NBII Pacific Basin Information Node

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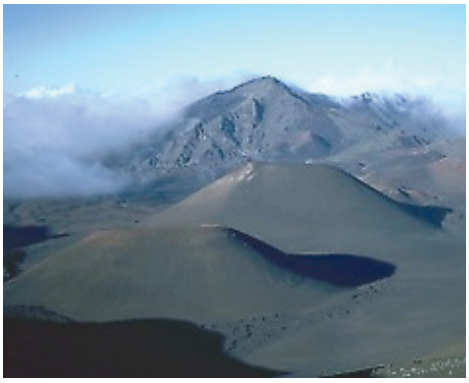
Background

The National Biological Information Infrastructure (NBII) <www.nbii. gov> is an electronic information network that provides access to biological data and information on our nation's plants, animals, and ecosystems. Data and information maintained by federal, state, and local government agencies; non-governmental organizations; and private sector organizations are linked through the NBII gateway and made accessible to a variety of audiences including researchers, natural resource managers, decision-makers, educators, students, and other private citizens.

Implementation of the NBII is being accomplished through the development of nodes that serve as interconnected entry points to the NBII and the information held by partners. These nodes function as fully digital, distributed, and interactive systems that focus on developing, acquiring, and managing content on a defined subject area (thematic nodes) or a geographic area (regional nodes). One of the regional nodes being developed is the Pacific Basin Information Node (PBIN).

The Node

PBIN is an information system that provides access to data and computer applications related to Pacific Island biodiversity. It is a cooperative venture including federal, state, public, and private organizations. These organizations have joined together in hopes of having a lasting impact on the biodiversity of tropical and subtropical islands by providing well-organized, authoritative, and timely information to educate, enable scientific progress, and address questions related to biodiversity conservation. A complete description of the node can be found at <http://pbin.nbii.org/about/index.html>.



Haleakala Crater, Maui, Hawaii

PBIN is important to Hawaii because it provides access to information that can help address current threats to island biodiversity. The Hawaiian Islands are the most isolated islands on Earth. They contain nearly all of the Earth's climates within a very small landmass. This rare setting enabled the evolution of unique, specialized, and sometimes highly vulnerable biota. Today, however, rapid transportation and a global economy have significantly reduced the isolation by providing a mechanism (airplane or ship) for species to move around the globe. Once a new species arrives in Hawaii it may find a suitable habitat and become established. These "alien" species either exist with endemic island biota or compete with the biota driving the endemic species to extinction. The presence of alien species can also have detrimental effects on entire island ecosystems. Understanding aliens, their potential impacts, and deciding on correct management actions, requires improved access to data and applications for data analysis and forecasting, primary goals of PBIN.

Integrating Data

PBIN will help integrate the vast amounts of data by addressing two basic questions of science. What is it? And where is it? The answers to these two questions form the foundation for scientific advancement and decision-making and are also important attributes for linking biological and environmental data. As an example, the attribute called species name labels the organism and can be used to locate data relevant to that organism. A good analogy is a person's name. A person's name identifies who a person is and serves as a link to specific facts about that person, such as age or weight. PBIN has begun ITIS Pacific, a species name authority (or standard) for organisms inhabiting Pacific Islands. It will provide names for Pacific organisms and link to the emerging global system for species names.

Hawaiian Coral Reef

Ohia Lehua Tree

Location

The second key element is geographic location. Like the example of name given above, location can link data that are associated with a specific place. As an example, if a plant grows in a specific location it is easy to identify important environmental characteristics, such as climate or soil preferences for that plant. Armed with such information a resource manager may be able to determine whether an "alien" species is a potential threat. Efforts to access and standardize existing data have begun and a common methodology for collecting, reporting, and storing the data is being developed. The goal is common data formats that allow for easier data discovery and application.

Hawaii Waterfall

Early Products

Early data products and organizational structure have evolved as PBIN has grown. A collaboration has been formed (see Partners) as well as a strategic direction identified <http://pbin.nbii.org/strategicplan/index.html>. A framework was developed for including collaboration with other Pacific Island nations to increase the scope and enhance PBIN's utility.

An Internet site has been developed to provide one location for access to information about Hawaii and other Pacific Islands. It includes a listing of over 23,000 Hawaiian species; an extensive collection of information on invasive species including a weed risk assessment tool and a risk assessment for the red imported fire ants on Pacific Islands; and an Internet mapping capability. Two additional applications will soon be available: a decision support system for the importation of birds; and a system for reporting snake sightings. Modeling efforts to understand the impact and behavior or alien avian disease on Hawaii bird populations have also begun.

Looking to the Future

Partnerships with island nations will be expanded to improve the scope of PBIN. Two new themes, avian conservation and the marine environment, will also be added. PBIN will join in the "All Species Maui" project. The project will use PBIN data to develop analysis tools to identify and efficiently sample biodiversity hot spots. The goal is to identify all species that inhabit Maui with the least expenditure of funds. This project will serve as a pilot for other islands, yield new techniques for modeling biodiversity, and will provide data valuable for understanding and managing biodiversity.

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Hawaiian Anianiau Honeycreeper

Partners

Non-Governmental and Educational Organizations

Bishop Museum
The Nature Conservancy of Hawaii
County Invasive Species Committees
University of Hawaii (HI)

- HI Natural Heritage Program
- Maui High Performance Computing Center
- Center for Research and Conservation Training

State/Federal Agencies

- HI Dept. of Land and Natural Resources
- HI Dept. of Agriculture
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- U.S. Geological Survey

International Organizations

- Invasive Species Specialist Group, World Conservation Union
- Global Invasive Species Program

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