BIOS Basics

Slide 1 (00:00): Introduction

Welcome to BIOS Basics. The first part of a three-part training course covering everything you need to know to get started working in the California Department of Fish and Wildlife's (CDFW) web-map viewer. My name is Joel Boros, I am the BIOS Lead and your primary point of contact for questions and comments regarding BIOS. In this first session we will cover the basics of accessing and using BIOS.

Slide 2 (00:28): Topics

In this lecture we will cover the following topics:

- what BIOS is and how to access it,
- data security in categories,
- navigating BIOS,
- searching for data,
- viewing metadata and downloading data,
- adding BIOS and reference data,
- working with the active layer,
- working with the Identify Features tool and California Natural Diversity Database (CNDDB) QuickView tool,
- changing basemaps,
- and where to find additional help.

Slide 3 (01:02): Biogeographic Data Branch Programs

The Biogeographic Information and Observation System, also known as BIOS, is part of the Data and Technology Division within CDFW. BIOS is under the Biogeographic Data Branch, alongside several other programs including:

- Areas of Conservation Emphasis (ACE),
- California Natural Diversity Database (CNDDB),
- Spotted Owl Observations Database,
- California Wildlife Habitat Relationships (CWHR),
- Vegetation Classification and Mapping Program (VegCAMP).

All these programs produce spatial data and some if not all of the data is available in BIOS.

Slide 4 (01:47): What is BIOS?

What is BIOS and what purpose does it serve? BIOS is a web-map viewer with a catalog of biological data. It was first released in 2002 and has since grown from a handful of datasets to thousands. In a broad sense, BIOS serves as California's primary data portal for biodiversity data. BIOS was created by CDFW as a place to store and make available all of its spatial biological data. BIOS was designed with several points in mind.

- To enhance data discovery, to make the data you are looking for easier to find. This coincides with the Department's new Data Governance Policy, which looks to make our data more transparent and accessible.
- To provide a platform to view GIS data for users who lack the knowledge to use or access to Geographic Information Systems (GIS) software.
- In addition to biological data, we also provide access to reference data, such as a variety of basemaps, aerial imagery, hydrography, land cover, ownership, and other useful datasets.

Slide 5 (03:01): Accessing BIOS

To access BIOS, visit the URL shown here or simply search the web for "CDFW BIOS" and it is generally the first search result. On the BIOS webpage you will see several buttons for different viewers, these are all just different flavors of the same viewer. Each is focused on a particular topic, and when opened the viewer will have data preloaded which relates to the specific topic. All viewers have the same functionality and access the same catalog of data and tools. For instance, the California Natural Diversity Database Viewers have all of the CNDDB related data preloaded, and the Area of Conservation Emphasis Viewer has all of the ACE terrestrial and aquatic biodiversity data preloaded.

Slide 6 (03:53): BIOS Home Page

Here you can see the BIOS Homepage with several buttons to launch the viewers we just discussed. In addition, you will notice several links in the panel to the right. From here you can access additional resources on more information about BIOS, the Training and Tutorial page, information about submitting data to BIOS and a link to contact us with questions.

Slide 7 (04:20): BIOS Splash Screen

When you first launch a viewer you will see a splash screen where you can find important announcements and a reminder to read the metadata to better understand what each dataset is meant to represent. Below that, you can choose to either continue to the public version of the viewer or choose to log into the secure viewer using either CNDDB subscriber credentials or CDFW staff credentials.

Slide 8 (04:50): Data Security

BIOS employs a stepped-data security model. Public data accounts for the majority of data in BIOS, over 90%. This data is available to everyone without a need to log-in and is downloadable. In addition to the public data, we have secured data available to CNDDB subscribers. These datasets contain sensitive species information which is used by the scientific community, in particular those working with species conservation and habitat management. Additionally, there are a handful of datasets only available to CDFW staff, these are generally draft working files used by CDFW staff.

Slide 9 (05:37): Available Data Types

BIOS includes primarily biological datasets useful for natural resource management activities. These include:

- Sensitive species protection and enhancement, such as the CNDDB, fish ranges from the National Oceanic and Atmospheric Administration, and terrestrial species critical habitats from the U.S. Fish and Wildlife Service,
- Species connectivity modeling, including habitat corridor and linkage planning,
- Renewable energy planning, as seen in the Desert Renewable Conservation Plan viewer,
- Invasive species tracking, included in these statewide analysis of invasive plants by quad from the Invasive Plant Council,
- and regional data such as invasive plants in the San Joaquin River, as shown here.

Also included is supporting data such as water quality readings, and wind turbine data which could be used for analyzing bird strikes. Additionally, you will find reference data such as counties, quads, rivers and lakes, USDA ecoregions, and land ownership. Data sources can be one-time collections or ongoing work, such as monitoring and mitigation.

Slide 10 (06:59): Data Contributors

We do not create any of the data in BIOS. The data is contributed to our catalogue from a variety of sources. The majority comes from CDFW scientists, but we also get data contributed from other federal, regional, and state government agencies, universities, and consultants. In our role as data stewards, we host the data and make it available in our map viewer. However, the contributor retains ownership of the data and is responsible for ensuring accuracy, completedness, and providing updates.

Slide 11 (07:38): Navigating the Map

When the map first opens, it is set to a statewide level zoom. From here there are several methods for navigating within the map. Click and drag or use the arrow buttons on your keyboard to pan the map an recenter it. There are several options to zoom in and out of the map:

- You can use the scroll wheel on your mouse, if it has one.
- You can use the plus or minus buttons on your keyboard or the buttons within the map seen in the graphic above.
- You can hold down the shift button, click and drag to draw box in the map that you want to zoom into.
- Or you can choose a zoom level from the list of preset options provided in the drop-down list within the map.

Slide 12 (08:24): Search for Data

You can search through our data catalog using the Add Data tool, which generates an alphabetical list of available datasets. This list can be further refined by entering keywords to filter the results. For example, entering "connectivity" will return only results related to species

connectivity. If you hover your cursor over one of the results in the list, a box with the full data set name appears. To limit the search results geographically, if you zoom to level 10 or higher, you gain the ability to filter search results and by extent. When this option is enabled, the search results will filter to display those results which have features that will draw within the current map extent. Clicking once on an item in the search results opens a summarized metadata panel on the right.

Slide 13 (09:22): Metadata & Download

From the metadata panel you can view a summary of the data, find contact information for the contributor, see when the data was last updated, view the full metadata, and download the data. When you click the download button, the GIS files for the entire dataset are saved to your computer. If the dataset is secure, the download button will be greyed out and you will need to either contact the contributor or us here at BIOS.

Slide 14 (09:54): CDFW Open Data Portal

Another option for downloading data is CDFW Open Data Portal, which allows you to choose the format of the data download. To get to the CDFW Open Data Portal from our BIOS webpage, click the CDFW Open Data Portal link under Related Information.

Slide 15 (10:15): Data Portal Download Options

The same dataset is available in the Open Data Portal and can be located using the same search terms. For example, if you were working with the Historic Trout Watershed dataset in BIOS, the same data is available in the Open Data Portal. Once you have located your dataset, click the Download button on the left-hand panel and select the format you are interested in.
If you are only interested in the attribute table, select the CSV (comma separated value) download option. The CSV can then be opened in Excel. The spreadsheet can be opened in Excel. You can also export the data in KML format if you prefer to work in Google Earth.

Slide 16 (10:54): Adding Data

If you would like to add data to your BIOS session, you can do this using the Add Data tool. As you remember, clicking once on the dataset in the search results list opens the metadata summary panel. Clicking twice on the dataset adds it to your map session. Added data appears in the BIOS Layers panel on the left. Multiple data layers can be added to your BIOS session.

Slide 17 (11:23): Reference Data

Several categories of reference layers are preloaded into the BIOS viewer for ease of use. They are found in the left-hand panel and are grouped according to content. Reference layers can be turned on and off in the map and can be made the active layer like any of the other data layers in BIOS.

Slide 18 (11:43): Active Layer

All tools in BIOS work with the active layer.

Slide 19 (11:50): Active Layer Continued

To make a layer active, click on the dataset name in
the BIOS Layers section. The active layer is given a pink highlight and is called out above the list of BIOS layers. Only one layer can be active at a time.

Slide 20 (12:06): Identify Features Tool

The Identify Features tool is the default active tool in BIOS. Clicking on a feature in the active layer within the map selects it.

Slide 21 (12:17): Identify Features Tool Continued

Related attribute information is returned in a table below the map. If another feature is identified, the selection in the table results will update accordingly. To clear the highlighted feature in the map, click the checkbox beside the Identify Graphic item in the Graphics and Selections, or click the X button to remove it.

Slide 22 (12:41): CNDDB QuickView Tool

And now for something a little different, I would like to show you how to use our CNDDB QuickView tool, which is found on the Advanced Tools menu. This tool can be used to generate a list of special status species. The tool opens on the right-hand side and prompts you with a brief description of the tool, some useful links to resources, and a link to the User Guide. You can create a list of special status species using one of the three available methods. Choose either list CNDDB Species for a Quad, list CNDDB Species for 9 Quads, or list CNDDB Species for a County. Select your preferred method, then click on the map and a list of special status species is returned.

Slide 23 (13:40): CNDDB QuickView Tool Report

The results are drawn from the mapped data in the CNDDB database, as well as the unprocessed data that has been submitted through the Online Field Survey Form, but not yet mapped. More details about Mapped versus Unprocessed data are available in the User Guide.

Slide 24 (14:00): CNDDB QuickView Tool Continued

You can also use the CNDDB QuickView tool to view where a special status species has been reported in the state. To do this, type the scientific or common name in the View CNDDB Quad Data by Species search box, then press enter.

Slide 25 (14:20): CNDDB QuickView Tool Species Search

The map will zoom to show the resulting data with the CNDDB mapped species shown as purple and the unprocessed data shown as stone blue. The tool also returns a count of quads the species was found in an lists its special status.

Slide 26 (14:40): Basemaps

You may have noticed the map can get a bit busy, you can change the basemap so it's not competing with the data. We have a variety of maps to choose from under the Basemaps tab in the left-hand panel, including topo maps, imagery, and a simple grey canvas map which is a great choice for busy data. When the tab is clicked, a series of thumbnail images will open, allowing you to select your desired basemap. Simply click on the thumbnail and the map will update with the selected basemap. Once you have selected your basemap and want to return to working with your data, click on the Layers tab.

Slide 27 (15:23): Additional Help

If you find yourself in need of additional assistance while working in BIOS, press the green Help button in the upper right corner. This will open a panel with several helpful links, including our User Guide, the Tutorials and Training page, and an option to email us with your questions.

Slide 28 (15:43): BIOS Tool Menus

The tools in BIOS are organized into three menus, Quick Tools menu, Map Tools menu, and the Advanced Tools menu. The Quick Tools menu always works with the search box adjacent to it. The Map Tools menu offers tools that work within the map itself. The Advanced Tools menu requires additional user input. We will cover most of the remaining tools in the next two raining videos.

Slide 29 (16:15): Topic Review

So, to review the topics we just covered: what BIOS is and how to access it, data security and categories, navigating BIOS, searching for data, viewing metadata and downloading data, adding BIOS and reference data, working with the active layer, working with the Identify and CNDDB QuickView tools, changing basemaps, and where to find additional help.

Slide 30 (16:49): Closing

Thank you for watching the BIOS Basics tutorial. Please look to continue BIOS training with the BIOS Tools and the BIOS Advanced Tools videos which will build upon the skills you learn today.