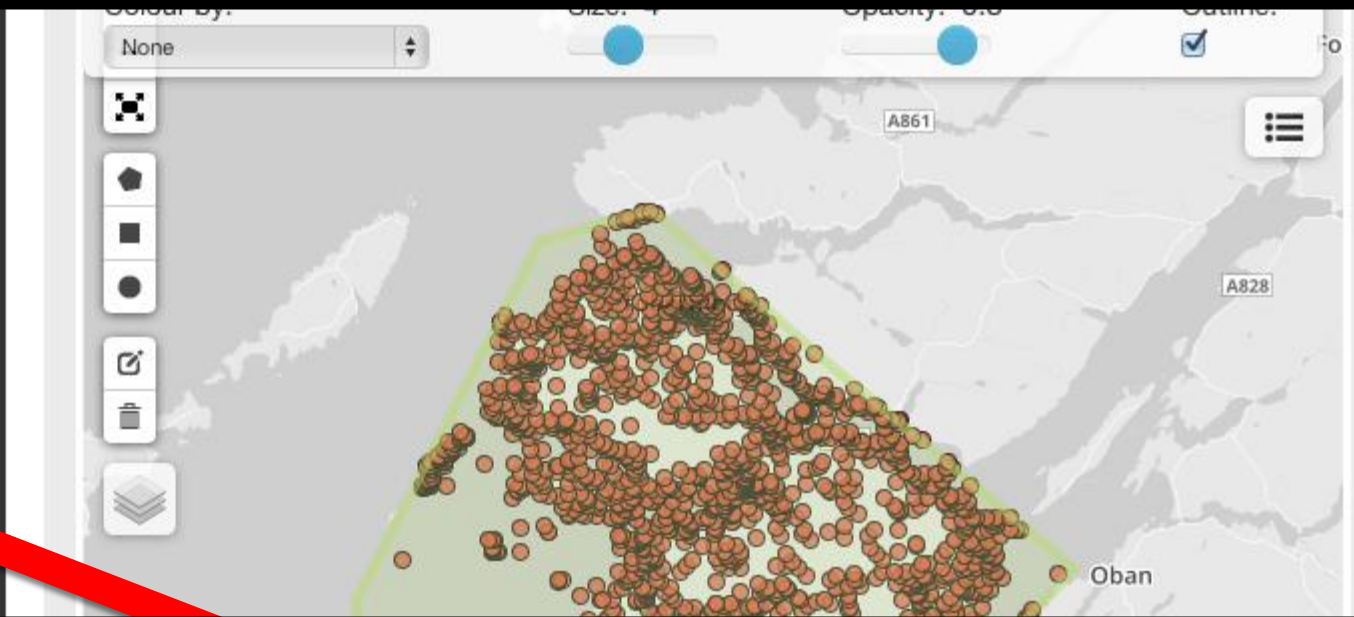
[Submit a photo](#)

[Download a fact sheet](#)

[Receive alerts when new](#)

Interactive mapping interface

- Abax
parallelepipedus (4)
- Aberrantidae (19)
- Abietinaria (3)
Abietinaria abietina
choose more...
- Species
- Abax
parallelepipedus (4)
- Abietinaria abietina (36)
- Abietinaria
choose more...
- Family
- Aberrantidae (19)
- Acanthochitonidae (3)
- Acanthidae (15)
- Acanthochitonidae (91)
- choose more...
- Lifeform
- Algae (3,271)
- Amphibians (46)
- Animals (26,620)
- Arthropods (5,737)
- choose more...



- Polygon search
- Data filters
- Customise map
- Data downloads – Excel and PDF

Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox, UK
Wildlife Portal

Occurrence records

Customise filters

73,404 results for [all records]

Selected filters: cl2: Scotland Spatial filter: POLYGON

Narrow your results

Selected filters

cl2: Scotland

Taxonomic

Temporal

Record details

Attribution

Record assertions

Miscellaneous

Species list

Scottish Biodiversity List (14,412)

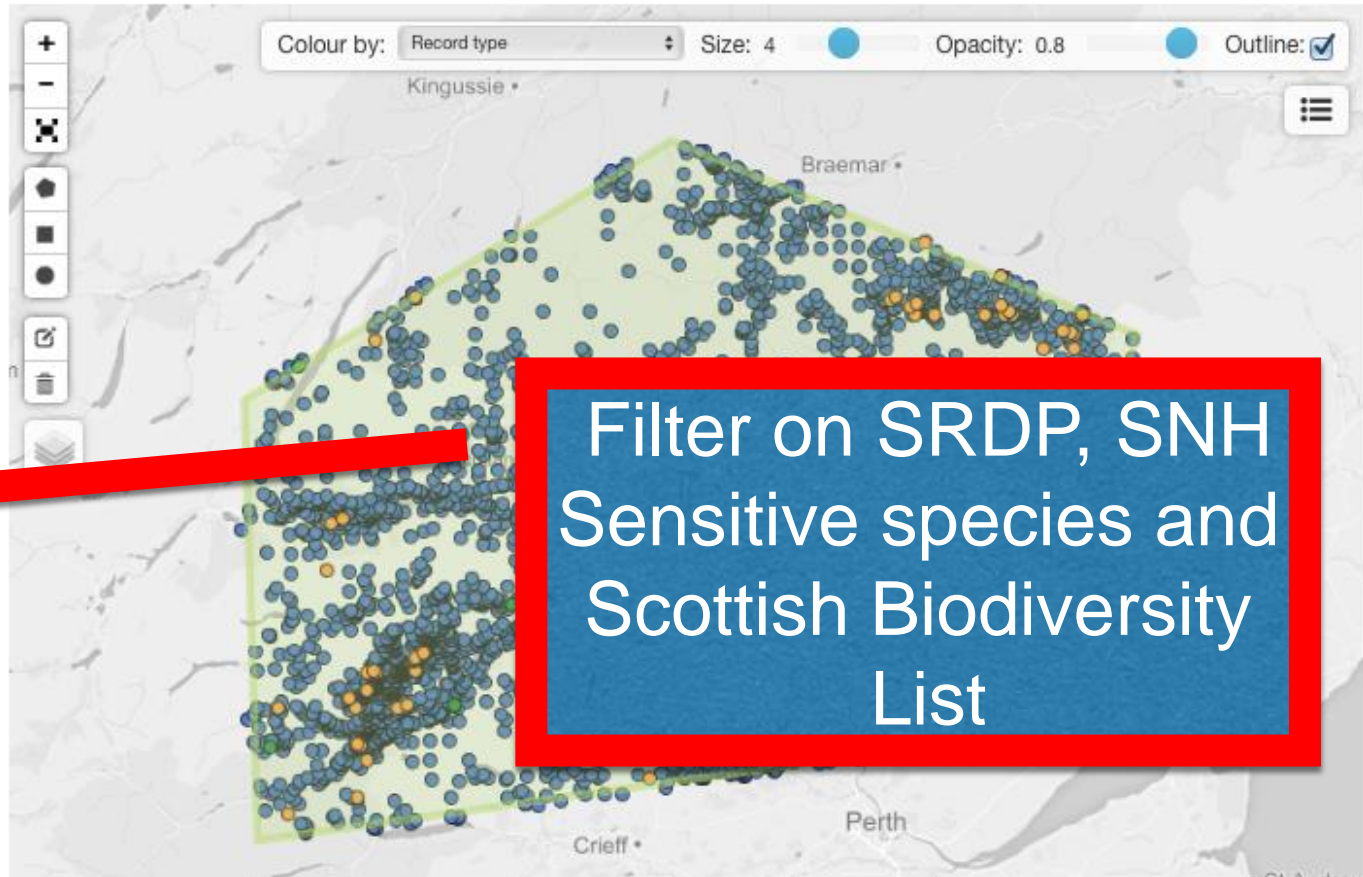
Scottish Rural Development Programme (9,698)

Scottish Natural Heritage Sensitive species list for Scotland (1,063)

Records Map Charts

Download map

Download WKT



Auto-summary data for a site

Occurrence records

Quick search

Customise filters -

73,404 results for [all records]

Selected filters: cl2: Scotland Spatial filter: POLYGON

Narrow your results

Selected filters

cl2: Scotland

Taxonomic

Temporal

Record details

Attribution

Record assertions

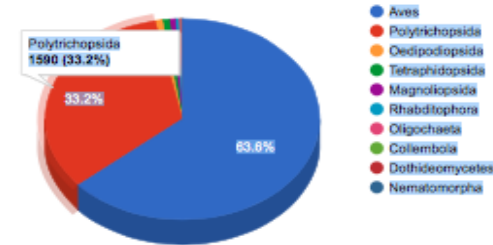
Miscellaneous

Species list

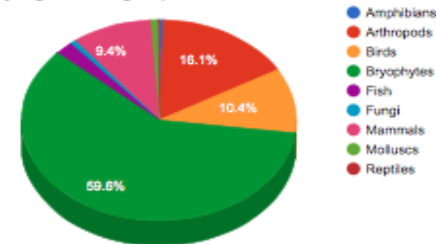
- Scottish Biodiversity List (14,412)
- Scottish Rural Development Programme (9,698)
- Scottish Natural Heritage Sensitive species list for Scotland (1,063)
- [choose more...](#)

Records Map Charts

By class



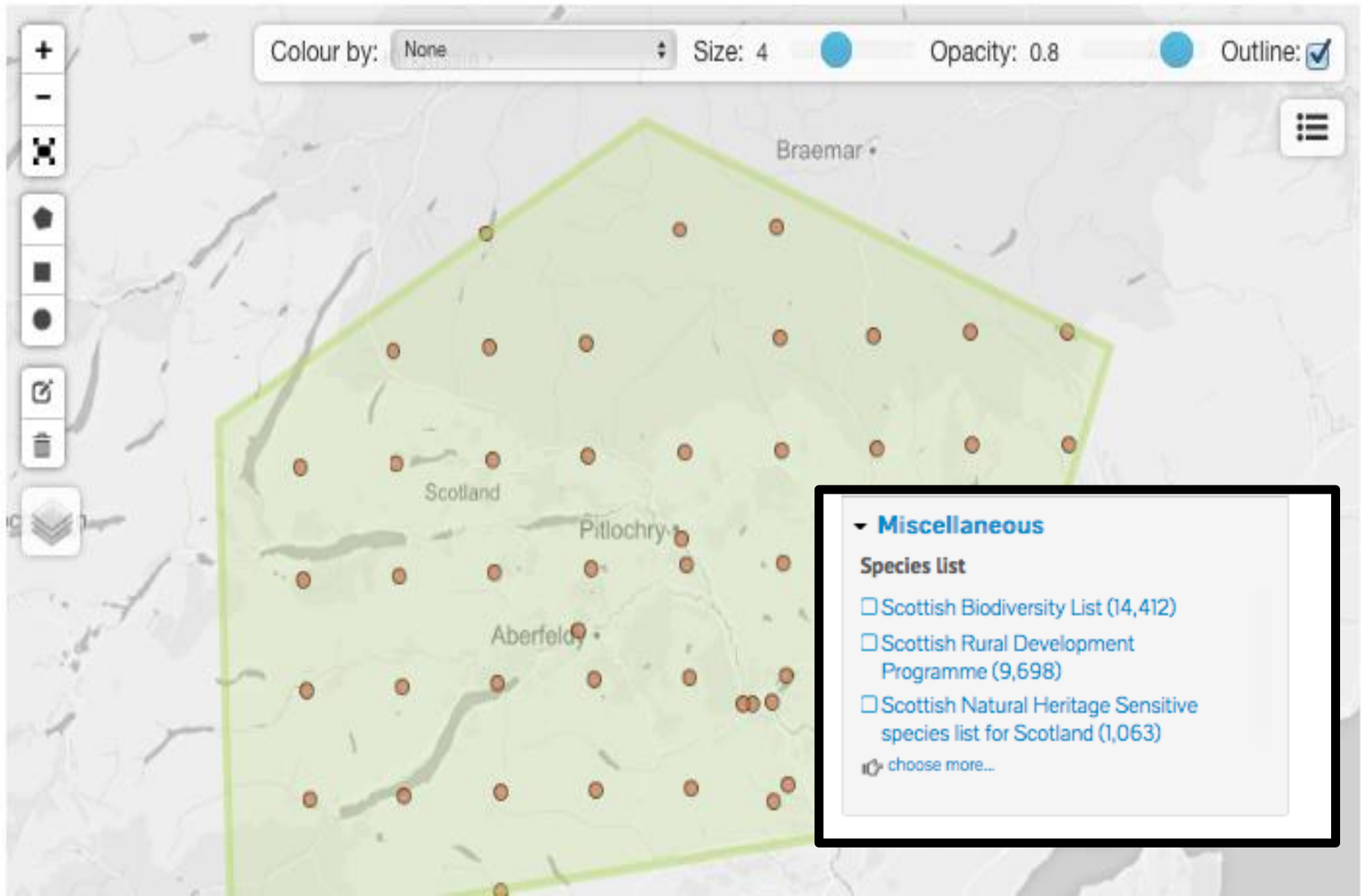
By higher-level groups



By data assertion



Sensitive species mapping blurred



Species density mapping

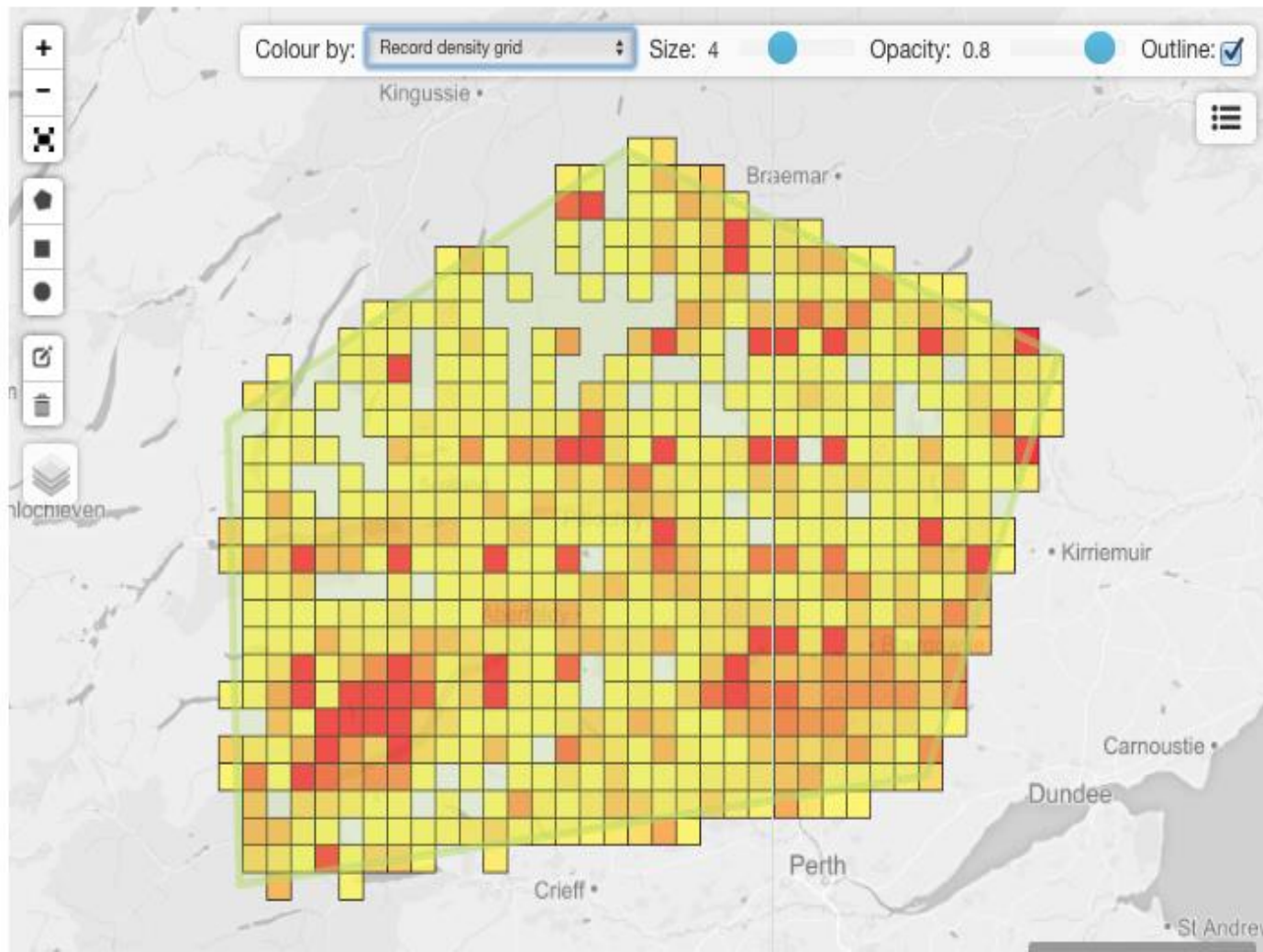
Custi

Selected filters: cl2: Scotland Spatial filter: POLYGON

Records Map Charts

Download map

Download WKT



Narrow your results

Selected filters

 cl2: Scotland

Taxonomic

Temporal

Record details

Attribution

Record assertions

Miscellaneous

Species list

 Scottish Biodiversity List (14,412) Scottish Rural Development Programme (9,698) Scottish Natural Heritage Sensitive species list for Scotland (1,063)[choose more...](#)

Sciurus vulgaris Linnaeus, 1758

Red Squirrel

SPECIES

Name authority: SNH List of Gaelic Names

Overview

Gallery

Names

Classification

Records

Literature

Sequences

Data Providers

Images



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758



Sciurus vulgaris Linnaeus, 1758

Creating Scotland's largest biodiversity image library

Spatial mapping and analysis enables:

- Integration of ecosystem, spatial layers and species data
- Bioclimatic modelling (MaxEnt)
- Scatter plotting
- Area reports

All off the shelf with options for further innovation

Area biodiversity reports

← ATLAS OF LIVING SCOTLAND

Add to Map • Tools • Import • Export • Help

CAIRNGORMS NATIONAL PARK

Map options | Delete all | Show all | Hide all

CAIRNGORMS NATIONAL PARK

Layer name: CAIRNGORMS NATIONAL PA

Facet: User defined colour



Opacity: 60%

Display spatial uncertainty as a circle



CAIRNGORMS NATIONAL PARK

Area (sq km)	4,517.12			Info
Number of species	3,126	<input type="button" value="List"/>		
Number of species - spatially valid only	3,126	<input type="button" value="List"/>		
Occurrences	88,933	<input type="button" value="Map all"/>	<input type="button" value="Sample"/>	View Records
Occurrences - spatially valid only	88,933	<input type="button" value="Map all"/>	<input type="button" value="Sample"/>	View Records
Expert distributions	0			
Checklist areas	0			
Checklist species	0			
Journalmap documents	0			
Gazetteer points	0			
Points of interest	0			
species_list_uid:dr1005	0			Full List
Threatened Species (sensitive only lists)	0			
Invasive Species (sensitive only lists)	0			
species_list_uid:dr781	0			Full List
Algae	22	<input type="button" value="List"/>	<input type="button" value="Map all"/>	View Records
Amphibians	4	<input type="button" value="List"/>	<input type="button" value="Map all"/>	View Records

Quick links: View results for CAIRNGORMS NATIONAL PARK

United Kingdom

Scale: 50 km / 20 mi

Lat: 1.61021, Lon: 98.70140

Hover over to view layers

EUNIS habitat mapping

The screenshot displays the ATLAS web application interface for EUNIS habitat mapping. The top left corner features the ATLAS logo and the text "OF LIVING SCOTLAND". A navigation menu includes "Add to Map", "Tools", "Import", "Export", and "Help". The main interface shows a map of the Aviemore region, with the word "Aviemore" overlaid in large black text. The map is color-coded by EUNIS Land cover, with a legend on the left showing a color gradient from blue (1.0 ID) to red (63.0 ID). The legend also includes a "show legend" button and a "hide legend" button. The map interface includes a search bar, a "Map options" dropdown, and buttons for "Delete all", "Show all", and "Hide all". A vertical toolbar on the left side of the map contains navigation and zoom controls. The bottom right corner of the map shows a scale bar (1000 m / 5000 ft) and coordinates (Lon: -3.91952, Lat: 57.20820). A "Quick links" panel is visible at the bottom left of the map area, with a "View metadata for 'EUNIS Land cover'" link.

ATLAS
OF LIVING SCOTLAND

Add to Map ▾ Tools ▾ Import ▾ Export ▾ Help ▾

EUNIS Land cover

Map options Delete all Show all Hide all

EUNIS Land cover

Layer name

Opacity 26%

1.0 ID

63.0 ID

Aviemore

Avieiochan
Granish
River Spey
Aviemore
A95
A9
Coylumbridge
Inverdrue
Alvie
Kinrara

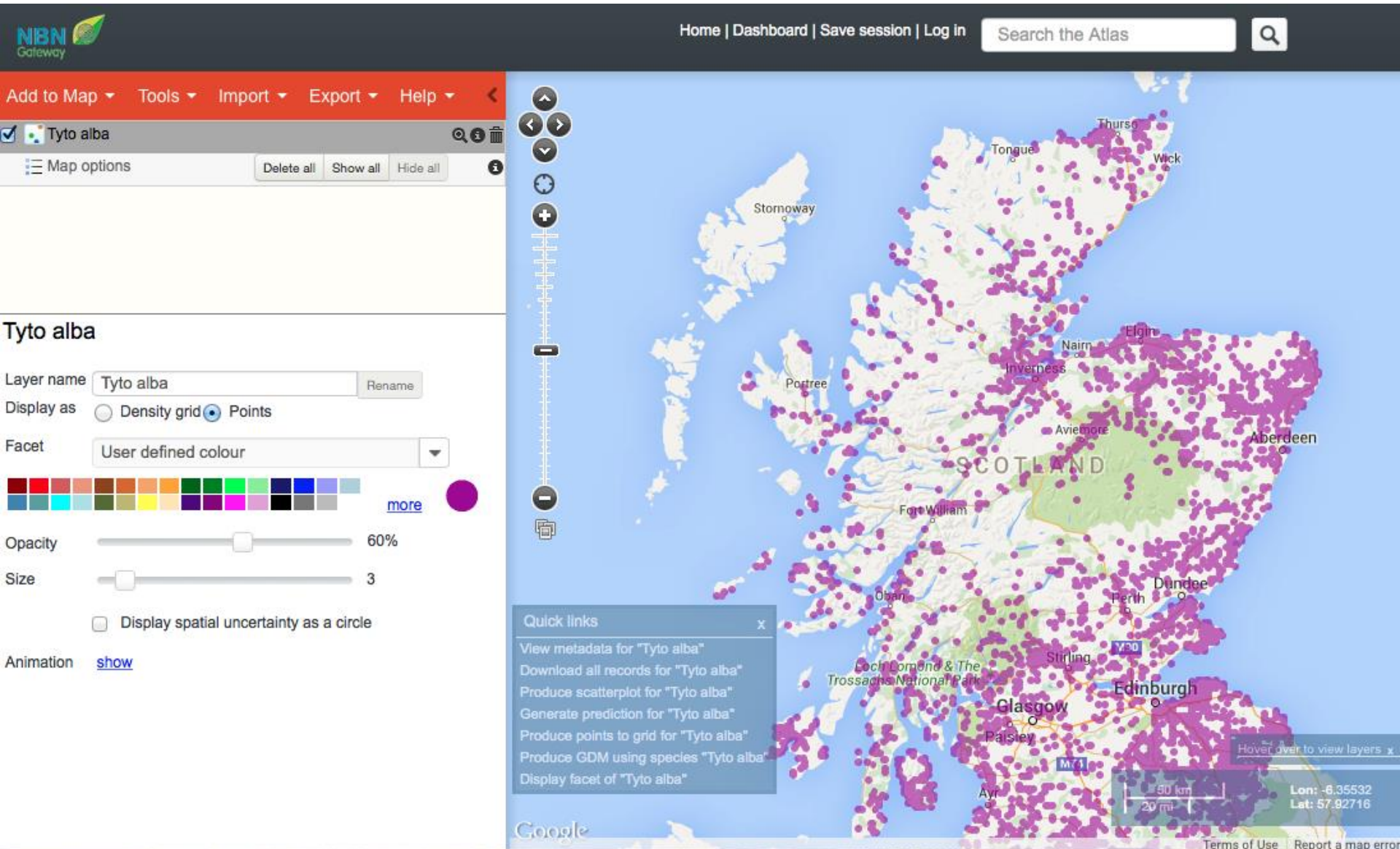
Quick links
View metadata for "EUNIS Land cover"

Hover over to view layers
EUNIS Land cover
17

1000 m
5000 ft

Lon: -3.91952
Lat: 57.20820

Barn owl in Scotland



Add broad-leaved woodland

NBN Gateway Home | Dashboard | Save session | Log in Search the Atlas

Add to Map Tools Import Export Help

- Broadleaved woodland - Land Cover Map 2007 (1km percentage target class, GB)
- Tyto alba

Map options Delete all Show all Hide all

Broadleaved woodland - Land Cover Map 2007 (1km percentage target class, GB)

Layer name: Broadleaved woodland - Land Co Rename

Opacity: 70%

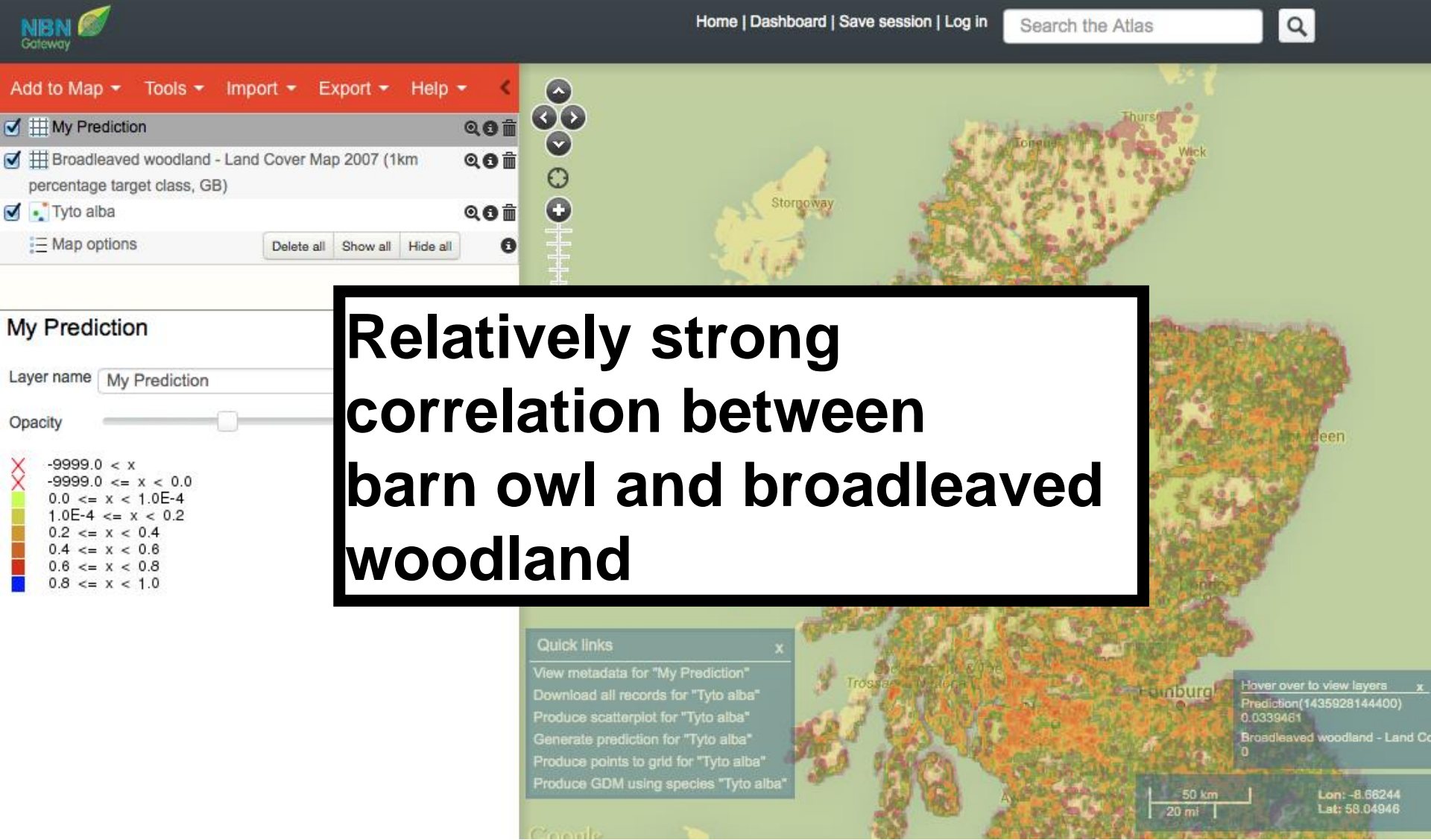
0.0 % 100.0 %

Quick links

- [View metadata for "Broadleaved woodland - Land Cover Map 2007 \(1km percentage target class, GB\)"](#)
- [Download all records for "Tyto alba"](#)
- [Produce scatterplot for "Tyto alba"](#)
- [Generate prediction for "Tyto alba"](#)
- [Produce points to grid for "Tyto alba"](#)
- [Produce GDM using species "Tyto alba"](#)

50 km 20 mi Lon: -5.63022 Lat: 58.20809

Create predictive model (all done in 3 minutes)



NBN Commitment to Atlas of Living Scotland

- 39 Data Partners committed in principle to sharing data (marine and terrestrial) on atlas
- 7 million species observations committed
- 10 spatial layers added so far...

Open data licenses – allowing research and innovation

- Four options:
 - Open Government License (OGL)
 - Creative Commons (CCO – Version 4.0)
 - Creative Commons with attribution (CC-BY)
 - Creative Commons non-commercial (CC-BY-NC)

Help us...

- Become an Atlas Data Partner
- Share data, environmental layers, images and research
- Join our user group – info@als.scot
- Innovate to develop data visualisation and analysis tools
- Support NBN members

15TH NATIONAL BIODIVERSITY NETWORK CONFERENCE

Lakeside Conference Centre, York

Thurs 19 – Fri 20 November 2015

35 speakers, 4 symposia

**Twitter: @_JohnSawyer
or @AoLScot**



Any questions?