



Biodiversity Information Serving Our Nation (BISON)

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Biodiversity Information Serving Our Nation (BISON)

A national unified resource for discovery and
access to biological occurrences of species
found in the United States

<http://bison.usgs.ornl.gov>



Background

- **Developed by U.S. Geological Survey**
 - Core Science Analytics, Synthesis & Libraries (CSAS&L)
- **Repository of documented species occurrences (who, what, where, when) in the U.S.**
- **Based on datasets from multiple sources**
 - U.S. datasets incorporated via BISON
 - U.S. records of datasets from the Global Biodiversity Information Facility (GBIF)
 - iDigBio data will be incorporated into BISON from GBIF

Data in BISON

- Species occurrence records for U.S. & Territories
- Various taxonomic groups (animals, plants, fungi)
- Various data types: observation-based data, specimen-based data, literature-based data
- Focus on terrestrial and aquatic species
- Federal and non-federal data

Currently +168 M records in BISON

Current Emphases for New Data

Organizations

1. USGS data (science centers, mission area programs, etc.)
2. Other DOI bureaus (FWS, NPS, etc.) data
3. Other Federal agencies data

Themes

- Non-native species
- Pollinators



Photo: *Ailanthus altissima*
Hansen and Roberts, BISON





Photo: *Bombus fervidus*
Diane Wilson, Discover Life

BISON & Other Federal National Initiatives

- **EcoINFORMA -**
Ecoinformatics-based Open Resources and Machine Accessibility initiative
 - **Scheduled public release: December 2014**
 - Biodiversity, ecosystems, and ecosystem services data
 - To facilitate communities of practice via Resource Hubs
 - **Biodiversity Resource Hub of EcoINFORMA: BISON**
- **Federal natural history collections**
 - *Interagency Working Group on Scientific Collections (IWGSC)*
 - BISON provides species occurrence data from federal specimen-based collections

BISON Web Portal – New Look

USGS Home
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Search USGS

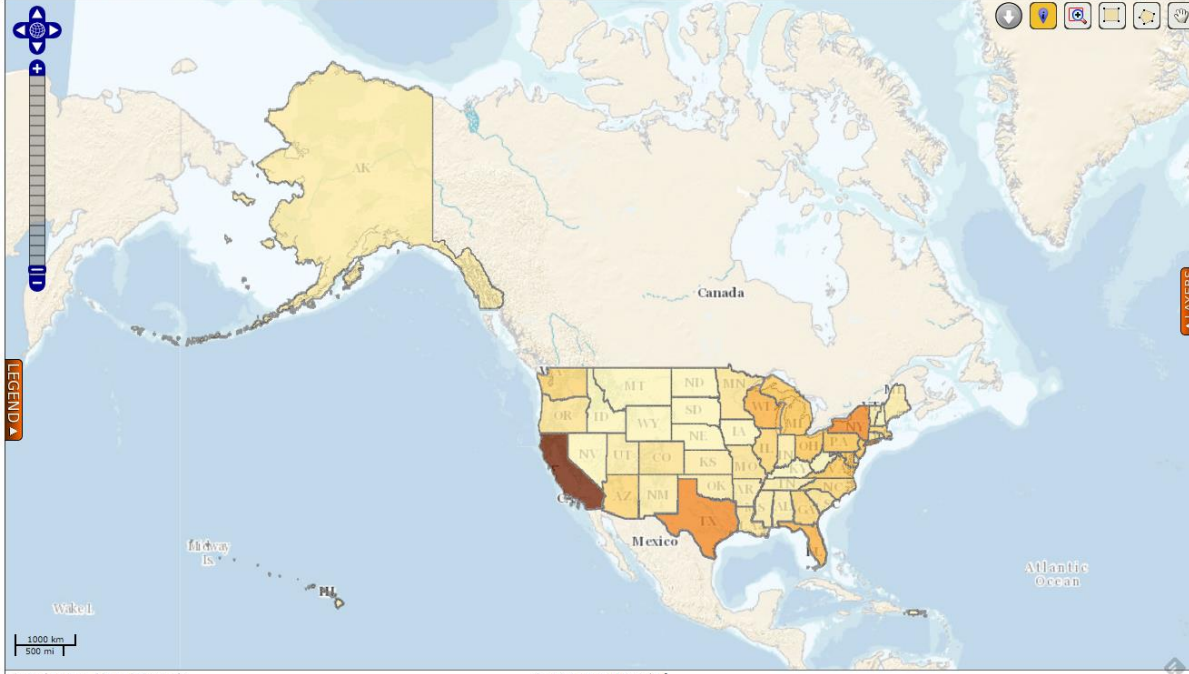
Biodiversity Information Serving Our Nation (BISON) - Explore & download U.S. species occurrence data & maps

Home About Data Providers Statistics API Examples Blog Help

:

Found **168,063,755** matches for *all species* using ITIS taxonomy

Refine Your Search



Search time: 29.156 seconds Current Zoom Level: 1

BISON Statistics

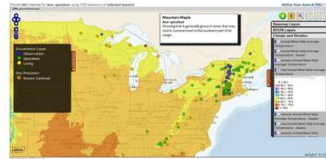
Total Records: 168,063,755
Georeferenced: 159,522,477
Taxa: 354,701
Data Providers: 314
Resources: 1,384

Updated: August 27, 2014

New Checklist Feature Available (September, 2014)



A new Checklist capability is now available (above the map's upper right corner) for any taxonomic or geographic area-based search. The Checklist can be used to generate a unique list of species scientific names for a specific location such as a wildlife refuge, park, or lake.

[More...](#)



Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey
URL: <http://bison.usgs.gov>
Page Contact Information: [Ask the USGS BISON Team](#)
Page Last Modified: Wednesday, October 15, 2014



New Feature: ITIS Integration

- Taxonomic data from the Integrated Taxonomic Information System (ITIS) now included in BISON
- Integration allows searches by taxonomic groups (e.g. Salmonidae, Amphibia)
- Results from ITIS-enabled BISON searches now include synonyms

ITIS Integration - Example

The screenshot displays the USGS BISON website interface. At the top, the USGS logo is on the left, and navigation links for 'USGS Home', 'Contact USGS', and 'Search USGS' are on the right. Below the header, a navigation bar includes 'Home', 'About', 'Data Providers', 'Statistics', 'API', 'Examples', 'Blog', and 'Help'. A search bar is set to 'ITIS Enabled Search by Scientific Name' with 'Morus' entered. Search and Reset buttons are present. Below the search bar, it states 'Found 168,063,755 matches for all species using ITIS taxonomy'. A map of the United States is shown with Alaska highlighted in yellow. A modal dialog box is overlaid on the map, containing the following text:

Please select a species name from the list below to proceed with your search.

- Kingdom Animalia**
 - [Morus](#) Vieillot, 1816 – valid
- Kingdom Plantae**
 - [Morus](#) L. – accepted

For more information on scientific names please refer to the [Integrated Taxonomic Information System \(ITIS\)](#).

The map also includes a legend, a scale bar (1000 km / 500 mi), and coordinates (Lat: -115.83413 Long: 72.75894).

New Feature: Checklist

- *Checklist* provides unique list of species scientific names for a specific location
 - Organized by Kingdom

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Home About Data Providers Statistics API Examples Blog Help

ITIS Enabled Search by Scientific Name Search Reset

Found 7,183 matches for *Reptilia* using ITIS taxonomy in Alachua County [Show all counties | all states] Refine Your Search Map Checklist

7,183 georeferenced

Kingdom	Count
Animalia	7183
ITIS Scientific Name	Count
Agkistrodon contortrix	2
Agkistrodon contortrix contortrix	1
Agkistrodon piscivorus	98
Agkistrodon piscivorus conanti	5
Agkistrodon piscivorus piscivorus	2
Alligator mississippiensis	131
Amphisbaenidae	1
Anolis carolinensis	165
Apalone ferox	131
Apalone mutica	1
Boa constrictor	2
Boidae	1
Caretta caretta	8
Carphophis amoenus	1
Cemophora coccinea	60
Cemophora coccinea coccinea	1

Found 7,183 matches for *Reptilia* using ITIS taxonomy in Alachua County [Show all counties | all states]

7,183 georeferenced

Points Layer

- Observation
- Fossil
- Specimen
- Unknown

Geo Precision:

- Known Centroid



New Fields

- Processed scientific name
- Provided scientific name
- ITIS TSN
- ITIS Common Name
- Catalog / collector number
- Calculated FIPS code
- Calculated county & state
- Associated Media
 - Images, sounds, video



Record Details generated with ITIS taxonomy.

- Summary Details	
Processed Scientific Name:	Ailanthus altissima
ITIS Common Name:	copal tree; tree of heaven; tree-of-heaven
ITIS TSN:	28827
Basis Of Record:	specimen
Occurrence Date:	7-16-2011
Provider:	BISON, BISON
Resource:	Towson University - MidAtlantic - Ailanthus altissima - 2011
- Taxonomic/Occurrence Details	
Collector:	Matthew S. Hansen and Roland P. Roberts
Collector Number:	MSH503
Valid/Accepted Scientific Name:	Ailanthus altissima
Valid/Accepted ITIS TSN:	28827
As Provided Scientific Name:	Ailanthus altissima (Mill.) Swingle
- Spatial Details	
Latitude/Longitude	38.21568/-78.8299
Calculated County/State Name:	Augusta County, Virginia
Calculated FIPS:	51015
- Associated Media:	
	
twsnalth_hansen_and_roberts_2011_364.jpg	
General Comments:	
GPS Unit: GPSmap76CSx; Individuals sampled: 688; Photo vouchers taken: 683; collector_number = Unique DNA sample identifier	
For more information, or to make comments on this occurrence, please contact the provider.	

Web Services



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[Home](#) [About](#) [Data Providers](#) [Statistics](#) [API](#) [Examples](#) [Blog](#) [Help](#)

Notice:

The BISON Web Service APIs have been updated. A summary of the enhancements to the APIs include:

The OGC WMS API includes changes to parameter values and additional parameters.

The OpenSearch API includes changes to parameter values and additional parameters.

The Solr API schema has changed; including modified parameter names and new parameters.

BISON supports several data interchange formats to enable developers to write custom applications. The BISON and Solr search APIs support [JavaScript Object Notation \(JSON\)](#) and [JSON with Padding \(JSONP\)](#). The Web Mapping Services support [Portable Network Graphics \(PNG\)](#). The web services APIs (OpenSearch & WMS) do not provide the ability to disambiguate species as does the BISON web based UI. When homonyms (names that map to multiple TSNs) exist for either a common name or scientific name OpenSearch or WMS search, a combined query is performed (e.g. Ficus maps to TSNs 73159 and 19081). The resulting combined web service query will return results that include either TSN. Example [applications](#) have been written using OpenLayers, and HTML 5 and we are working on mobile applications that will be available shortly.

[BISON Search](#)

[Web Map Service \(WMS\)](#)

[Extended Search 'params' Argument](#)

[REST API](#)

[Provider and Resource Identifiers](#)

[Provider Statistics API](#)

[Apache Solr Interface](#)

[Data Use Agreement](#)

Multiple output formats supported:
JSON, JSONP, CSV, SHP, etc.



Current Projects

■ Lifemapper Collaboration

- Models of predicted species distributions under current and future climate conditions for species documented in BISON
- Development of Web services to enable querying of predicted distribution models via BISON

■ USGS Patuxent Wildlife Research Center Collaboration

- Embedded map viewer using BISON Web services



Thank You

For additional information:

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For questions and to report BISON bugs:

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BISON Team

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