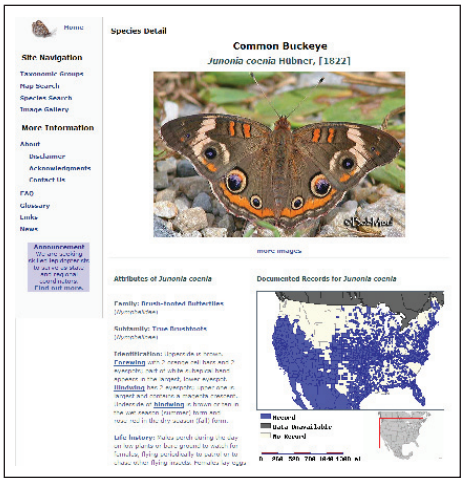
Butterflies and Moths of North America (BAMONA)

Successful butterfly and moth management and conservation efforts are limited by access to distribution data.

Importance of Pollinators

Pollinators play a crucial role in sustaining agricultural production and biodiversity around the world by enabling plants to reproduce. Bees, bats, birds, butterflies, moths, and many other species perform these economic and ecological functions every day.

Unfortunately, many butterfly and moth species have been declining, partially due to the loss of habitat, including migratory and nectar corridors. Attempts to reverse this trend are underway, but successful butterfly and moth management and conservation efforts are limited by access to distribution data and other important information. Information about habitat requirements of even the most common species are scattered in published literature or limited to generalized distribution maps available in paper field guides.



Species detail pages include images, distribution maps, and other information.

Providing Access to Butterfly and Moth Data

Butterflies and Moths of North America (BAMONA) www.butterfliesandmoths.org is a user-friendly database that contains the most comprehensive online distribution record of butterfly and moth species available for this region. More than 275,000 records and nearly 4,500 species accounts are accessible via the Web site through dynamic distribution maps, checklists, and species accounts that are generated in "real time," offering users the most up-to-date information with each visit.

The data-rich Web site was unveiled by the National Biological Information Infrastructure (NBII) Mountain Prairie Information Node (MPIN) http://mpin.nbii.gov and the Big Sky Institute (BSI) at Montana State University http://bsi.montana.edu in June 2006. BAMONA has since drawn rave reviews from professional lepidopterists to backyard bug-catchers and has attracted up to 115,000 visits and more than 1.1 million page views per month.

Pipevine swallowtail (Battus philenor)

Regal fritillary (Speyeria idalia) *feeding on knapweed flowers* (Centaurea spp.)

Features

- **Dynamic distribution maps** showing verified species occurrences;
- **Species checklists** for each county in the United States and each state in Mexico;
- **Species accounts** that describe size, identifying characteristics, life history, flight, caterpillar hosts, adult food, habitat, species range, conservation status, and management needs;
- **Photographs** of more than 3,000 adults and caterpillars;
- A **glossary** that defines entomological terms utilized in species accounts; and
- **Links** to other regional butterfly and moth distributions.

Data Collection

BAMONA data come from a variety of sources, including museum and personal collections, field

observations, literature, and citizen scientists. The BAMONA database incorporates data and photographs collected by the U.S. Geological Survey Northern Prairie Wildlife Research Center (NPWRC) www.npwrc.usgs.gov from 1995-2005.

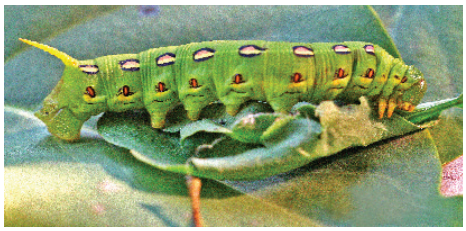
Today, partnerships between nearly fifty volunteer regional coordinators and BSI are central to the ongoing data collection effort, especially for data submitted by the public. Led by renowned lepidopterist Dr. Paul A. Opler, these regional coordinators provide valuable quality control for data collection by reviewing the required photograph submissions and by verifying species occurrence data and identification.

Standardized data collection methods lay the groundwork for future capabilities. Pertinent metadata such as date, specific location details and geographic coordinates, source, and species status are collected for each new record, where available.

Since the BAMONA site was launched, over 80,000 new butterfly and moth records have been added to the database. More than 1,000 high quality photographs taken by amateur and professional photographers have also been added to species pages and image galleries.

Partners

BAMONA is a collaboration between MPIN, the NBII Pollinators Project



Larvae of the white-lined sphinx moth (Hyles lineata)

Imperial moth (Eacles imperialis)

Hummingbird clearwing moth (Hemaris thysbe) *feeding on milkweed flowers* (Asclepias spp.)

http://pollinators.nbii.gov, the BSI Ecological Informatics Lab, and the NPWRC.

The BAMONA database was built upon a foundation developed by the NPWRC, which hosted two distinct sites on butterflies and moths until forming a partnership with BSI and the NBII to update the technology and to make the data more accessible.

The NBII www.nbii.gov is a collaborative program to provide increased access to data and information on the nation's biological resources. MPIN is one of nine regional NBII nodes that coordinate and serve biological data and information specific to a region of the United States. The NBII Pollinators Project provides access to information to support monitoring, management, and conservation of pollinators, pollinator-dependent species, and pollinator habitats.

The BSI Ecological Informatics Lab is MPIN's primary partner, with a comprehensive goal of making ecological data more useful to society by bringing together natural sciences, geographic information systems, statistics, modeling, information technology, and computational programming.

Future

BAMONA was developed to ensure the ongoing availability of key distribution data. In 2010, the project will take a big leap when BSI launches a new version of the Web site, which will include Canadian data, maps displaying point data and recent submissions, and a new online submission/review process. A new Web mapping service (WMS) will allow researchers to integrate BAMONA data into mapping and modeling software. Long-term priorities include data download capabilities; improved identification tools; and incorporation of data from The Lepidopterists' Society and other new partners, with particular emphasis on Canadian data. Partnerships with state coordinators, scientists, volunteers, photographers, and database managers are central to this endeavor, and MPIN and BSI are eager to explore additional ways to continue this important work. If you are interested in participating, please contact the BAMONA team.

For More Information

Jennifer Carlino
MPIN Manager
Phone: 303-202-4260
E-mail: jcarlino@usgs.gov

Kelly Lotts
BAMONA Project Coordinator
Montana State University
Phone: 360-305-8822
E-mail: lotts@montana.edu

Elizabeth Sellers
Pollinators Project Manager
Phone: 703-648-4385
E-mail: esellers@usgs.gov

Find us on the Web at www.butterfliesandmoths.org.

mpin

MONTANA STATE UNIVERSITY
BIG SKY INSTITUTE

NPWRC

nbii
National Biological Information Infrastructure

USGS
science for a changing world