



Tutorial for using the CNDDDB layer in the BIOS 6 CNDDDB & Spotted Owl Viewer



California Department of Fish and Wildlife
California Natural Diversity Database
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The [CNDDDB & Spotted Owl Data Viewer](#) is a bookmark in the Biogeographic Information and Observation System (BIOS) web-map viewer with the California Natural Diversity Database (CNDDDB) and Spotted Owl Observations Database data preloaded for you. Using BIOS, you may view CNDDDB data spatially, add labels, and print maps without the need to have GIS software installed on your computer. More complex spatial analysis and data manipulation will still require the use of a full GIS in conjunction with RareFind.

Additional BIOS data viewer support is also available on the [Biogeographic Data Branch Tutorials and Training page](#).

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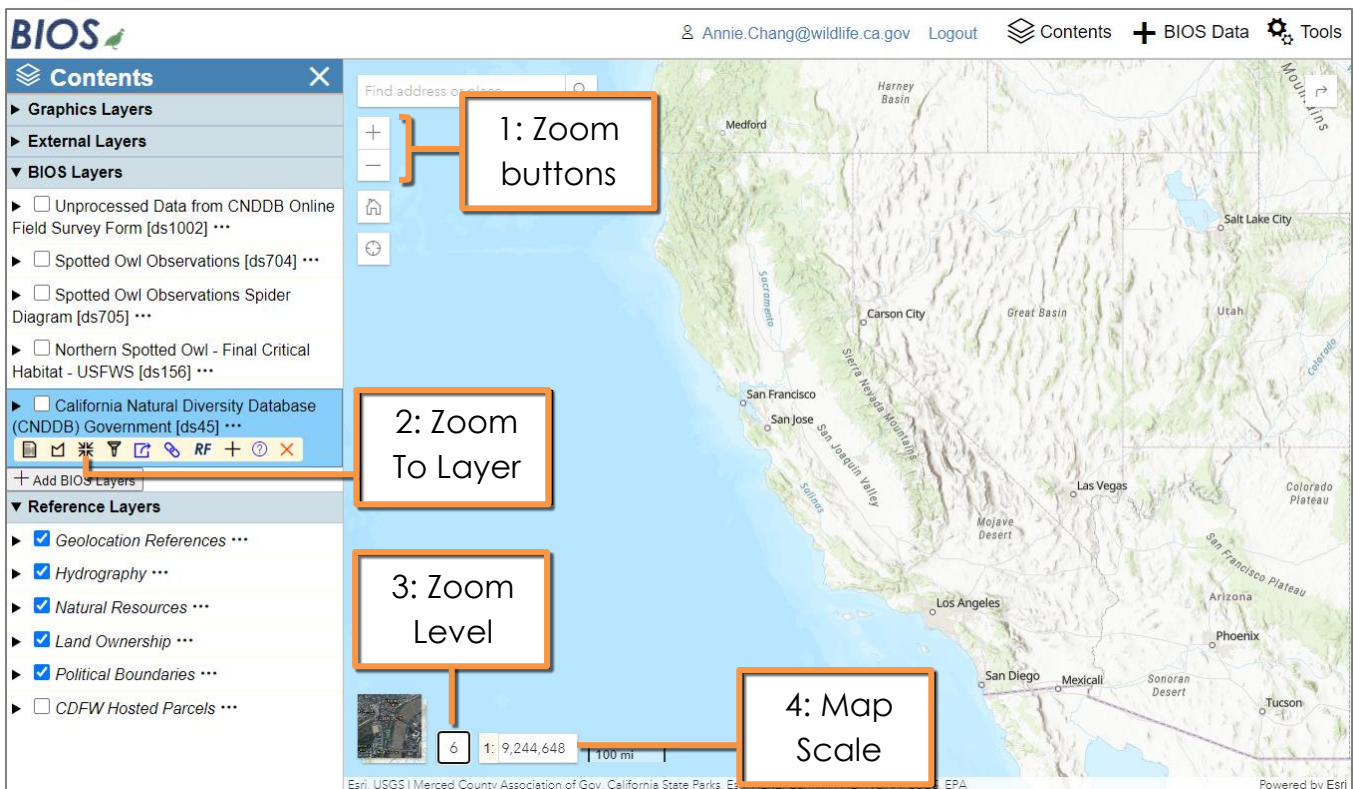
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Navigating

Navigation in BIOS is achieved with the mouse or keyboard. You can pan the map in any direction by a simple click and drag.

To zoom in or out:

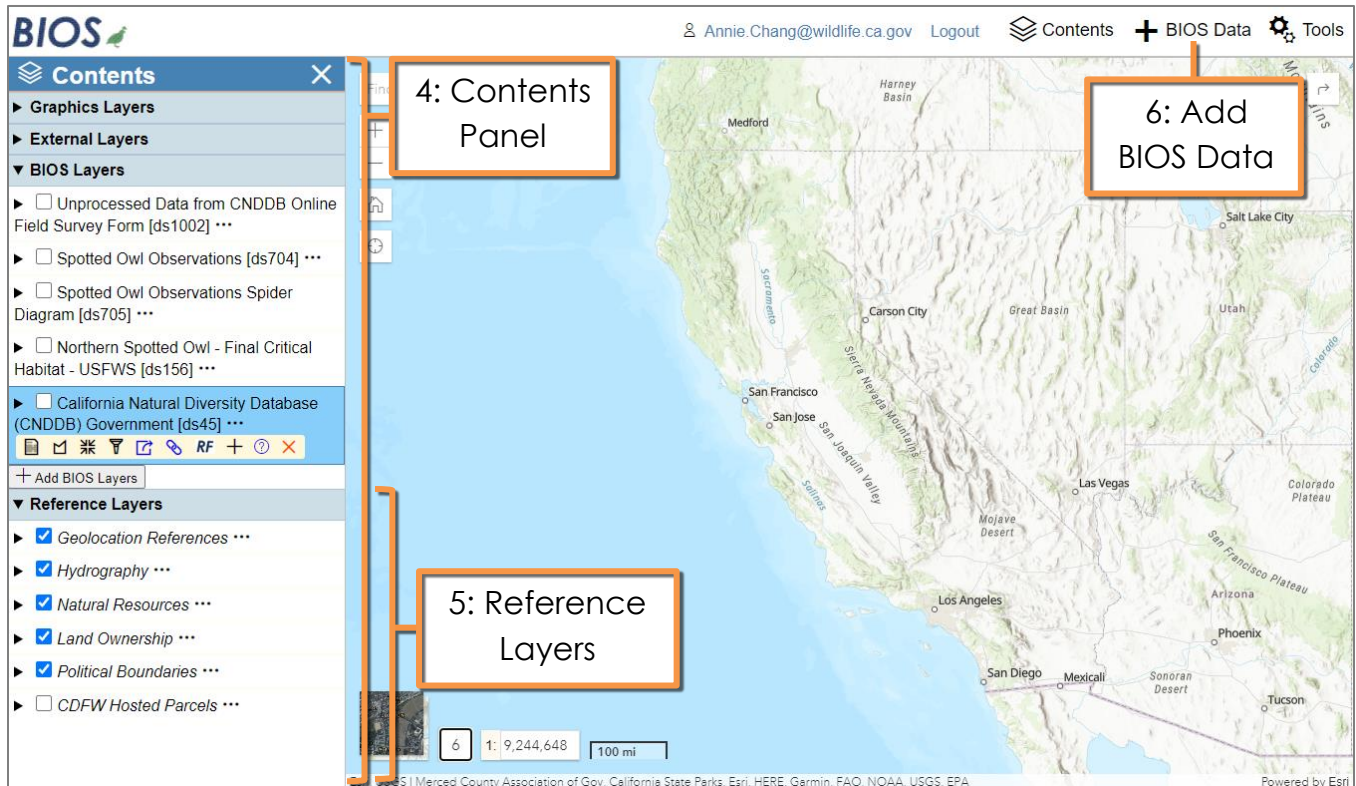
- Scroll the mouse wheel
- Hold Shift on your keyboard + click-and-drag with your mouse to form a box and zoom to that box's area (Ctrl + Shift + click-and-drag zooms out)
- Use the "+" and "-" keys on the keyboard
- Double-click to zoom in
- Press the "+" or "-" buttons on the map [1]
- Click the ellipsis by a layer to expand the menu that contains a "Zoom To Layer" button to zoom to the data in that layer [2]
- If there is a particular reference scale you prefer, you can type in the zoom level [3] or map scale [4] and press Enter. When the zoom level is at 15 or greater, the CNDDDB Element Occurrences are labeled with scientific name.



Adding Layers

The CNDDDB & Spotted Owl Viewer bookmark comes preloaded with the following data sets in the BIOS Layers portion of the Contents Panel [4]:

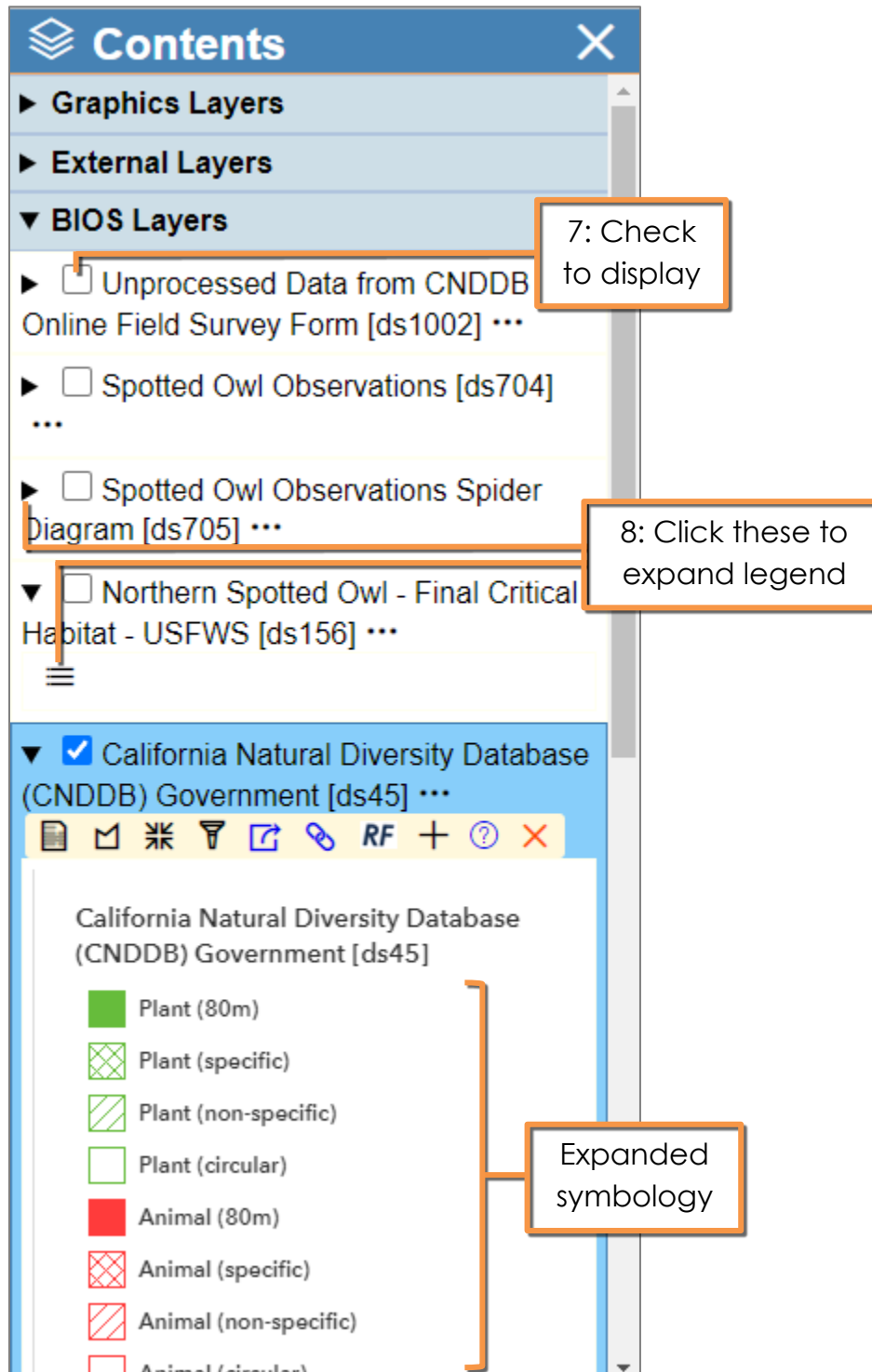
- Unprocessed Data from CNDDDB Online Field Survey Form [ds1002]
- Spotted Owl Observations [ds704]
- Spotted Owl Observations Spider Diagram [ds705]
- Northern spotted owl critical habitat [ds156]
- CNDDDB occurrences [ds45 or ds85]



Additionally, the BIOS viewer has several Reference Layers [5] preloaded in the Contents Panel. The viewer also allows the use of additional biogeographic data layers in conjunction with the CNDDDB data layer. The "+ BIOS Data" button [6] can be used to add other BIOS data layers, such as Critical Habitat layers, vegetation, and other species data layers.

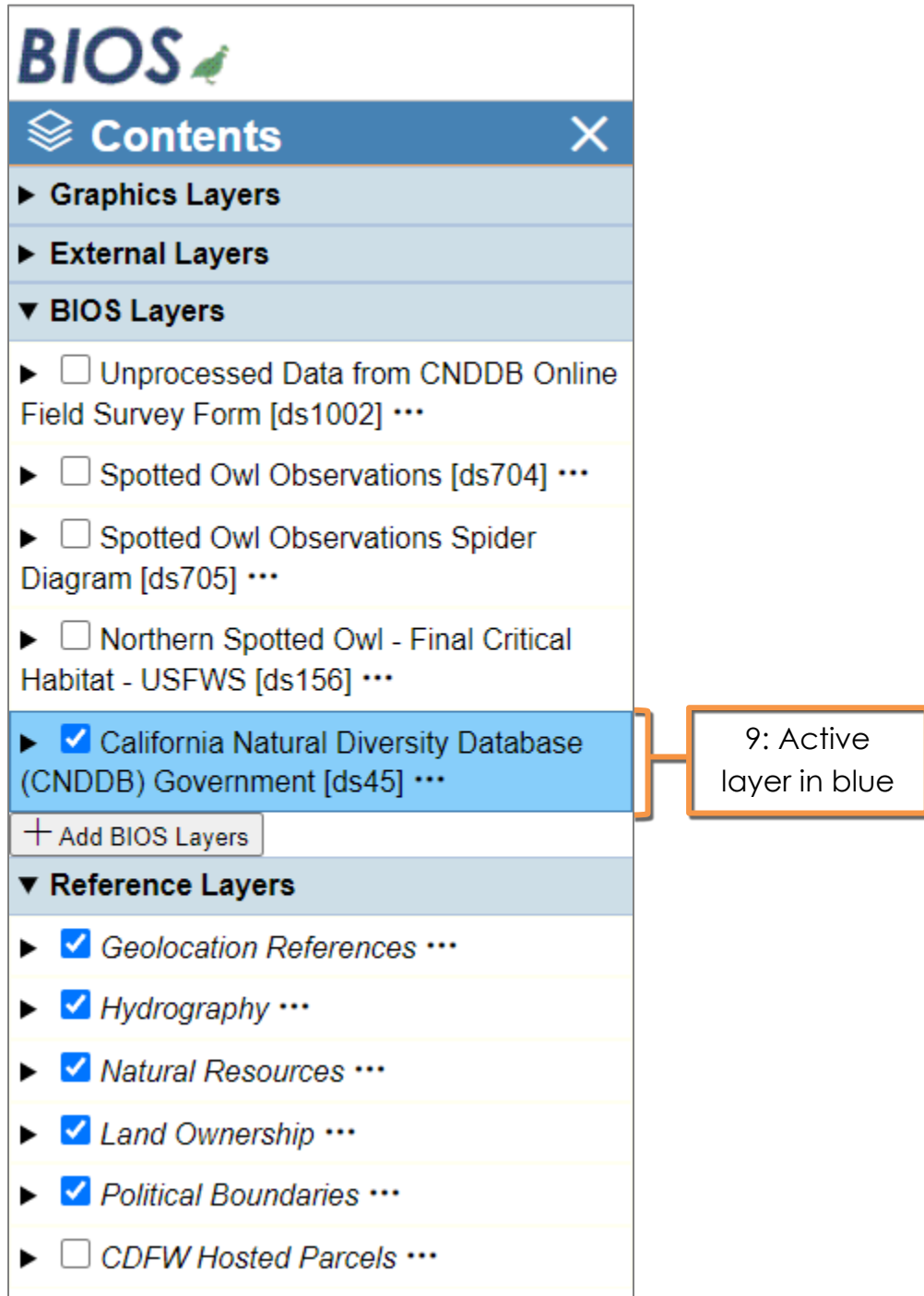
Displaying Layers

Click the checkbox of each layer that you want displayed [7]. It helps to zoom in when displaying the CNDDDB data to avoid long drawing times. The symbology associated with a data set can be expanded in the Contents Panel by clicking the right triangle (▶) to the left of the layer title, and then the Show Legend button (≡) to expand the legend [8].



Activating a Layer

Tools in BIOS that interact with data layers only work on the “Active Layer.” Only one layer at a time can be active. To make a layer active, simply click on the name of a layer [9]. You will see a blue box appear around the layer indicating it is active.



The screenshot shows the BIOS interface with a 'Contents' panel. The panel is titled 'Contents' and has a close button (X). It is organized into several sections: 'Graphics Layers', 'External Layers', 'BIOS Layers', and 'Reference Layers'. Under 'BIOS Layers', there are five items, each with a checkbox and a right-pointing triangle. The first four items have unchecked checkboxes, while the fifth item, 'California Natural Diversity Database (CNDDDB) Government [ds45] ...', has a checked checkbox and is highlighted with a blue background. A callout box with an orange border points to this highlighted item, containing the text '9: Active layer in blue'. Below the 'BIOS Layers' section is a button labeled '+ Add BIOS Layers'. Under 'Reference Layers', there are six items, each with a checked checkbox and a right-pointing triangle.

Section	Item Name	Active
BIOS Layers	Unprocessed Data from CNDDDB Online Field Survey Form [ds1002] ...	<input type="checkbox"/>
	Spotted Owl Observations [ds704] ...	<input type="checkbox"/>
	Spotted Owl Observations Spider Diagram [ds705] ...	<input type="checkbox"/>
	Northern Spotted Owl - Final Critical Habitat - USFWS [ds156] ...	<input type="checkbox"/>
	California Natural Diversity Database (CNDDDB) Government [ds45] ...	<input checked="" type="checkbox"/>
+ Add BIOS Layers		
Reference Layers	Geolocation References ...	<input checked="" type="checkbox"/>
	Hydrography ...	<input checked="" type="checkbox"/>
	Natural Resources ...	<input checked="" type="checkbox"/>
	Land Ownership ...	<input checked="" type="checkbox"/>
	Political Boundaries ...	<input checked="" type="checkbox"/>
	CDFW Hosted Parcels ...	<input type="checkbox"/>

Identifying Features

Click on the layer name you are interested in to make it the Active Layer. From the Tools menu at the upper right [10], select “Identify Features” to get additional information about occurrences by activating (clicking) the tool and then clicking the feature of interest (layer must be Active Layer). The features you click on will highlight in teal [11] and a table will expand from the bottom and return the attributes of the identified feature(s) [12].

The screenshot shows the BIOS web application interface. On the left is a 'Contents' sidebar with a tree view of layers. The 'California Natural Diversity Database (CNDDDB) Government [ds45]' layer is selected. The main map area shows a geographical map with several features highlighted in teal. A callout box labeled '11: Highlighted feature(s)' points to these teal features. In the top right corner, a 'Tools' menu is open, with a callout box labeled '10: Tools menu' pointing to it. On the right side of the map, an 'Identify Features' panel is expanded, showing details for the selected features, including a 'Clear Identified' button and coordinates. A callout box labeled '12: Results table' points to the table below the map. The table has 13 columns: ZoomTo, Scientific_Name, Common_Name, Element_Code, Occ_Number, MAPNDX, EONDX, Key_Quad_Code, Key_Quad_Name, Key_County_Code, Accuracy, Presence, Occ_Type, Occ_Rank, and Sensit. It contains 4 rows of data.

ZoomTo	Scientific_Name	Common_Name	Element_Code	Occ_Number	MAPNDX	EONDX	Key_Quad_Code	Key_Quad_Name	Key_County_Code	Accuracy	Presence	Occ_Type	Occ_Rank	Sensit	
1	9275	Plegadis chihi	white-faced ibis	ABNGE02020	11	17165	6068	4112084	West of Willow Ranch	MOD	non-specific area	Presumed Extant	Natural/Native occurrence	Unknown	N
2	9278	Siphateles bicolor thalassinus	Goose Lake tui chub	AFCJB1303Q	1	17165	9711	4112084	West of Willow Ranch	MOD	non-specific area	Presumed Extant	Natural/Native occurrence	Good	N
3	9279	Oncorhynchus mykiss ssp. 1	Goose Lake redband trout	AFCHA02096	1	17165	9713	4112084	West of Willow Ranch	MOD	non-specific area	Presumed Extant	Natural/Native occurrence	Unknown	N
4	9276	Larus	California gull	ABNNM03110	2	17165	4944	4112084	West of Willow	MOD	non-	Presumed	Natural/Native	Unknown	N

Selecting Element Occurrences

CNDDDB Element Occurrence features can be selected either spatially in the map viewer or through a specific query selection. The spatial selection is useful for selecting all the occurrences in a particular area, whereas the query selection allows a selection through attributes (for example, you may use the query selection to select federally endangered birds). To select occurrences from the CNDDDB layer, please make sure the CNDDDB layer is set as the [Active Layer](#).

Selecting EOs – spatial selection

If you want information on a group of occurrences in the same general area, Open the Tools menu on the upper right-hand corner and choose “Select by Graphics.”

Select by drawing a shape:

There are 5 different ways of selecting through drawing a shape [13]: Draw a point, polyline, polygon, rectangle, or circle. These selection methods will select any Element Occurrence that the drawn shape touches; they do not have to completely enclose the occurrence. Simply click on the type of shape you want to draw in the menu, and then click on the map to draw your graphic [14]; double-click to complete a polyline, polygon, or rectangle. Once the selection is made, the selected occurrence will be highlighted in teal [15]. A table at the bottom of the map viewer will display the details of the selected records [16].

The screenshot shows the BIOS map viewer interface. The top navigation bar includes the BIOS logo, user information (Annie.Chang@wildlife.ca.gov), and links for Logout, Contents, BIOS Data, and Tools. The main interface is divided into several panels:

- Contents Panel (Left):** Lists layers including "SELECTED California Natural Diversity Database (CNDDDB) Government [ds45]" and "California Natural Diversity Database".
- Map View (Center):** A map showing a geographic area with several red dots representing occurrences. A teal circle highlights a specific occurrence, and a black rectangle is drawn around it. A callout box labeled "13: Graphic selection options" points to the selection tools in the right panel. A callout box labeled "14: Drawn graphic" points to the black rectangle on the map. A callout box labeled "15: Selected occurrences" points to the teal circle on the map.
- Select By Graphics Panel (Right):** Contains options for "Draw a shape to select by:" (point, line, polygon, rectangle, circle), "Or Enter Coordinates" (with input fields for "35.44,-119.65" and a "Verify Location" button), and "Add Optional Buffer" (with a "5 miles" input and an "Apply Buffer" checkbox).
- Selection Table (Bottom):** A table displaying details for 4 selected records.

ZoomTo	Scientific_Name	Common_Name	Element_Code	Occ_Number	MAPNDX	EONDX	Key_Quad_Code	Key_Quad_Name	Key_County_Code	Accuracy	Presence	Occ_Type	Occ_Rank	Sensit	
1	84687	Anniella stebbinsi	Southern California legless lizard	ARACC01060	305	B1060	112953	3211674	Mount Laguna	SDG	80 meters	Presumed Extant	Natural/Native occurrence	Good	N
2	94397	Caulanthus simulans	Payson's jewelflower	PDBRA0M0H0	41	05672	20555	3211674	Mount Laguna	SDG	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N
3	84690	Anniella stebbinsi	Southern California legless lizard	ARACC01060	307	B1063	112956	3211674	Mount Laguna	SDG	specific area	Presumed Extant	Natural/Native occurrence	Good	N
4	84688	Anniella stebbinsi	Southern California legless lizard	ARACC01060	306	B1061	112954	3211674	Mount Laguna	SDG	80 meters	Presumed Extant	Natural/Native occurrence	Good	N

Select by entering a coordinate:

If you know the coordinates of your project site or area that you want to search, you can type that in and press “Verify Location” [17]. A pin would be drawn at your coordinates [18]. You can then press “Select by Location” to make your selection.

Add optional buffer:

You may choose to add a buffer to your graphic or coordinate to expand your selection area. Type in the distance, choose a unit, and check on “Apply Buffer” [19] By default, miles is selected.

The screenshot shows the BIOS web application interface. The top navigation bar includes the BIOS logo, user information (Annie.Chang@wildlife.ca.gov), and various utility icons. The left sidebar contains a 'Contents' panel with a tree view of layers, including 'SELECTED California Natural Diversity Database (CNDDDB) Government' and 'BIOS Layers'. The main area is a map showing a topographic view of a region with a red pin and a purple circular buffer. A search bar at the top of the map area contains the text 'Find address or place'. The right sidebar is the 'Select By Graphics' panel, which is open and shows options for drawing shapes, entering coordinates, and adding a buffer. The 'Or Enter Coordinates' section has the coordinates '35.01512,-118.62391' entered and the 'Verify Location' button. The 'Add Optional Buffer' section has '1' entered in the distance field, 'miles' selected in the unit dropdown, and the 'Apply Buffer' checkbox checked. A table at the bottom of the interface displays data from the California Natural Diversity Database (CNDDDB) Government. The table has columns for ZoomTo, Scientific_Name, Common_Name, Element_Code, Occ_Nu, Key_County_Code, Accuracy, Presence, Occ_Type, Occ_Rank, and Sensi. The table contains three rows of data.

ZoomTo	Scientific_Name	Common_Name	Element_Code	Occ_Nu	Key_County_Code	Accuracy	Presence	Occ_Type	Occ_Rank	Sensi		
1	65688	Ensatina eschscholtzii croceator	AAAAD04011	44	KRN	specific area	Presumed Extant	Natural/Native occurrence	Unknown	N		
2	76636	Diplacus pictus calico monkeyflower	PDSCR1B240	43	91900 92976 3511815	Cummings Mtn.	KRN	specific area	Presumed Extant	Natural/Native occurrence	Good	N
3	42682	Leptosiphon serrulatus	PDPLM09130	22	74657 75589 3411886	Winters Ridge	KRN	5 miles	Presumed Extant	Natural/Native occurrence	Unknown	N

Selecting EOs – attribute selection

You can also select occurrences based upon their attributes. Open the Tools menu on the upper right-hand corner and choose “Select by Attributes.”

There is a small blue circle with a question mark you can click on to open a help document that would explain how to compose a query [20]. [Appendix 1](#) in this document also provides definitions and example queries.

To start building a query, first select an attribute field to query on using the first picklist; the fields available to pick from would be based on the [active layer](#). Next, choose an operator from the picklist. Finally, select from the list of available field values that refresh according to the attribute field you selected in step one, or type a value directly into the SQL expression that is being built. Note that text values require apostrophes around them.

The screenshot shows the 'Select By Attributes' dialog box. It has a title bar with a search icon and a close button. The main content area is divided into several sections:

- Active Layer:** A callout box points to the text 'FROM California Natural Diversity Database (CNDDDB) Government [ds45] WHERE'.
- Query or Filter Layer:** This section contains several picklists:
 - The first picklist is labeled '--SELECT ATTRIBUTE FIELD--' and is selected with a radio button. A callout box labeled '20: Help document' points to a question mark icon next to it.
 - The second picklist is labeled '--SELECT RELATED COLUMN--'.
 - The third picklist is labeled '--OPERATOR--'.
 - The fourth picklist is labeled '--FIELD VALUE(S)--'.
 - Below these picklists is a search box labeled 'Find/Filter field values by'.
 - The fifth picklist is labeled '--CONNECTORS--'.
- SQL Expression:** A large text box below the picklists is labeled '21: Query statement appears here'. Below it is a 'CLEAR SQL EXPRESSION' button.
- Buttons:** There are two buttons: 'Query New Selection' and 'Query Within Selection'. Below them is a 'Clear Selection' button.
- Layer Filtering:** This section has a funnel icon and two buttons: 'Filter Layer' and 'Selection As Filter'. Below them is a 'Remove Filter' button.

A callout box on the right side of the dialog box says 'Use picklists to build your query'.

As you build your query, it will appear in the box below the picklists [21]. Once you have finished building your query, you may click “Query New Selection.”

Using Selected Features

Once you've made a selection, either by spatial selection or by attributes, all of the selected features will be highlighted.

Zoom to the selected features



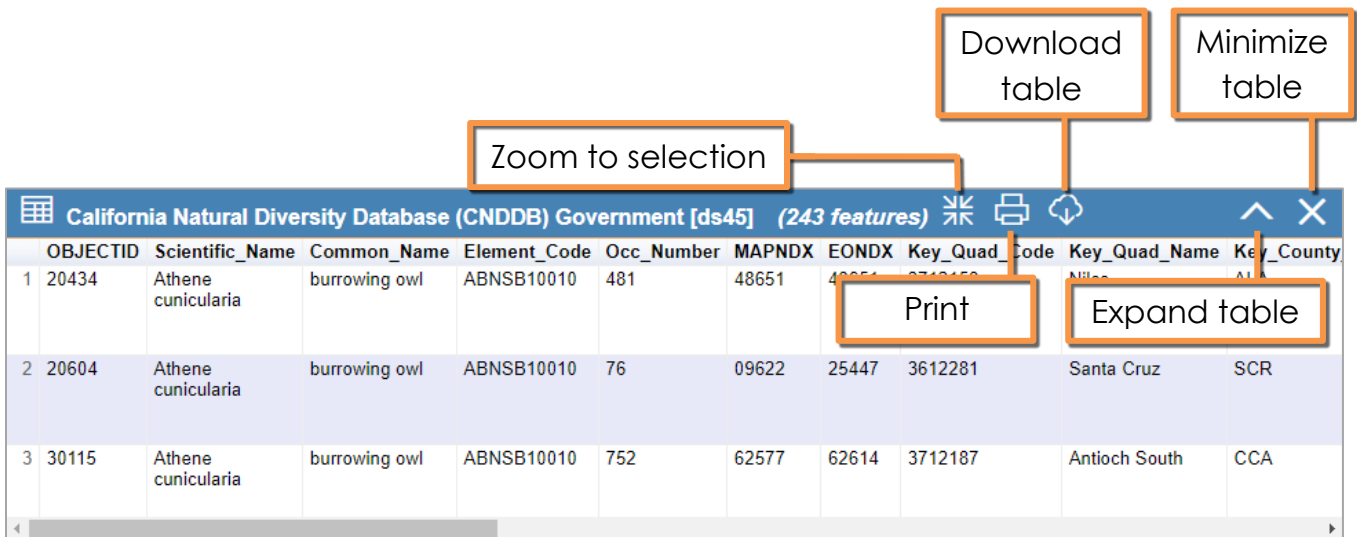
In the Graphics Layers section of the Contents Panel, you will see the layer containing your new selection. Click the Zoom to Selection button  to zoom to the selected features.

Table of selected features

Right after you make a selection, a table should appear at the bottom of browser window. If you close your table at any point, you may open it back up by navigating to the Graphics Layers section of the Contents Panel, locating the layer that you selected from, and clicking the Display selection attributes button .

Several buttons are on the top blue bar of the table that allow you to zoom to selection, print the table, download the table, expand the table, or minimize the table.



The screenshot shows a table titled "California Natural Diversity Database (CNDDDB) Government [ds45] (243 features)". The table has columns: OBJECTID, Scientific_Name, Common_Name, Element_Code, Occ_Number, MAPNDX, EONDX, Key_Quad_Code, Key_Quad_Name, and Key_County. The first three rows are visible, all for the species "Athene cunicularia" (burrowing owl). The table has a blue header bar with several icons: a zoom icon, a print icon, a download icon, and a minimize icon. Callouts point to these icons with labels: "Zoom to selection" points to the zoom icon, "Download table" points to the download icon, "Minimize table" points to the minimize icon, "Print" points to the print icon, and "Expand table" points to the expand icon.

OBJECTID	Scientific_Name	Common_Name	Element_Code	Occ_Number	MAPNDX	EONDX	Key_Quad_Code	Key_Quad_Name	Key_County
1 20434	Athene cunicularia	burrowing owl	ABNSB10010	481	48651	40051	3712150	Antioch South	CCA
2 20604	Athene cunicularia	burrowing owl	ABNSB10010	76	09622	25447	3612281	Santa Cruz	SCR
3 30115	Athene cunicularia	burrowing owl	ABNSB10010	752	62577	62614	3712187	Antioch South	CCA

Filters

One of the most requested feature enhancements by CNDDDB subscribers using BIOS to view the CNDDDB Element Occurrences has been the ability to view subsets or only a specific portion of the CNDDDB data. This may be helpful to make maps clearer to understand where there are many CNDDDB occurrences.

For example, one map may be filtered to show only plants, and another map to show only animals for the same location. You may also choose to filter so that only occurrences for a single species are displayed. Note: CNDDDB recommends that all CNDDDB-tracked species be considered during environmental review and not excluded from analysis.

To filter, first make a selection using the [Select by Attributes tool](#). Once you have a selection, choose "Selection as Filter" at the very bottom of the Select by Attributes menu. When you want to remove a filter, click the Remove Filter button.

Select By Attributes

FROM **California Natural Diversity Database (CNDDDB) Government [ds45]** WHERE

▼ **Query or Filter Layer**

--SELECT ATTRIBUTE FIELD--

--SELECT RELATED COLUMN--

?field data type

--OPERATOR--

--FIELD VALUE(S)--

Find/Filter field values by

OR

CLEAR SQL EXPRESSION

Query New Selection Query Within Selection

Clear Selection

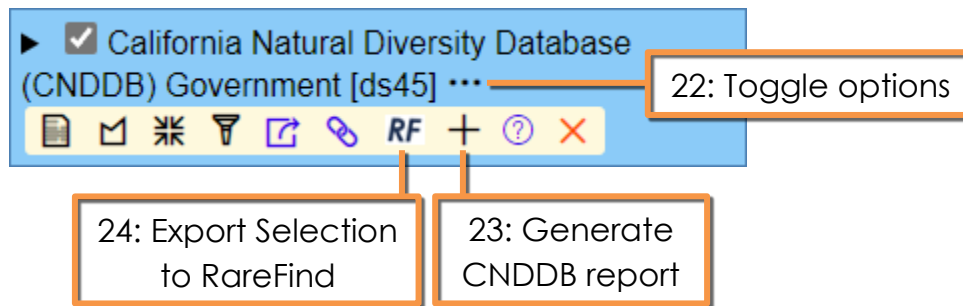
Layer Filtering

Filter Layer Selection As Filter

Remove Filter

Reports

After Element Occurrence records are selected from the CNDDDB layer, an Element Occurrence Report can be generated. To generate a report, go to the Contents Panel and toggle more options on by clicking on the ellipses under the CNDDDB layer in BIOS Layers [22]. A row of additional options should appear. The “+” button generates CNDDDB reports based on what you've selected in the CNDDDB layer [23]. When you click on that button, a pop-up window should appear and indicate that the report is being generated and then downloaded. Please allow pop-ups if prompted. Additional report formats and tabular data exports are available using [RareFind](#).



Export to RareFind

For further analysis of occurrence details or reporting functions, a selected set of Element Occurrences from the CNDDDB layer in BIOS can be exported to RareFind. Click the “RF” button that appears after clicking on the ellipses in the previous example [24]. This will open RareFind in a new browser window with the selected records loaded. If RareFind is already open in a different browser window, RareFind will refresh with your BIOS selection. Please allow pop-ups if prompted.

Export Selected Records from RareFind to BIOS

The previous demonstration showed how to pass selected CNDDDB occurrences in the BIOS viewer to RareFind (RareFind has more reporting and tabular export functions, as well as more data fields available). Conversely, a selection can be made in RareFind and exported to BIOS to view the selection spatially on a map. Furthermore, BIOS contains a printing function that creates a PDF map of the data and view displayed in BIOS, which could be saved for printing, emailing, or adding to documents.

Once a query is made in RareFind, simply click the BIOS tab in RareFind [25]. A small window with up to five options will appear below the tab. The BIOS tab is best used while viewing the Results tab; what you have selected in the “Elements” [26] and “Occurrences by Selected Elements” [27] tables will affect the options you may choose from.

The screenshot shows the RareFind interface with the BIOS tab selected. A dropdown menu is open, showing options for BIOS 5 and BIOS 6, and four map display options. The current selected element is 'ghost-pipe' (Monotropa uniflora), and occurrence number 2 is selected in the 'Occurrences by Selected Element' table.

Query	Results	Occurrence Details	Reports	BIOS	Export/Import	Help																														
<div style="border: 1px solid black; padding: 5px;"> <input type="radio"/> BIOS 5 <input checked="" type="radio"/> BIOS 6 Show map with no selection Show map with all returned occurrences (407) Show map with only current element's occurrences (115) Show map with only current element's selected occurrences (1) </div>																																				
<table border="1"> <thead> <tr> <th>Image Search</th> <th>Scientific Name</th> <th>Common Name</th> <th>Class</th> <th>Code</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>Monotropa uniflora</td> <td>ghost-pipe</td> <td>Dicots</td> <td>PDMON03030</td> <td>115</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Rana aurora</td> <td>northern red-legged frog</td> <td>Amphibians</td> <td>AAABH01021</td> <td>292</td> </tr> </tbody> </table>							Image Search	Scientific Name	Common Name	Class	Code	Count	<input type="checkbox"/>	Monotropa uniflora	ghost-pipe	Dicots	PDMON03030	115	<input type="checkbox"/>	Rana aurora	northern red-legged frog	Amphibians	AAABH01021	292												
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<input type="checkbox"/> 3				Extant	Specific bounded area																															
<input type="checkbox"/> 4				Extant	Non-specific bounded area																															

- **Show map with no selection:** This option will open the BIOS map viewer in a new window (if it is not open already) and then load and display the CNDDDB layer.
- **Show map with ALL returned occurrences (#):** Opens BIOS, loads the CNDDDB layer, and then zooms to a layer created from all the occurrences your RareFind query. The number of occurrences selected is shown in the parentheses.
- **Show map with current element's occurrences (#):** Opens BIOS, loads the CNDDDB layer, and then zooms to a layer created from the occurrences for the current element [26] highlighted in the RareFind Results tab (all occurrences

displayed in the Occurrences table at the bottom of the Results tab). The number of occurrences selected is shown in the parentheses.

- **Show map with current element's selected occurrences (#):** Opens BIOS, loads the CNDDDB layer, and then zooms to a layer created from the selected occurrence(s) [27] of the currently selected element (occurrences checked in the Occurrences table). The number of occurrences selected is shown in parentheses.
- **Show map with currently displayed occurrence (#):** This option is only seen when clicking on the BIOS tab while on the Occurrence Details Screen [28]. This option opens the BIOS data viewer, loads the CNDDDB layer, and then zooms to a layer created from the occurrence that is currently displayed on the occurrence details screen.

The screenshot shows the 'Occurrence Details' tab selected in the top navigation bar. Below the navigation bar, there are tabs for 'Element Details', 'Record: 2 of 2', and a BIOS dropdown menu. The BIOS menu is open, showing the following options:

- BIOS 5
- BIOS 6
- Show map with no selection
- Show map with all returned occurrences (407)
- Show map with only current element's occurrences (292)
- Show map with only current element's selected occurrences (0)
- Show map with currently displayed occurrence (1)

The fifth option, 'Show map with currently displayed occurrence (1)', is highlighted with an orange box. A text box next to it says '28: Fifth option only available while on Occurrence Details tab'.

Below the BIOS menu, there are sections for 'General Habitat', 'Micro Habitat', and 'Habitats'. The 'General Habitat' section contains the text: 'Humid forests, woodlands, grasslands, and streamside in northwestern California, usually near dense riparian cover.' The 'Micro Habitat' section contains the text: 'Generally near... be found far from... and meadows, ... season.'

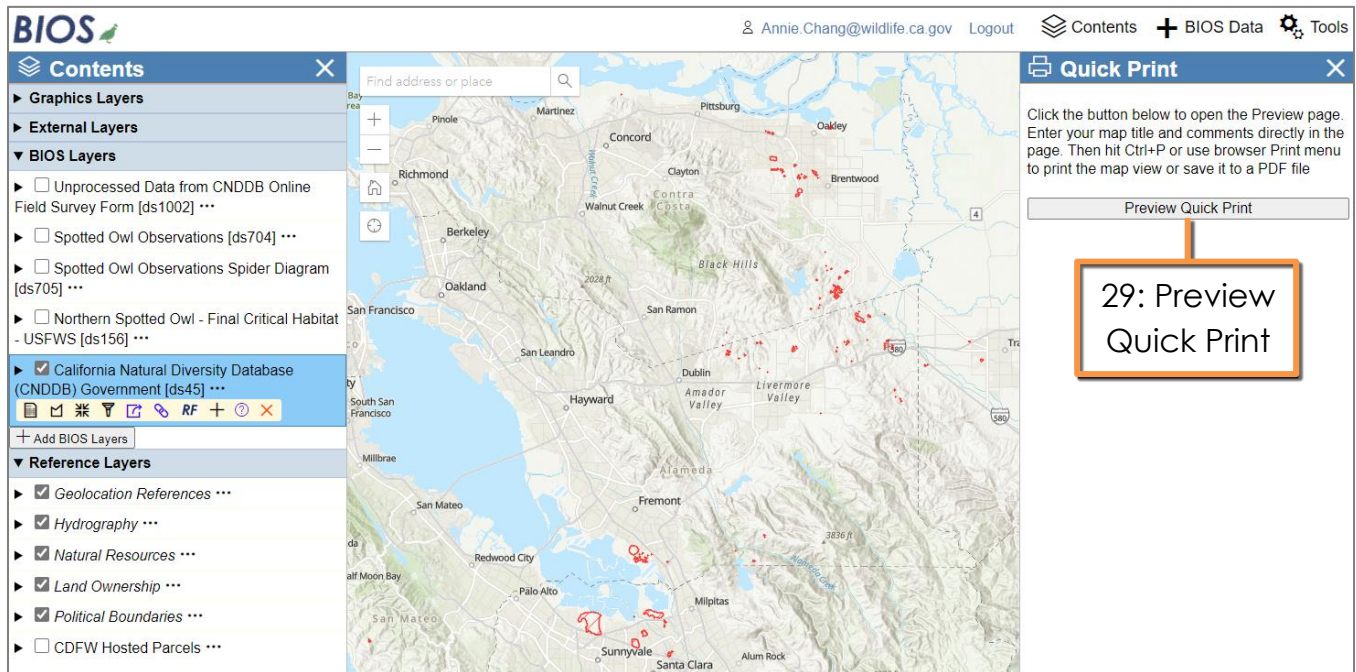
At the bottom of the screen, there is an 'Occurrence Details' section with 'Record: 1 of 292' and a 'Print' button. Below this is a table with the following columns: Occurrence Number, EOndx, Mapndx, Occurrence Rank, Date Element Last Seen, Date Site Last Seen, Presence, Trend, and Natural/.

Occurrence Number	EOndx	Mapndx	Occurrence Rank	Date Element Last Seen	Date Site Last Seen	Presence	Trend	Natural/
2	6499	24554	B-Good	2011-01-18	2011-01-18	Presumed Extant	Unknown	Natural/

Please allow pop-ups for the BIOS browser window to open. For more information on how to work with the CNDDDB data in RareFind, refer to our [Rarefind 5 User Guide](#).

Create PDF of Map & Data

The Quick Print tool in BIOS allows you to print your current map view into a PDF. First, navigate to your area of interest, select an appropriate basemap, have the layers turned on that you are interested in showing on your map, and add any labels to your map (see the [BIOS 6 User Guide](#) for details on how to do this). Once you have the view and layers set up the way you like, go to the Tools menu and select Quick Print, and then Preview Quick Print from the menu that appears [29].



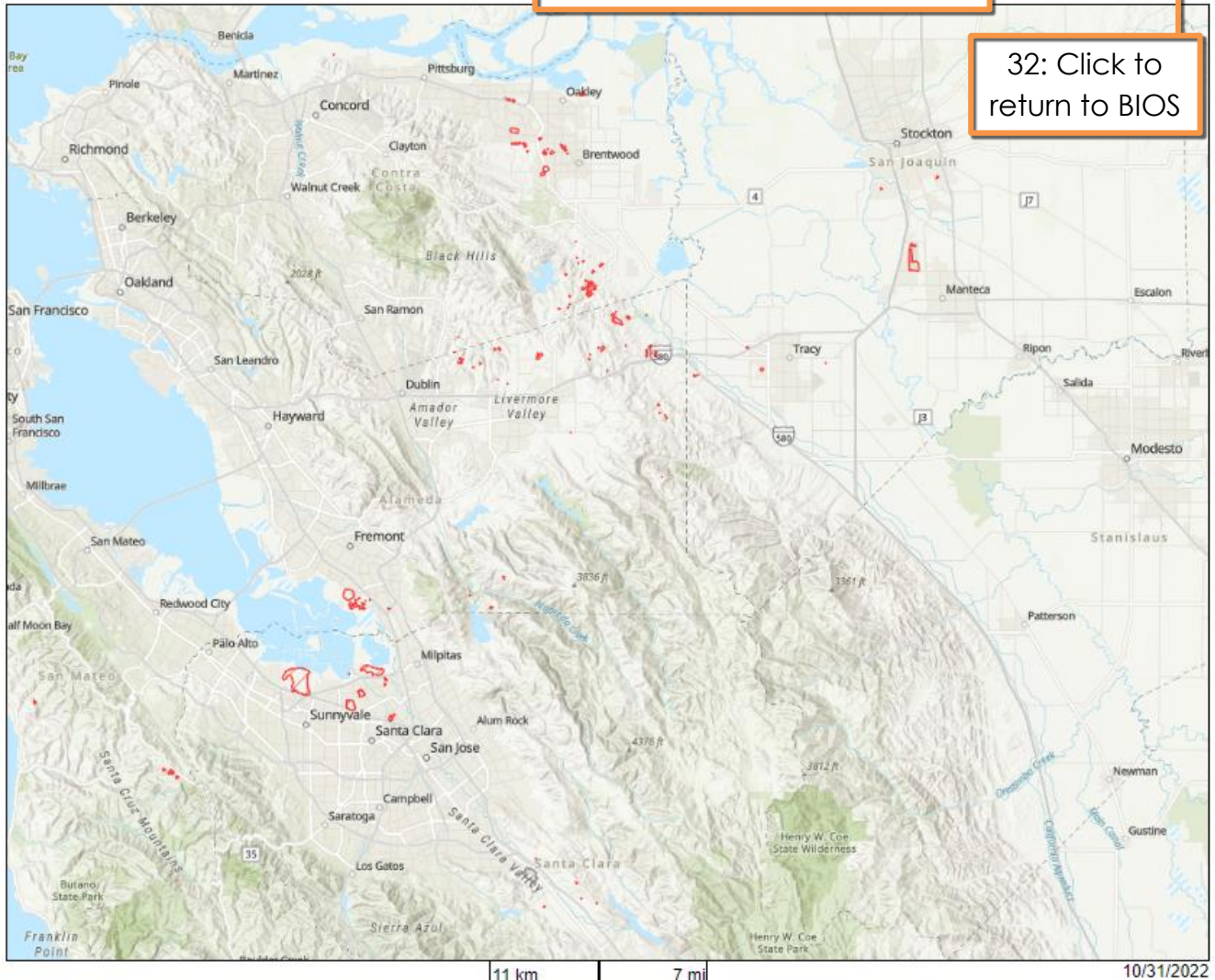
The preview window will appear over the map which includes a title, image of the current map extent (with currently visible layers), a map scale bar, a description, the current date, and the map legend. The title [30] and description [31] can be edited by first clicking on the text. Once edits have been made and you are ready to print, press CTRL+P on your keyboard or navigate to your browser's print function and select the option to print to PDF. Press the blue X button on the upper right-hand corner to return to BIOS [32].

BIOS Map (ENTER MAP TITLE HERE)

30: Click and type to edit title



32: Click to return to BIOS



(ENTER MAP CAPTION OR YOUR DESCRIPTION HERE)

31: Click and type to edit description

Map Legend

Biosds45 fps - California Natural Diversity Database (CNDDB) Government [ds45]

Symbology

Plant (80m)



Appendix 1: Conditional statements in BIOS 6

Conditional statements are used in a query, which is a way to investigate data. In BIOS 6, Conditional statements are used in the Select by Attributes tool. A conditional statement is comprised of three components: fields, operators, and values. The statement must follow a syntax (format) to be valid. More complex statements can be created by using connectors.

Fields

Fields are components that provide structure in a table. You may typically identify a field by looking at the header in a table. That header or field name should describe what data is contained in the column.

Operators

Operators are words or characters used to perform a task. In BIOS 6, you may use the following operators to generate a query:

Operator	Symbol	Description
Equals	=	Returns record(s) which equal a value
Not Equal	<>	Returns record(s) which do not equal a value
Less than	<	Returns record(s) which are less than a value
Less or Equal	<=	Returns record(s) which are less than or equal to a value
Greater than	>	Returns record(s) which are greater than a value
Greater or Equal	>=	Returns record(s) which are greater than or equal to a value
LIKE	LIKE '%%'	Used to find a record(s) with a portion of text, with a wildcard '%'
IN (List...)	IN ()	Returns record(s) that match a list of values
Is Null	IS NULL	Returns record(s) with a null value
Is Not Null	IS NOT NULL	Returns all record(s) except those with a null value
Is Not Blank	<>''	Return(s) all records which are not blank and not null

Values

Values are the data within the database, which is returned in response to your query.

Connectors

Connectors allow you to build complex queries by joining two or more conditional statements together.

Connector	Description
AND	Returns records where <u>both</u> statements are true
OR	Returns record(s) where <u>either</u> statement is true

Examples:

Example data:

ComName	Location	Number	Elevation_ft
Snowy egret	Carnegie SVRA		1850
Western toad	Carnegie SVRA	4	1725
Mule deer	Carnegie SVRA	3	2150
Gophersnake	Carnegie SVRA	1	1975
Mule deer	Stanislaus NF	6	4250
Barn owl	Stanislaus NF	11	1750

Example queries and results using various operators and connectors:

1. Equals

a. Query: ComName = 'Western toad'

b. Result:

ComName	Location	Number	Elevation_ft
Western toad	Carnegie SVRA	4	1725

2. Not Equal

a. Query: Location <> 'Carnegie SVRA'

b. Result:

ComName	Location	Number	Elevation_ft
Mule deer	Stanislaus NF	6	4250
Barn owl	Stanislaus NF	11	1750

3. Less Than

a. Query: Elevation_ft < 1750

b. Result:

ComName	Location	Number	Elevation_ft
Western toad	Carnegie SVRA	4	1725

4. Less or Equal

a. Query: Elevation_ft <= 1750

b. Result:

ComName	Location	Number	Elevation_ft
Western toad	Carnegie SVRA	4	1725
Barn owl	Stanislaus NF	11	1750

5. Greater Than

a. Query: Number > 6

b. Result:

ComName	Location	Number	Elevation_ft
Barn owl	Stanislaus NF	11	1750

6. Greater or Equal

a. Query: Number >= 6

b. Result:

ComName	Location	Number	Elevation_ft
Mule deer	Stanislaus NF	6	4250

Barn owl	Stanislaus NF	11	1750
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7. Like

a. Query: Location LIKE '%SVRA'

b. Result:

ComName	Location	Number	Elevation_ft
Snowy egret	Carnegie SVRA		1850
Western toad	Carnegie SVRA	4	1725
Mule deer	Carnegie SVRA	3	2150
Gophersnake	Carnegie SVRA	1	1975

8. In (List...)

a. Query: ComName IN ('Mule deer', 'Gophersnake')

b. Result:

ComName	Location	Number	Elevation_ft
Mule deer	Carnegie SVRA	3	2150
Gophersnake	Carnegie SVRA	1	1975
Mule deer	Stanislaus NF	6	4250

9. Is Null

a. Query: Number IS NULL

b. Result:

ComName	Location	Number	Elevation_ft
Snowy egret	Carnegie SVRA		1850

10. Is Not Null

a. Query: Number IS NOT NULL

b. Result:

ComName	Location	Number	Elevation_ft
Western toad	Carnegie SVRA	4	1725
Mule deer	Carnegie SVRA	3	2150
Gophersnake	Carnegie SVRA	1	1975
Mule deer	Stanislaus NF	6	4250
Barn owl	Stanislaus NF	11	1750

11. Is Not Blank

a. Query: Location <> ''

b. Result: (all results returned)

ComName	Location	Number	Elevation_ft
Snowy egret	Carnegie SVRA		1850
Western toad	Carnegie SVRA	4	1725
Mule deer	Carnegie SVRA	3	2150
Gophersnake	Carnegie SVRA	1	1975
Mule deer	Stanislaus NF	6	4250
Barn owl	Stanislaus NF	11	1750

12. And

a. Query: Location LIKE '%SVRA' AND Elevation_ft > 1850

b. Result:

ComName	Location	Number	Elevation_ft
Mule deer	Carnegie SVRA	3	2150
Gophersnake	Carnegie SVRA	1	1975

13. Or Location LIKE '%SVRA' OR Elevation_ft > 1800

a. Query:

b. Result:

ComName	Location	Number	Elevation_ft
Snowy egret	Carnegie SVRA		1850
Western toad	Carnegie SVRA	4	1725
Mule deer	Carnegie SVRA	3	2150
Gophersnake	Carnegie SVRA	1	1975
Mule deer	Stanislaus NF	6	4250