Animal Diversity Web

Phil Myers

University of Michigan

Museum of Zoology

Active, inquiry-based learning most effectively improves scientific literacy:

Manduca and Mogk. 2002. *Using data in undergraduate science classrooms*. **Final report on an interdisciplinary workshop sponsored by the National Science Digital Library at Carleton College.**

National Research Council. 1996, *National Science Education Standards*. **Washington, D.C.: National Academy Press.**

National Science Foundation. 1996, *Shaping the Future: New Expectations for Undergraduate Education in Science, Mathematics, Engineering and Technology*. **(NSF 96-139). Arlington, VA: National Science Foundation.**

Hands-on inquiry has limitations:
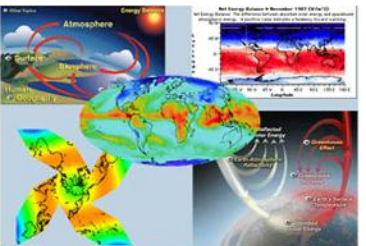
1) Resulting data sets are often small and lack breadth across time or ta

2) Data collection can be logistically difficult to implement.

GEODE INITIATIVE

Geographic Data in Education

The Geographic Data in Education (GEODE) Initiative is dedicated to the improvement of Earth and environmental science education through the use of data visualization and analysis tools to support inquiry-based pedagogy. Through an integrated program of research and development, the GEODE Initiative is advancing our understanding of learning in the Earth and environmental sciences, design of curriculum and educational software, and teacher professional development. Equally important, the GEODE Initiative is creating useful and useable products for students and teachers at levels ranging from middle school through college.
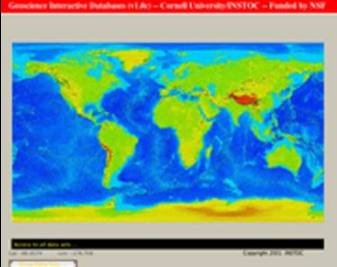
Project Overview
Curriculum
Software
Research and Publications
Conferences and Presentations
Recognition
Who We Are

Discover Our Earth

Welcome

Student

Teacher

Web Tools

San Diego Supercomputer Center, Geoinformatics Lab

NSF DLESE NSDL

If you are using Discover Our Earth in an educational environment, please tell us about it.

Unidata

Providing data, tools, and community leadership for enhanced Earth-system education and research

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CommunityCorner
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ToolBox
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· Search

DisplayAnalysis
· GEMPAK
· McIDAS
· IDV

DataAccess
· LDM
· THREDDS
· OPeNDAP/DODS

THREDDS THREDDS

The THREDDS (Thematic Realtime Environmental Distributed Data Services) project is developing middleware to bridge the gap between data providers and data users. The goal is to simplify the discovery and use of scientific data and to allow scientific publications and educational materials to reference scientific data.

The mission of THREDDS is for students, educators and researchers to publish, contribute, find, and interact with data relating to the Earth system in a convenient, effective, and integrated fashion. Just as the World Wide Web and digital-library technologies have simplified the process of publishing and accessing multimedia documents, THREDDS is building infrastructure needed for publishing and accessing scientific data in a similarly convenient fashion.

What's New?

· 9 March 2005 - Version 0.3.1 of NcML-G and NcML-Gml is now available. The NcML GIS extensions have been developed to facilitate interoperability between the earth sciences and the GIS communities.
· 2004/11/30 - THREDDS Catalog Generator version 0.9 released.

Getting Started

· THREDDS server software
· THREDDS Toolset - Data Viewer
· THREDDS Java Client Libraries
· THREDDS Catalog Generator

Computers in Chemistry at Cabrillo College

C4 WebMO Consortium

C4's Consortium WebMO Pro Implementation
Login portal for C4 Consortium Members.

Molecular Library 2.0
A set of over 400 molecular models, plus three Java-enhanced viewers: the MonoViewer, DuoViewer, and MacroViewer. The old version is still available as well.

A Chime Tutorial
How to use Chime, a Netscape plug-in which renders molecular structures within a web browser. Includes problem set.

Chime Student Exercises
Sets of chemistry problems incorporating Chime models. Assigned as student homework in 5 different undergraduate courses.

Insulin: Structure of a Protein Hormone
A Chime-based tutorial examining the structure of the protein insulin.

Chime Toolbox
A package of Java applets for educational developers to use in making their own Chime web pages. Includes online documentation and examples!

Download C4 Software
You can download our completed tutorials or other projects here, for use offline.

About the C4 Project
We are developing visualization and instructional software for chemistry instructors and students.

Chime Help Center
How to get set up with Chime and a compatible browser.

EthoBank

EthoSource: Storing, Sharing, & Combining Behavioral Data

- EthoBank Home
- About Us
- Contribute
- Search
- Analyze
- For Kids
- Related Links

EthoBank is a public repository for animal behavior data. It is part of EthoSource, a global initiative to store, share, and combine behavioral information.

See the links to the left for further information.

EthoBank was created with help from:

Home | About Us | Contribute | Search | Analyze | For Kids | Related Links

ECO INFO

ecoinformatics.org

- home
- projects
- tools
- services
- charter
- jobs

Online Resource for Managing Ecological Data and Information

Ecoinformatics.org is an open, voluntary collaboration of developers and researchers that aims to produce software, systems, publications, and services that are beneficial to the ecological and environmental sciences.

Sub-projects are created and supported by ecoinformatics.org in order to build an active community that is developing informatics solutions for the ecological and environmental sciences. See our **Charter** for details. Subscribe to mailing list

Lifemapper

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Biodiversity
Research
Center
University of Kansas

- Home
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- + How Lifemapper Works

Welcome to Lifemapper

Lifemapper uses the Internet and leading-edge information technology to retrieve records of millions of plants and animals in the world's natural history museums. Lifemapper analyzes the data, computes the ecological profile of each species, maps where the species has been found and predicts where each species could potentially live.

...ad! Make a Lifemapper map!

...search that developed Lifemapper was supported by the ...al Science Foundation, the US government agency that ...s all basic research and education in non-medical science.

Lifemapper's results be used?

Mammal Networked Information System — MaNIS

With support from the National Science Foundation, seventeen North American institutions and their collaborators developed the Mammal Networked ...combined specimen data from a web browser, 2) enhance the ...m that can be easily adopted by other disciplines with similar ...the need for long-term, external maintenance of the network

...d internationally, that the real impact of this collaborative effort ...join have at their disposal the data standards, software and ...s that they make the same institutional commitment as the ...and make the accompanying data available for the benefit of

...tory museums to come together to build and support a ...ation, and public health. That call has now been answered. It ...le use of biodiversity in all its complexity as we attempt to ...century.

...| Gazetteer | Join MaNIS

NCBI — National Center for Biotechnology Information

National Library of Medicine — National Institutes of Health

PubMed | All Databases | BLAST | OMIM | Books | TaxBrowser | Structure

Search All Databases ___ for ___ Go

- SITE MAP — Alphabetical List
- Resource Guide
- About NCBI — An introduction to NCBI
- GenBank — Sequence submission support and software
- Literature databases — PubMed, OMIM, Books, and PubMed Central
- Molecular databases — Sequences, structures, and taxonomy
- Genomic biology — The human genome, whole genomes, and related resources
- Tools — Data mining

What does NCBI do?

Established in 1988 as a national resource for molecular biology information, NCBI creates public databases, conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information - all for the better understanding of molecular processes affecting human health and disease. More...

100 Gigabases

GenBank and its collaborating databases, the European Molecular Biology Laboratory and the DNA Databank of Japan, have reached a milestone of 100 billion bases from over 165,000 organisms. See the press release or find more information on GenBank.

Entrez Gene

You can now use Entrez to search for information centered on the concept of a gene, and connect to many sources of related information both within and outside NCBI.

PubMed Central

An archive of life sciences journals

Hot Spots
- Assembly Archive
- Clusters of orthologous groups
- Coffee Break, Genes & Disease, NCBI Handbook
- Electronic PCR
- Entrez Home
- Entrez Tools
- Gene expression omnibus (GEO)
- Human genome resources
- Malaria genetics & genomics
- Map Viewer
- dbMHC
- Mouse genome resources
- My NCBI

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Collection Highlights
◀ Sound

© Peter R. Stettenheim/CLO
Barred Owl (Strix varia)
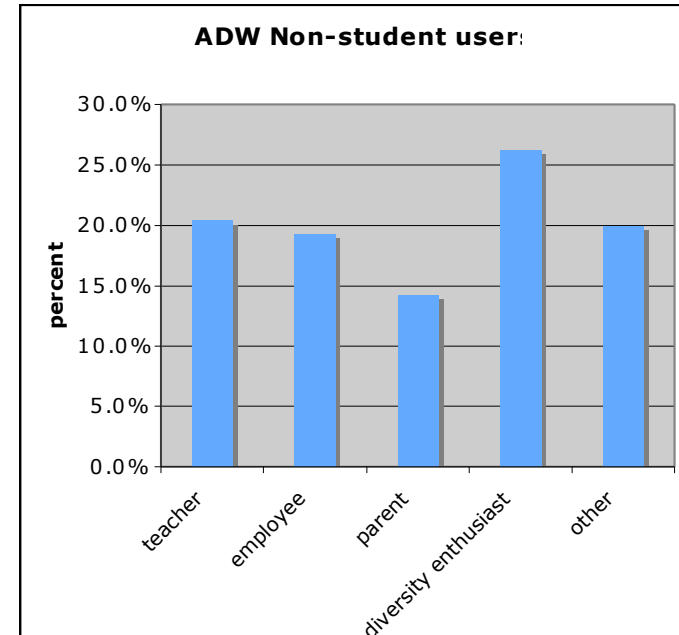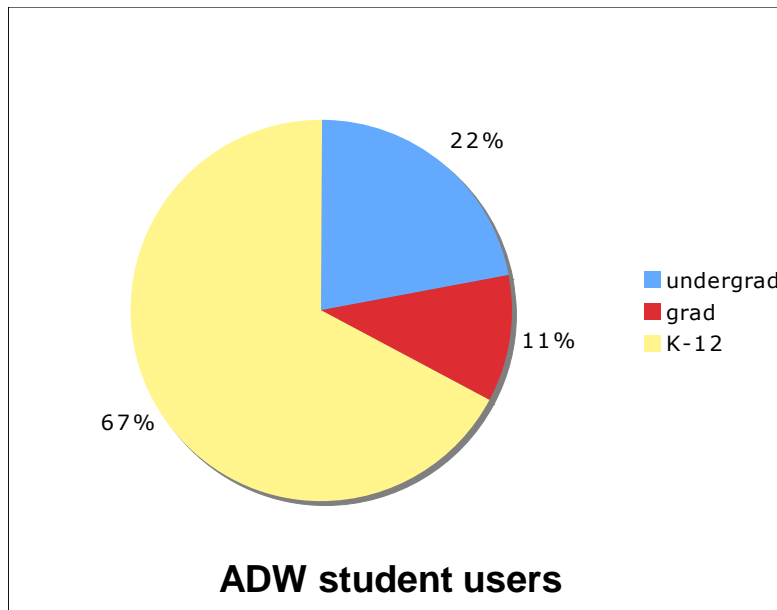
Real Player

◀ Video

▼ Featured

What is ADW?

- Database driven content
  - 3200 species accounts (about half are mammals)
  - 16222 pictures
  - 2804 "specimen" images
  - 724 sounds
- BioKIDS spin-off site
- Structured query tool (Quaardvark)

Who uses it?

- Target audience: written (primarily) by college students for college students
- Actual audience: all ages, worldwide
- September 2010 stats: ~2.2 million pages; ~425,000 visits; 200 countries (varies with academic calendar, peaks around 5 million pages/month)
- User Survey (2005): 70% students

ADW student users

Legend:
- undergrad
- grad
- K-12

22% / 11% / 67%

ADW Non-student users

(teacher, employee, parent, diversity enthusiast, other)

Formal Educational Uses

- General resource
- Writing species accounts
- Alternative textbook
  - E.g. mammal special topics
- Inquiry with quaardvark

Who contributes?

- Species accounts from 42 classes at 35 universities
- At least 2475 individual authors (mostly students)
- More than 200 photographers

Student-Written Accounts by Yea
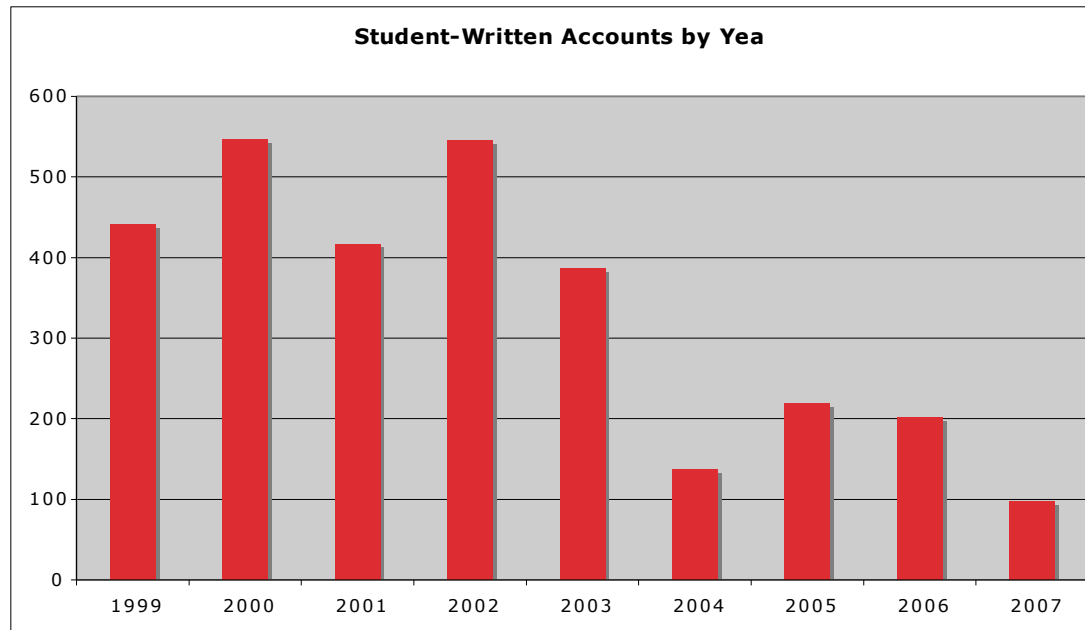
help

Contact adv.fall.2005@umich.edu for help using the site or account template.

status

Coughlin, Megan
University of Michigan - EEB
440/ENVIRON 422/NRE 422
megano@umich.edu

State
submitted

Identification
Helostoma temmincki: found

There has been no discussion.

markup

For latin names:
`<<Lama glama>>`

To link to a latin name:
`'llamas <<Lama glama>>'`

To link to a URL:
`'Birds and yards <http://audubon.org/yard.html>'`

In the examples above, that's a **back quote**

Species Helostoma temmincki

Discuss

Class: Actinopterygii

(?) Geographic Range

Helostoma temmincki, also known as the kissing gourami, is naturally found in the Oriental region of the world, in Southeast Asia from Thailand to Indonesia. It has also been introduced into the Neotropical region.

Edit

advanced observations
Christensen, 1992

Biogeographic Regions: 🔍 Oriental (🔍 Native); 🔍 Neotropical (🔍 Introduced).

Other Geographic Terms:

(?) Habitat

Helostoma temmincki is a freshwater fish which prefers the sluggish or standing water of tropical lakes, canals, swamps, and ponds. Generally the water temperature is between 22-30°C. During the rainy season they migrate through rivers to shallow lakes and floodplains to spawn. They are usually found near the surface of the water because of their ability to breathe air.

Edit

Christensen, 1992; Rainboth, 1996

Elevation:

Depth:

These animals are found in the following types of habitat: 🔍 Tropical; 🔍 Freshwater.

(?) Food Habits

Use this text box to describe what these animals eat. If there are special structures or adaptations for feeding, describe them. Try to use summarizing terms like "insectivore," "frugivore," "omnivore," etc., but also describe the foods used in more detail. If your animal is a dietary generalist, provide some specific examples of foods eaten identified by scientific name. If your animal is a dietary specialist, provide a complete list of foods eaten by scientific name. Surround the scientific names of animals with `<<>>` (for example: `<<Canis rufus>>`) so that the name acts as a direct link to information on that animal.

The kissing gourami is omnivorous, eating almost everything. It is the most highly specialized freshwater filter-feeder of Southeast Asia with very intricate gill rakers. It feeds on phytoplankton, zooplankton, and aquatic insects, supplemented by plant material. When it is rasping algae off of a surface is when it most frequently shows the "kissing" behavior.

☑ Advanced ☑ Intermediate

Please check the applicable references:
- ☐ Axelrod et al., 1971
- ☐ Christensen, 1992
- ☐ Davis, 1959
- ☐ Edwards, Little, and Yakupitiyage, 1997
- ☐ Garant, 1969
- ☐ Ladich and Yan, 1998

Breeding/spawning season

Indicate the time of year (span of months, for instance) in which fertilization occurs, and, if appropriate, spawning and/or nesting. This does not necessarily include pair formation (that goes in 'Mating Behavior...').

The breeding season is the beginning of the rainy season (May)

☑ Advanced ☑ Intermediate

Use the fields provided to include information on number of offspring, time to hatching, time to independence, time to fledging, age at sexual maturity, etc. Be sure to select the correct units for those measurements. Also describe these values in the Reproductive Behavior text box (above). Enter the typical lower and typical highest values as they are reported in the literature, only enter an average value if it is identified as an average in the literature (for example: average time to hatching is 12 days). Try to be as complete as possible in filling out this information and checking all keywords that apply to these animals.

Number of offspring

Low:	900
High:	1900
Average:	1000

Time to hatching

Low:	1
High:	2
Average:	1
Units:	days ▼

Time to independence

Low:	
High:	
Average:	3
Units:	days ▼

Key behaviors
- ☐ arboreal (lives in trees) 🔍
- ☐ scansorial (specialized for climbing in trees)
- ☐ cursorial (specialized for running)
- ☐ terricolous (lives on the ground)
- ☐ fossorial (specialized for burrowing under ground) 🔍
- ☐ troglophilic (breeds and thrives in caves)
- ☐ flies
- ☐ glides
- ☐ saltatorial (specialized for jumping and hopping) 🔍
- ☑ natatorial (specialized for swimming) 🔍
- ☐ diurnal (active during the day) 🔍
- ☐ nocturnal (active at night) 🔍
- ☐ crepuscular (active at dusk and dawn) 🔍
- ☐ parasite 🔍
- ☑ motile (able to move around) 🔍
- ☐ nomadic (moves throughout a large range year-round) 🔍
- ☑ migratory (moves seasonally between different regions) 🔍
- ☐ sedentary (mainly stays in one general area) 🔍
- ☐ hibernation (inactive during the winter) 🔍
- ☐ aestivation (dormant during hot weather or times of little food)
- ☐ daily topor (dormant for a part of each day)
- ☐ solitary 🔍
- ☐ territorial (area defended by an animal or group) 🔍
- ☐ social (lives mainly in a group) 🔍
- ☐ colonial (lives in large groups) 🔍
- ☐ dominance hierarchies 🔍

Species (or larger taxonomic groups) used as hosts by this species

☑ Advanced ☑ Intermediate

Add Data Field

Species (or larger taxonomic groups) that are mutualists with this species

☑ Advanced ☑ Intermediate

Add Data Field

Commensal or parasitic species (or larger taxonomic groups) that use this species as a host
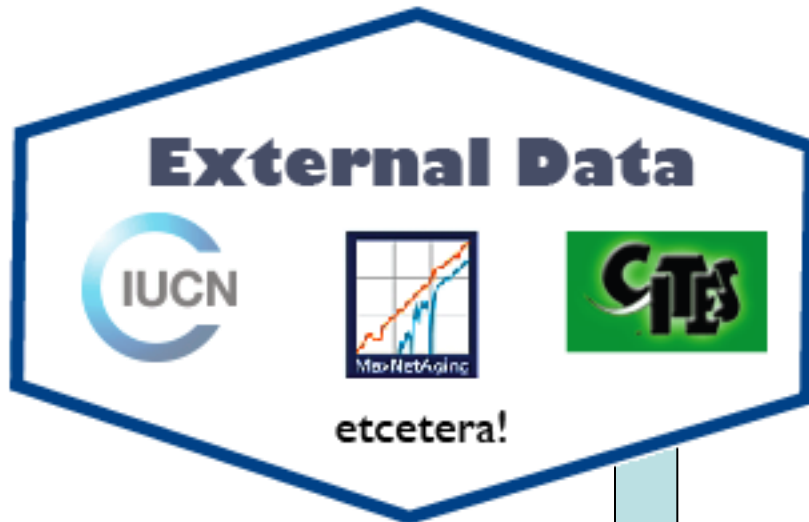
<<Stigeoclonium>>, Chlorococcales

☑ Advanced ☑ Intermediate

☑ Advanced ☑ Intermediate

Add Data Field

Structured data from
the template combine
with external sources,

identification | references | view | edit

Species Ursus arctos

External Data

IUCN

MaxNetAging

CITES

etcetera!

Edit Species Taxon Account | Discuss Species Taxon Account

? Geographic Range

Describe the limits of the range. For migratory species describe which parts of the range this species occupies for which parts of the year. Indicate both native and introduced ranges.

Use the world map of geographic ranges to help you find the appropriate world regions.

<<Ursus arctos>> once ranged throughout northern and central Europe, Asia, the Atlas mountains of Morocco and Algeria, and western North America as far south as Mexico. They are now found in extremely small numbers from western Europe and Palestine to eastern Siberia and the Himalayan region, possibly the Atlas Mountains of northwest Africa, and Hokkaido. Northern North American populations in Alaska and western Canada remain fairly stable. Many populations in the United States have been extirpated, including those of the Sierra Nevada and southern Rockies. Northern Mexican populations were extirpated in the 1960's.

☑ Advanced ☐ Intermediate

Please check the applicable references:

☑ Wilson and Ruff, 1999

resulting in…

…a species account on ADW!

And now, through collaboration with EOL…

…it also appears on EoL.

What do students get?

(beyond the obvious international exposure and worldwide acclaim)

- Research and writing skills
  - practice effective writing
  - experience evaluating sources and citing them
- Deeper understanding of course concepts through application
  - learn natural history terminology
  - learn about conservation lists
  - learn about specific animals
- Publication on the Web

A means of making museum resources available for teaching and research

September EOL Usage Stats

- EOL has 1,185,647 species pages
- 2554 (0.22%) have ADW content
- 52678 species viewed in September; 1824 (3.46%) with ADW content
- Visitors spent 65.6 hours on these 1824 pages, more than 8% of the total time spent on EOL

- (disproportionately high usage of pages with ADW content relative to entire site)

We're looking for a few good collaborators.

contact: adw.staff@umich.edu