



University
of Glasgow | College of Science
& Engineering

Al McGowan: Palaeobiologist A bit about me

University of Glasgow alumnus
Geology & Applied Geology(1994)

Wilderness Years

Three years in the outdoors building boats, mountain footpaths
and planting trees

Graduate School

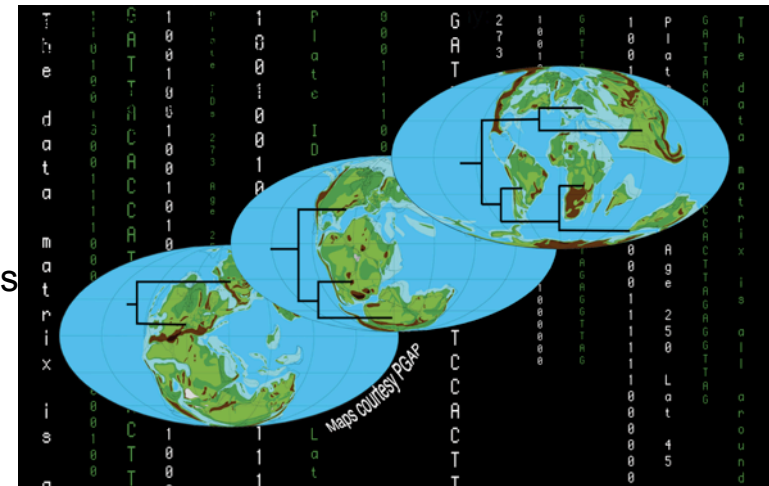
M. Sc. Palaeobiology Bristol (1999)
Ph. D. Triassic ammonoid macroevolution in space and time
University of Chicago (2003)

PDRAs

Smithsonian National Museum of Natural History (2003)
University College London (2003-2005)
Natural History Museum, London (2005-2008)

Independent Research Fellowships

Alexander von Humboldt Fellow, MfN, Berlin (2008-2009)
RSE/Scottish Government PDRF Co-Funded by Marie Curie

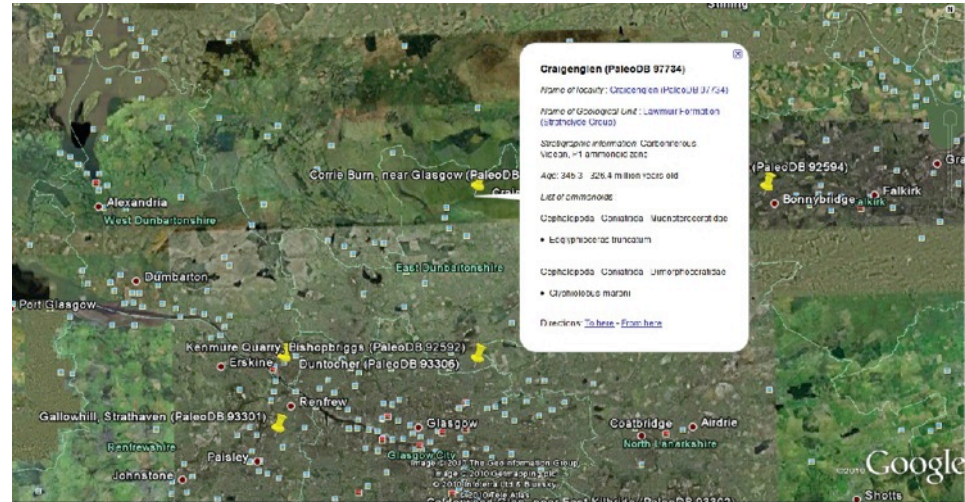


The Socio-Economic case: Scottish Government Strategic Objectives

Source of projects

Influence in their
local communities

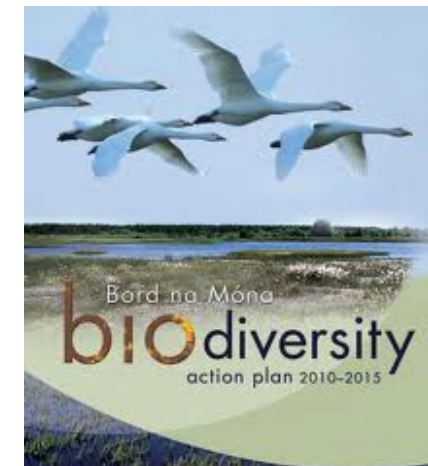
Life-long learning



Strang & McGowan (2010)

Between 1995-1999 436 Biodiversity
Action Plans were produced. Many
biology/ecology graduates found
employment

Possible to do the same for
Geodiversity Action Plans?



Citizen Science

The concept is that individual volunteers, or networks of volunteers run research-related tasks such as observation, making measurements, data entry or computational tasks.

Many members will not have project-specific skills when they start.

The large numbers of volunteers can make projects that would otherwise be unprofitable or too time-consuming feasible.

Citizen Science is a hot topic among professional scientists (see recent articles in high-impact journals on display).



Wider benefits of biodiversity recording (and citizen science)

- Allows projects to go ahead that would be otherwise unfeasible
- Data are usually publicly available
- Connects people to evidence-based thinking
- Data or web tools from one project can often be used in other projects
- Cost-effective



BioBlitzes: Intensive effort on selected sites or cities (<http://www.bnhc.org.uk/home/bioblitz/>)

What is a BioBlitz event?

A “BioBlitz” is a large scale event that engages large numbers of people with biodiversity, inviting them to get directly involved in surveying and monitoring. The events have three main elements:

Length – BioBlitz events are run over 24 hours in a single location

People – BioBlitz events involve large numbers of scientists and members of the public

Focus – BioBlitz events place equal emphasis on scientific recording and public engagement

A reminder that undiscovered biodiversity is all around,
not just in exotic, far-flung places

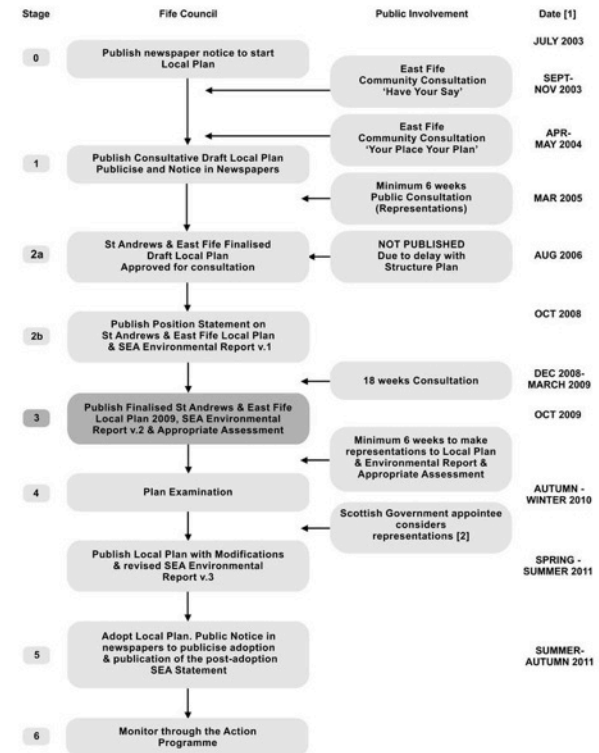
Geodiversity across disciplines

Deep time



Surface processes

Figure 1.2 : St Andrews & East Fife Local Plan process



Notes:

[1] Dates will be confirmed as the Local Plan progresses through each stage. An annual monitor will be published in the Council's Development Plan Scheme.

[2] The plan examination is the responsibility of the Scottish Government - Directorate of Planning Environmental Appeals. The appointed person will determine the format of the examination (written submissions or, hearings, or inquiry sessions).

Human factors

Geodiversity: Other aspects



“What happens to us is irrelevant to the world's geology,
But what happens to the world's geology is
not irrelevant to us.”

Hugh MacDiarmid



Baseline surveying: What have we got?

Quantitative metrics
and GIS support
for reserve/park design

CPD for biodiversity-led
organizations/geoparks
Staff/ALERC

Baseline surveying of
geodiversity

- Desktop (BGS)
- Fieldwork



Tools for sharing geodiversity information

Specialist tools/media

Printed maps

Books

Scientific papers

GCR Reports

Museum collections

Online databases that need
a specialist knowledge

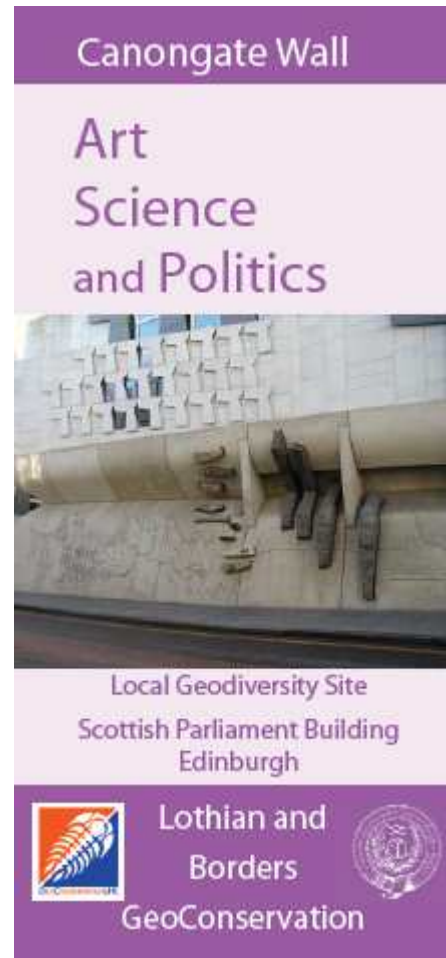
- Many BGS tools
- Some older OS maps
- PaleoDB



Tools for sharing geodiversity information

Non-specialist tools

- Face-to-face events
- Leaflets
- Websites for Individual sites or areas
- Geoparks/LGS



Site assessment: Scope for expert input and spotting research project opportunities

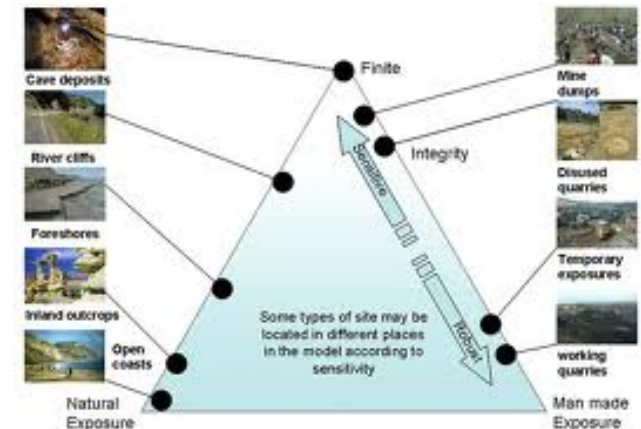
Strathclyde RIGS site assessment form

Proposed RIGS site name **AUCHENREOCH GLEN**
 Site name Auchenreoch Glen, Bonhill, West Dunbartonshire
 Proposed interest Carboniferous stratigraphy (Ballagan Formation), dykes and faulting
 Grid ref (centre of site) NS 418783
 Evaluated by Alistair McGowan & Nick Everett, August 2010

General description River gorge cliffs exposing Lower Carboniferous (Dinantian) mudstones and cementstones.

Rationale for designation – see appended scoring sheet

	Max score	score	Comments
Access	50	33 29	Access not simple, but gives rewards of a surprisingly wild 'feel'. Challenging access.
Science education	90	30 48	Moderate range of hard-rock interests, with subsidiary geomorphological interests.
Specific educational value	40	27 28	Educational potential increases at higher academic levels.
Science bonus	20	15 18	Excellent representative of Ballagan Fm at local authority scale. Best exposure in Ballagan Fm in west Central Belt; best & most accessible sedimentary exposure in West Dunbartonshire and possibly further afield. Was considered for GCR, but Ballagan Glen was chosen because type locality, despite its poorer access.
Cultural & heritage	n/a		Good links to history of landscape use – cementstones used in lime kilns.
Conservation	n/a		
Further notes	n/a		
TOTAL	200	105 123	



Geoconservation.com



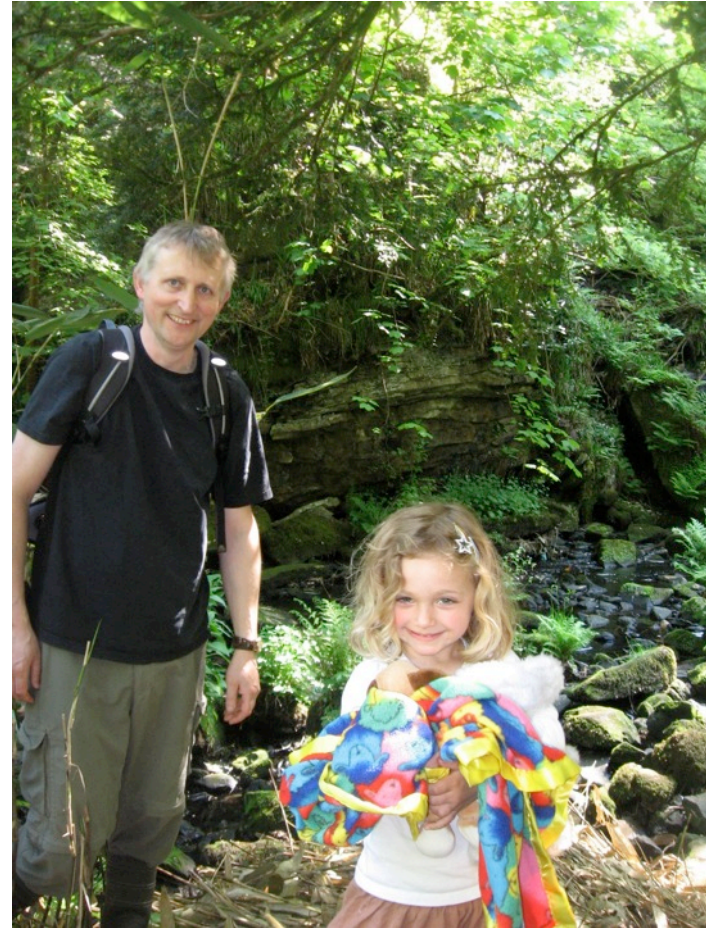
Communicating geoscience: Think geo, act local!

RIGS to be
replaced with Local
Geodiversity Sites (LGSs)

Equivalent to Local
Nature Reserves

Sites should be
accessible to communities

Generate an appreciation
of how geodiverse the
British Isles are



John Faithfull and helper
In Rouken Glen

What biodiversity/geodiversity recording is *not*

- Ecology as political lobbying.
- Hands-on conservation work
- About owning land
- Centrally controlled by government

A citizen scientist is a volunteer who collects and/or processes data as part of a scientific enquiry. Projects that involve citizen scientists are burgeoning, particularly in ecology and the environmental sciences, although the roots of citizen science go back to the very beginnings of modern science itself.

Silvertown (2010)



Rev. Gilbert White
Wrote 'The Natural History and Antiquities of Selbourne' (1789) and is widely regarded as the first modern 'local patch recorder'.

Should geodiversity sites take a listed building approach rather than a nature reserve approach?



Union Terrace Gardens



Perth City Hall

Birmingham
Central Library



Links between geodiversity & biodiversity



Geodiversity underpins

- Biodiversity
- Archaeology
- Built heritage
- Industrial heritage
- Landscape/place



NBN Gateway

Clearing house for
biodiversity data from
Local BRCs

SNH: iMap tool

Similar to NBN
Gateway but
also has information
on protected areas,
landscape character
and habitats

nbn gateway HOME LOG IN/OUT LIBRARY MY ACCOUNT HELP FEEDBACK

By using this site you are agreeing to be bound by the [Gateway Terms & Conditions](#) and our [Privacy Policy](#).

Welcome to the NBN Gateway

The **National Biodiversity Network** allows you to view distribution maps and download UK wildlife data by using a variety of interactive tools. It is completely dependent on the [data providers](#).

Use the Search engine, the Geosearching facility or the Shortcuts to create maps and view data on the Gateway.

New to the NBN Gateway? ?

GEOSEARCHING

Use this to create a species list for a 10km square.

SEARCHBOX

Type in the name of a species or a wildlife site in the UK to search the Gateway database

 ?

SHORTCUTS TO INFORMATION

- » [Datasets on the Gateway](#)
- » [Browse species lists](#)
- » [Browse Biodiversity Action Plan Species](#)
- » [Browse Species of Conservation Concern](#)
- » [Find a site report by name or map](#)

LATEST UPDATES

There are currently **27,920,319** species records available on the NBN Gateway from **229** different datasets.

Database last updated 8th October 2007

Species datasets - new:

Marine Biological Association
[MarClim UK & Ireland Rocky Shore Survey 2001 - 2005](#)

RSPB
[Distribution of bean geese on the Slamannan Plateau, Central Scotland \(RSPB/SNH/Bean Geese Action Group\)](#)
[RSPB Reserves breeding bird surveys](#)
[Black grouse surveys \(RSPB/CCW/DefraRDS/EN/FCS/GCT/JNCC/SNH\)](#)
[White-tailed eagle reintroduction in Scotland - Sightings Data \(RSPB/SNH\)](#)

The Scottish Ornithologists' Club
[South East Scotland Tetrads Atlas 1988 - 1994 - 10km public access](#)
[South East Scotland Tetrads Atlas 1988 - 1994 - full public access](#)
[Clyde Breeding Bird Tetrads Atlas 1985 - 1991 - 10km public access](#)
[Clyde Breeding Bird Tetrads Atlas 1985 - 1991 - full public access](#)
[Highland Breeding Bird Data 2002 - 2003 - 10km public access](#)
[Highland Breeding Bird Data 2002 - 2003 - full public access](#)
[Highland non-breeding bird data 2002 - 2003 - full public access](#)

Species datasets - updated:

Biological Records Centre

<http://www.searchnbn.net/>

Example from NBN Gateway: Distribution of toads

Information

This page shows a map displaying records for *Bufo bufo* recorded in the 10km grid square NT26.

If you have download access to any datasets used, the raw data is provided below.

- [How to interpret data on this page](#)
- [Why can't I see all the data?](#)
- [XML Web services for this page](#)

Download data

[Species records](#)

Map of records

Legend

- 100m
- 1km

10 km map square and information on precision of records. Highlights under-reporting/lack of records

Species data

Records for *Bufo bufo* (amphibian), in the 10km grid square NT26

Records from the dataset *Reptiles and Amphibians Dataset*

Summary of your access to the dataset *Reptiles and Amphibians Dataset*, provided by *Biological Records Centre*

Dataset Resolution	Your Resolution	Sensitive access	Download raw data	View Attributes	View Recorder
100m	Full	✗	✓	✓	✓

Site name	Gridref	Date Recorded	Date Accuracy	Sensitive	Recorder	Determiner	SPECIES	VICECOUNTY
Mortenhall Golf Course	NT2569	1980	Year	N	Brown, E.R.	Unknown	0401 201	Midlothian (Edinburgh)
STRAITON	NT200667	1988	Year	N	Mary Swan's amphibian records	Unknown	0401 201	Midlothian (Edinburgh)

By using this site you accept to be bound by the GATEWAY TERMS & CONDITIONS and our PRIVACY POLICY

Developed for National Biodiversity Network by CEH and JNCC.

Individual record information

Local biological/environmental records centres

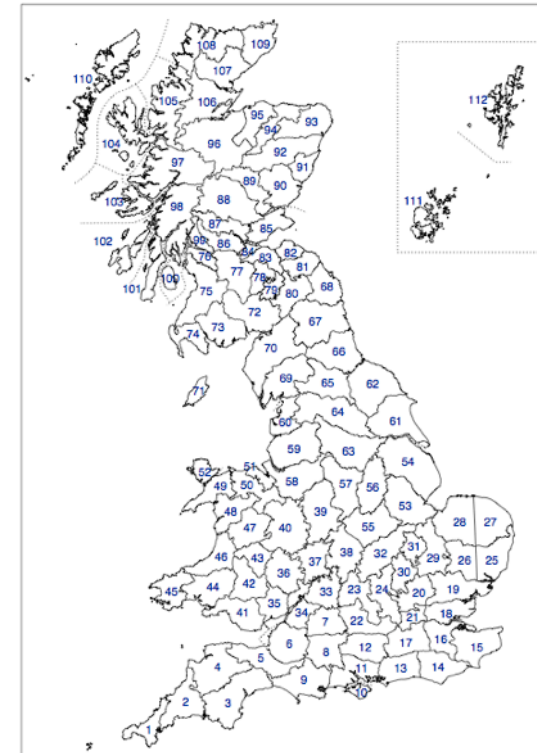
Network of localized computer archiving centres throughout the UK. (<http://www.alerc.org.uk/>)

Some central co-ordination from CEH Wallingford (Oxfordshire)

(<http://www.brc.ac.uk/>)

Lothian and Borders
now covered by new
joint BRC based at
Vogrie Country Park

(<http://www.wildlifeinformation.co.uk/>)

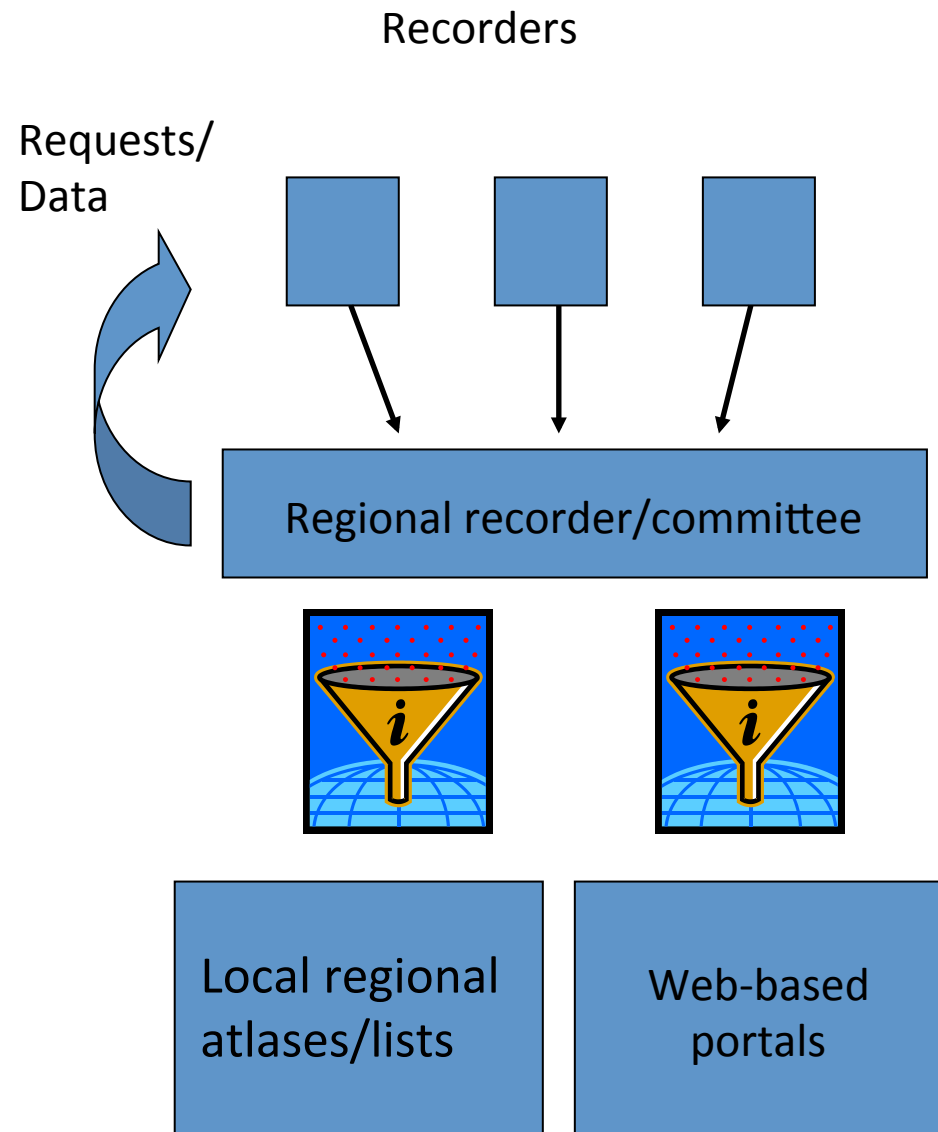


How local recording schemes work

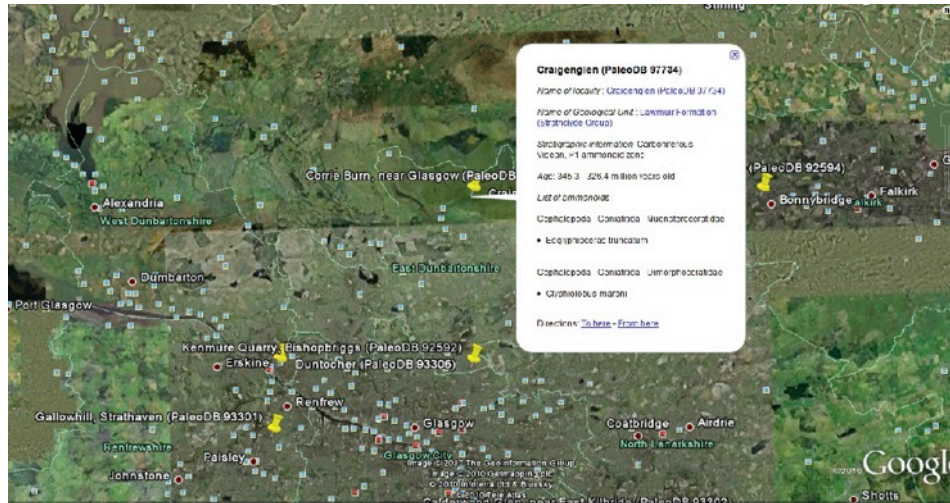
Some schemes will have a local or regional recorder or records committee. Other schemes now harvest data from online databases

They will vet and clean records up and query unusual sightings. Will organize archiving of data (another way to volunteer)

Publish and share data through print publications and online for public use. However, individual recorders still own their records and are acknowledged.



Web 2.0, mash-ups and mobiles



Geobrowsers

QR technology for mobiles

Only MakkaMappa can show your current location on **any** map image.

1. On the website...		2. On the phone...	
Your map. Upload ANY map to MakkaMappa for FREE.	Your information. Add exactly the information you want onto the map.	Our app. Download the map to your phone and share with others.	On location. Current location is shown on the map with access to your information.
