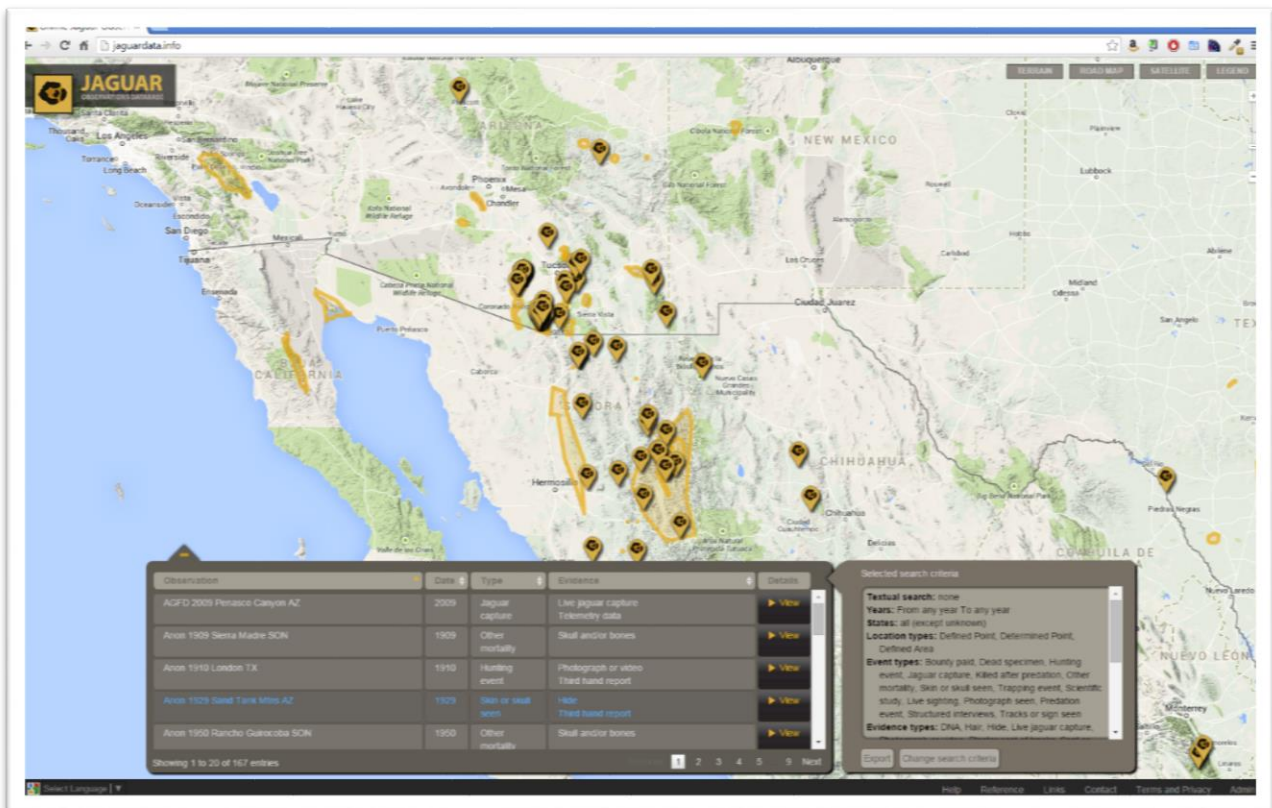


## Northern Jaguar Online Database

A Submission to the U.S. Fish and Wildlife Service  
in Partial Fulfillment of Contract F12PX00877

23 December 2014



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## Overview

The US Fish and Wildlife Service contracted with the Wildlife Conservation Society (WCS) to develop a web-enabled jaguar observation database, as the next generation of the comprehensive observations database (originally in Microsoft Access and ESRI shapefile formats) created by WCS as part of the jaguar habitat modeling exercise begun originally in 2010 in support of the Jaguar Recovery Team. The high-level requirements for the online database application were:

1. an interface for defining criteria used to create a list and map of jaguar observations across its northern range. The interface will be simple and intuitive enough for **stakeholders** and **the general public** to use but detailed enough to allow **scientists** to specify complex search criteria applicable to their field.
2. an interface for administrators to add, edit, and delete all jaguar observations across its northern range, thereby maintaining a central authoritative data source.

## Deliverables

Guided by modifications 3 and 4 of contract F12PX00877, the specification developed by Kim Fisher, Marit Alanen, and Chris Miles in June 2013 and reviewed by the Jaguar Recovery Team (see attached 130806\_northern\_jaguar\_onlinedb\_spec.pdf) listed the following deliverables for the application:

- Design workshop in Tucson
- Phase 1: Web application specification document
- Phase 2: Site infrastructure and core public interface
  - Hosting setup/domain registration and creation of development environments
  - Installation of web framework and account management system component
  - Database conversion
  - Zotero configuration
  - Development of map to display observations
  - Creation of controls for filtering observations in datagrid and map
  - Frontend layout and styling
- Phase 3: Administrative interface, secondary public interface, test/launch
  - Datagrid add/edit/delete functionality
  - Zotero linking functionality
  - Mini-map allowing graphic geographic placement of the observation
  - User account management (add, edit, delete, change role, email)
  - Bilingual rendering
  - Static footer content

In addition, modification 5 included:

- User help (tutorials/examples/videos)
- Training session in Tucson

Finally, modification 5 also specifies provision beyond contract closing of:

- Ongoing maintenance and project management
- Hosting for five years

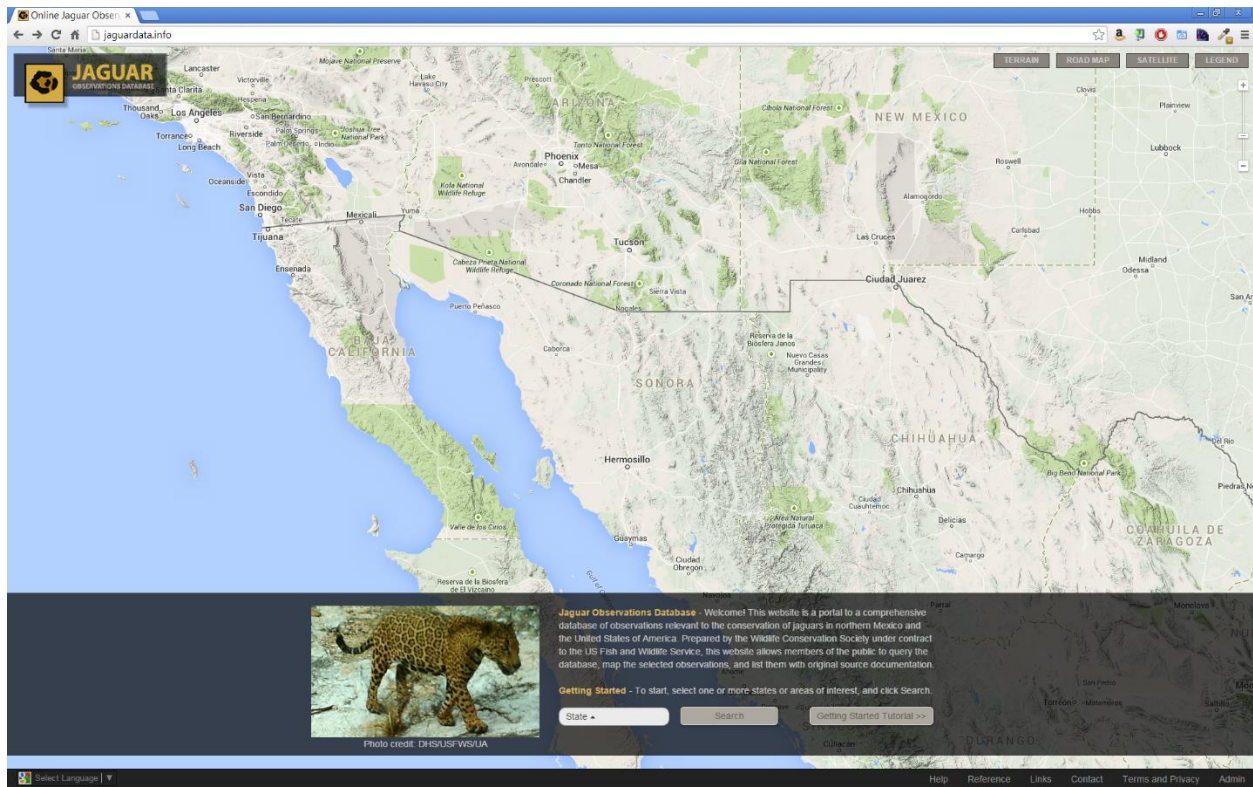
## Results

All items listed above were delivered on time and approved by FWS. As with any software, ongoing maintenance will result in improvements over the next five years but the application can be considered complete. The site is not yet public because some data updates from FWS are still pending, but once these updates are complete a simple password removal will make the site public.

The application was built around a PostGIS-enabled PostgreSQL database and a Python-based Django 1.5 framework with a variety of modules, using a Bitnami-created Ubuntu/Apache virtual server from Amazon (AMI). The code and database were committed to a Subversion repository, allowing for local development. Client-side, a number of jQuery and Bootstrap-oriented JavaScript libraries were used. Thus the whole application is built on an open-source stack.

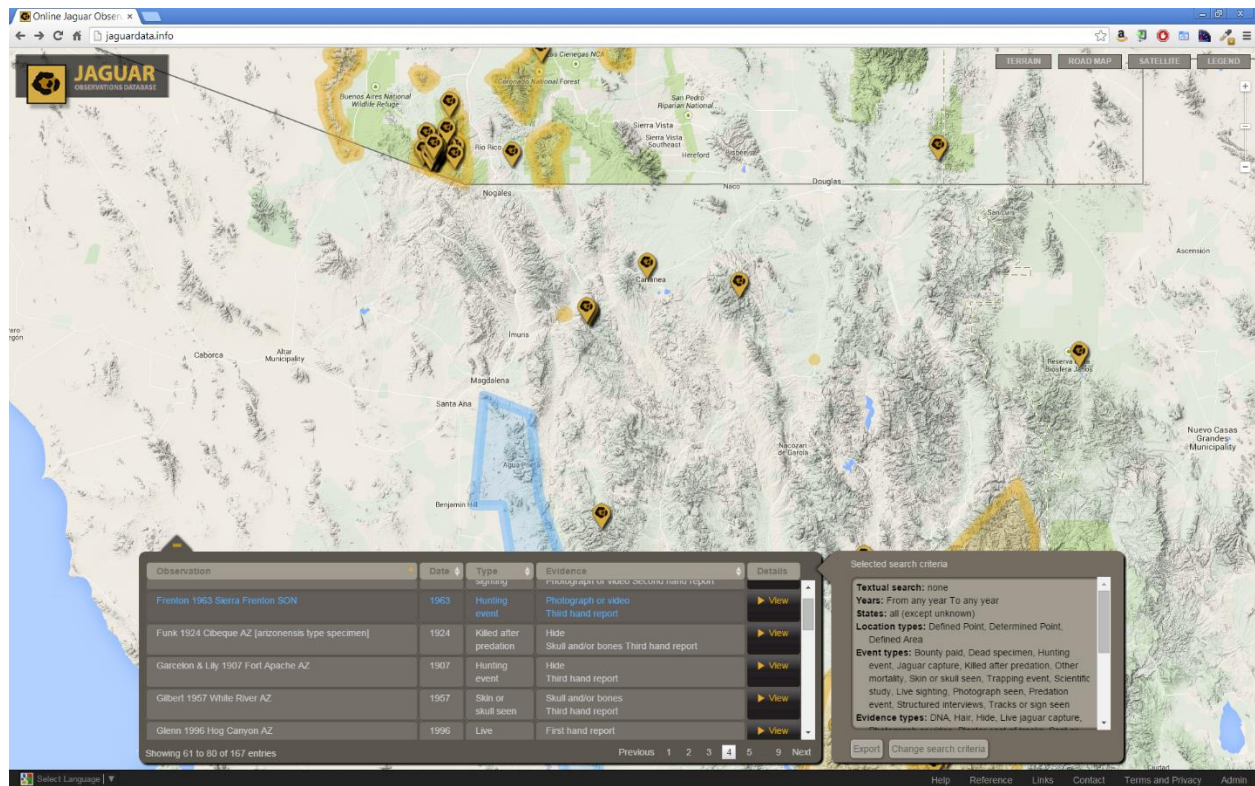
## Public website interface

The public interface to the online database is available at <http://jaguardata.info/>. Until the final data edits are complete, the entire site is protected by a username/password combination of northernjag/OJOD4good.

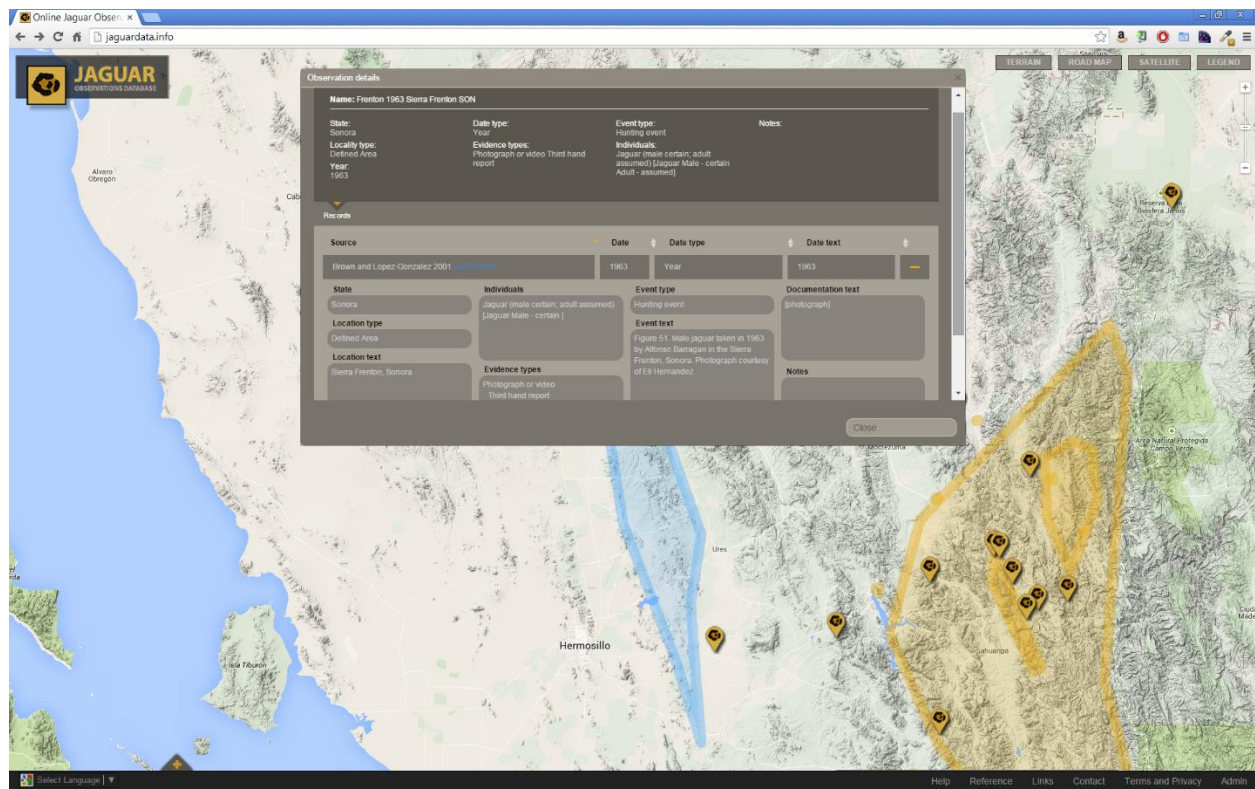


Initial landing splash page

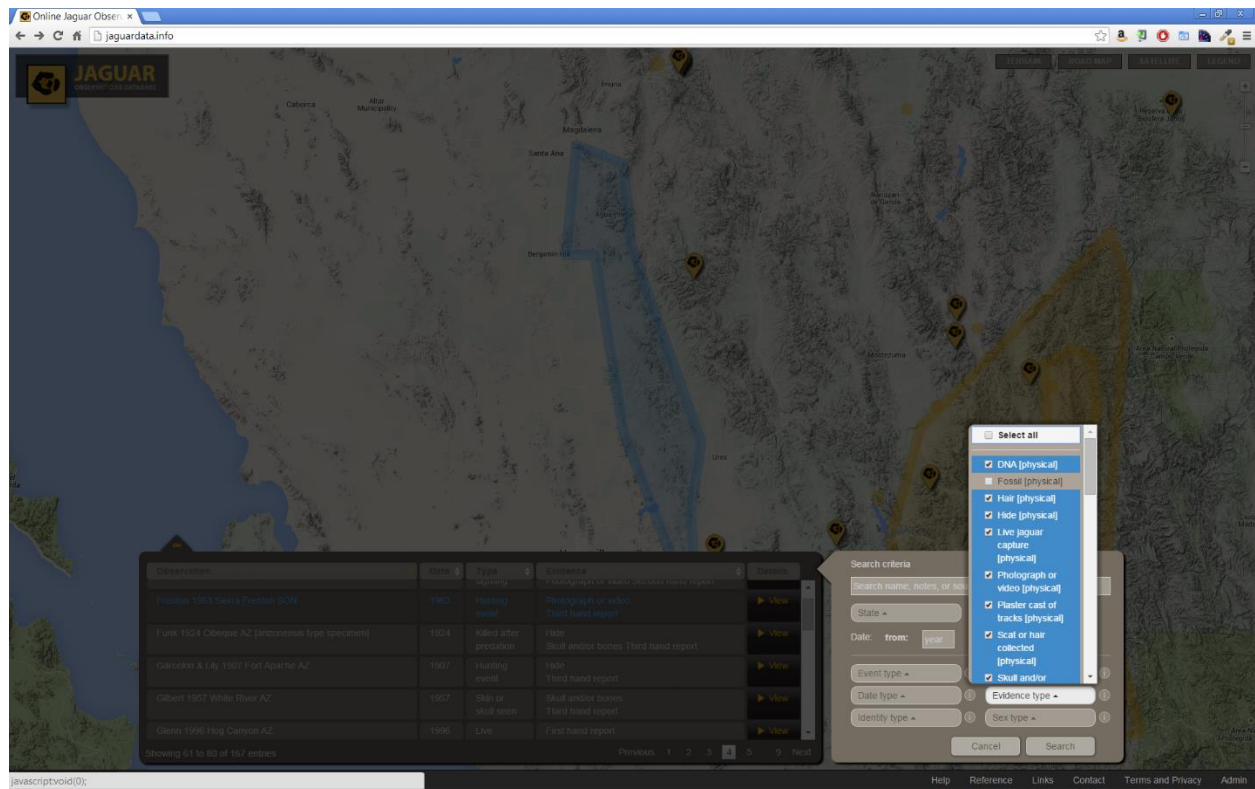




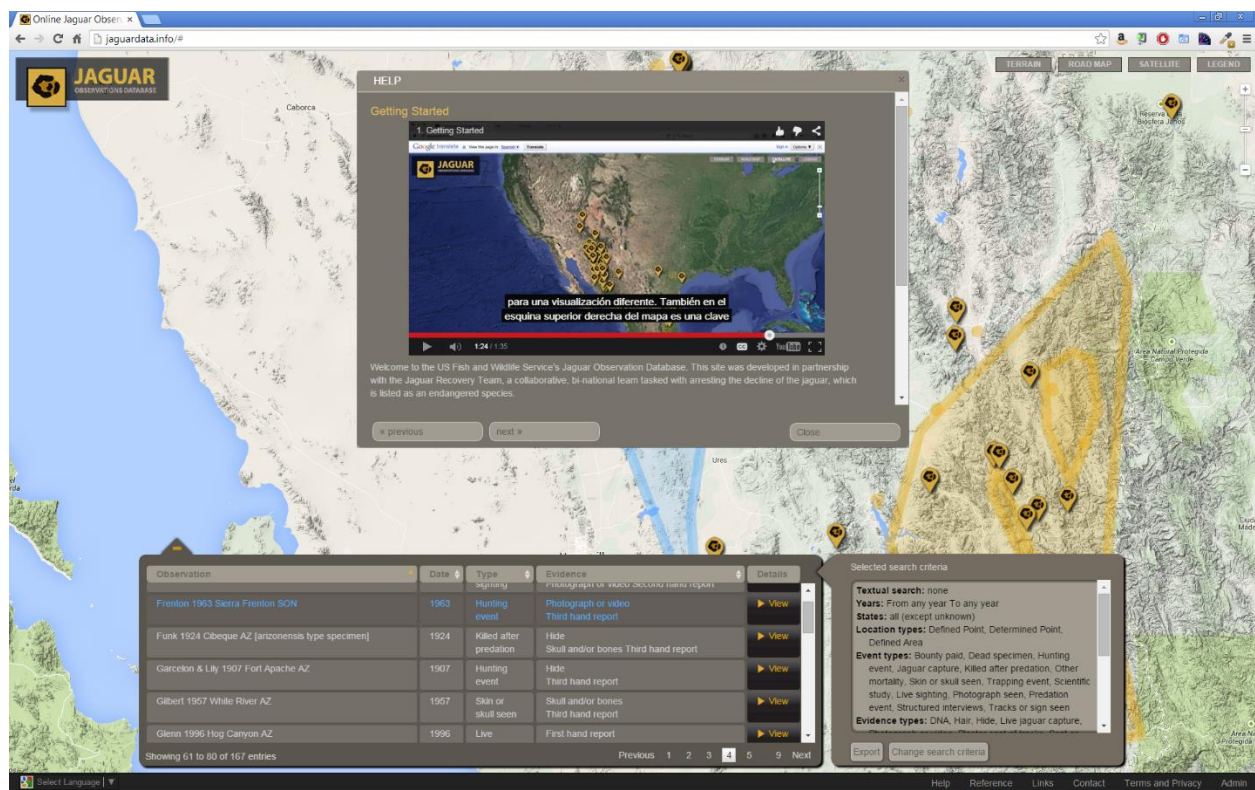
Observation search results on map and in sortable table. Note that point and polygonal observations are both represented. Note also the ability to export results to csv.



Observation details, with table slid out of way



Changing observation search criteria. Search criteria are always attached to search results.



Example help content, including narrated video with both English and Spanish subtitles



**JAGUAR**  
Western Big Cat Database

**REFERENCE**

**Evidence type**  
The evidence type attribute describes the kinds of evidence that support each event. Evidence types range from fossils to cultural myths. A full list of evidence types can be found in the table below.

Evidence type	Description	Physical evidence
Photograph or video		Yes
Skull and/or bones		Yes
Hide		Yes
DNA		Yes
Scat or hair collected		Yes
Plaster cast of tracks		Yes
Fossil	Fossilized bone or track found, attributed to jaguar	Yes
Tracks seen and/or measured		Yes
Live jaguar capture		Yes
Subfossil	Incompletely fossilized remains	Yes
Hair		Yes

◀ previous   next ▶   Close

Observation	Date	Type	Evidence	Details
Frenton 1963 Sierra Frenton SON	1963	Hunting event	Photograph or video Third hand report	▶ View
Funk 1924 Obeque AZ [arizonensis type specimen]	1924	Killed after predation	Hide Skull and/or bones Third hand report	▶ View
Garcekon & Lily 1907 Fort Apache AZ	1907	Hunting event	Hide Third hand report	▶ View
Gilbert 1957 White River AZ	1957	Skin or skull seen	Skull and/or bones Third hand report	▶ View
Glen 1996 Hog Canyon AZ	1996	Live	First hand report	▶ View

Showing 61 to 80 of 167 entries   Previous   1   2   3   4   5   9   Next

**Selected search criteria**

Textual search: none  
 Years: From any year To any year  
 States: all (except unknowns)  
 Location types: Defined Point, Determined Point, Defined Area  
 Event types: Bounty paid, Dead specimen, Hunting event, Jaguar capture, Killed after predation, Other mortality, Skin or skull seen, Trapping event, Scientific study, Live sighting, Photograph seen, Predation event, Structured interviews, Tracks or sign seen  
 Evidence types: DNA, Hair, Hide, Live jaguar capture

Export   Change search criteria

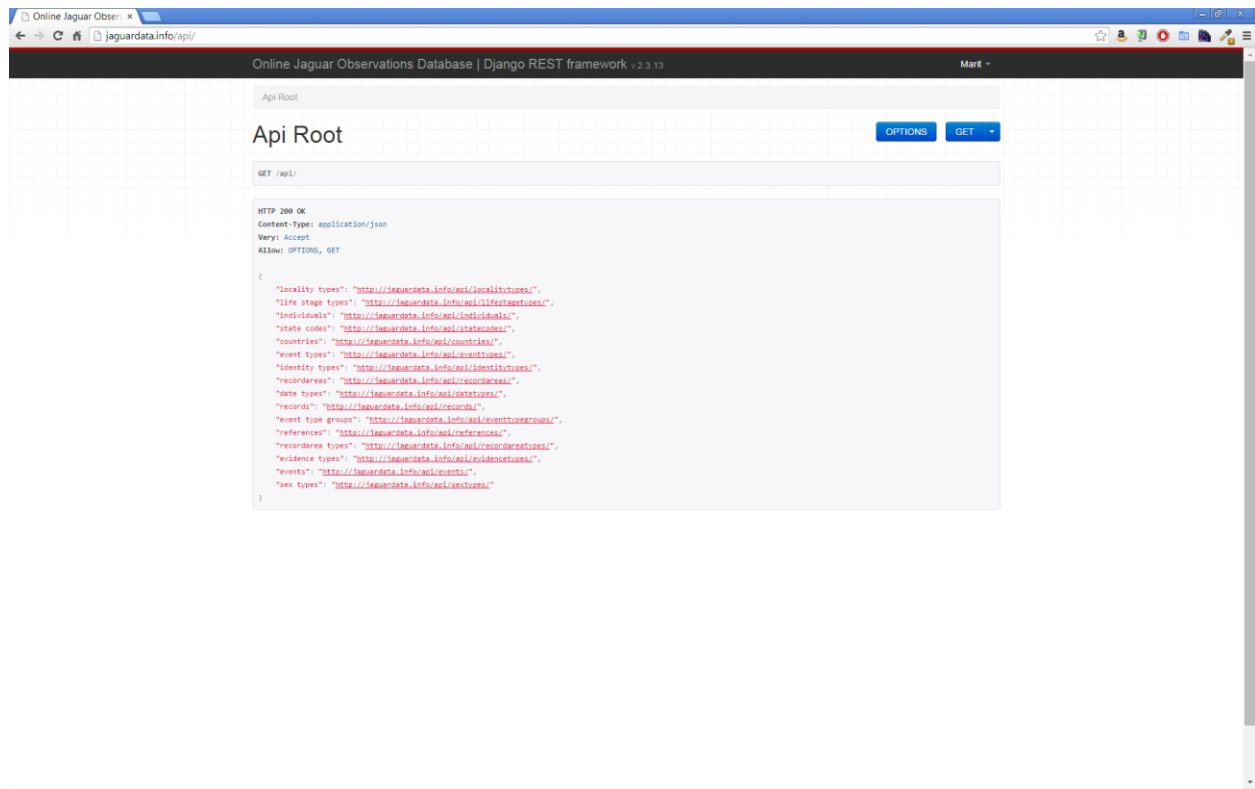
Help   Reference   Links   Contact   Terms and Privacy   Admin

## Observation search criteria reference content

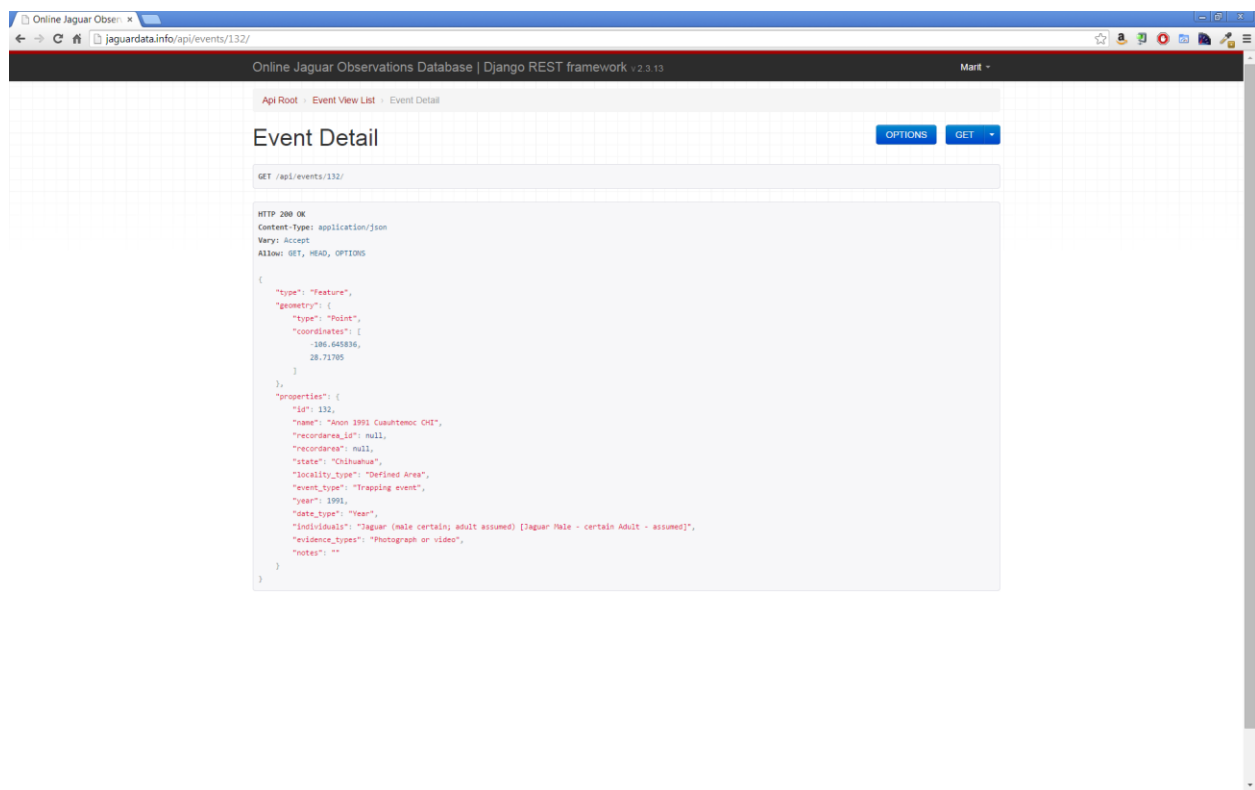
### API

The public application was developed around a series of REST endpoints acting as a logical layer between the raw database and the application logic and defining an open architecture that could potentially support other applications. The REST API endpoints are accessible here:

<http://jaguardata.info/api/>



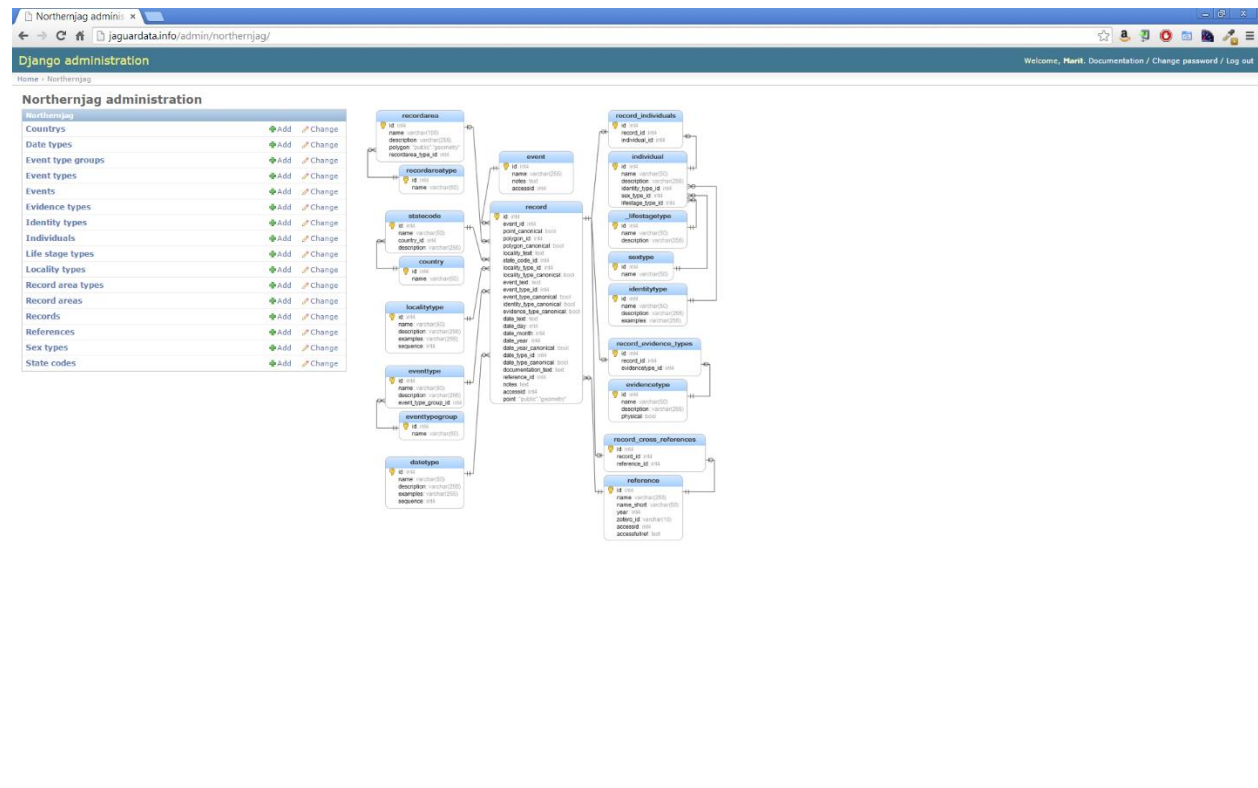
## REST API root



## Sample API data, for Event

## Administrative interface

The administrative interface to the online database is accessible at <http://jaguardata.info/admin/> and includes the Django account management framework so that different groups and users can be defined with permissions to add, edit, or delete different tables in the database. The administrative form for Events was highly customized to act as the primary data entry interface for observations.



Administrative interface, with access to all application tables and a database diagram.





Select user to change: x

← → C jaguardata.info/admin/auth/user/

Django administration Welcome, Harit. Documentation / Change password / Log out

Home > Auth > Users

Select user to change

Q Search

Action: 0 of 8 selected

<input type="checkbox"/>	Username	Email address	First name	Last name	Staff status
<input type="checkbox"/>	admin	ksfche@wca.org	Kim	Fisher	Yes
<input type="checkbox"/>	Carlos	cato4mex@gmail.com	Carlos	Lopez-Gonzalez	Yes
<input type="checkbox"/>	Eric	esanderson@wca.org	Eric	Sanderson	Yes
<input type="checkbox"/>	Erin	erin_fernandez@fws.gov	Erin	Fernandez	Yes
<input type="checkbox"/>	Mario	mgampien@wca.org	Mario	Gampien	Yes
<input type="checkbox"/>	Harit	harit_alanen@fws.gov	Harit	Alanen	Yes
<input type="checkbox"/>	Test_Contributor	harit_alanen@fws.gov	Test	Contributor	Yes
<input type="checkbox"/>	TimSnow	tsnow@azgfd.gov	Tim	Snow	Yes

8 users

Filter

- By staff status
  - All
  - Yes
  - No
- By superuser status
  - All
  - Yes
  - No
- By active
  - All
  - Yes
  - No
- By groups
  - All
  - Northern jaguar administrators
  - Northern jaguar editors
  - Northern jaguar contributors

Administrative user account management