**Searching the mammalweb database**

Both scientistSearch.html and userSearch.html offer the capacity to search the mammalweb database regarding specific attributes, for scientists and normal users respectively. The former allows searches for sites or photos using dropdowns\_sites.php and dropdowns\_images.php, whereas the latter allows searches only for photos, using dropdowns\_images.php. Both the site search and the photo search function very similarly.

The dropdown files generate dropdown menus for selecting attributes, populating the dropdowns using the database, as well as a map generated using google maps javascript API whereby the user can select a square area by left clicking twice.

Submitting the searches sends the variables selected by the user to the file image\_display for a photo search, and site\_display for a site search, along with the variable userMode storing the type of user doing the search.

**Viewing search results**

The files image\_display and site\_display both generate SQL queries by searching the $\_REQUEST array for specific predesignated variables corresponding to those for which there are dropdowns in the previous pages. The SQL query is then executed on the mammalweb database, and the results (if there are any) are displayed in a table using the php echo function, including a button where appropriate to display each result on a map (using google maps embed API) for sites, or a button to display the photo for photos.

**Downloading result data**

On the image\_display and site\_display pages showing results of a query, if the page is in scientist mode (as a pose to user mode), i.e. if the userMode variable is set to ‘s’, a button is generated labelled ‘download results’. Clicking this button sends the SQL query to exportToCSV.php , which downloads the results in CSV format.

**Viewing graphs of results**

On the image\_display and site\_display pages, a button labelled ‘view graphs’ also loads. Clicking this button links to the userDashboard or scientistDashboard pages, again depending on the log in mode. On these dashboard pages, a dropdown menu allows you to select an attribute on which to generate a bar chart of the results (using the d3 graph library and code in the file scientistDashboard.js or userDashboard.js), and a graph is generated using google maps javascript API displaying the locations of the results.

**Additional comments**

In order to use all the google maps associated with this project, it was required to add latitude and longitude columns in the database. The script ‘updateLatLong’ uses the external script phpCoord to do this for the purposes of this project, but in a commercial setting, an alternative way of adding/updating latitude and longitude data in the table might be necessary if google map functionality is desired. For more information on licensing, see the document entitled “List of external libraries and code”.

For the purposes of this project, we have not implemented a proper log in system for users or scientists, as this would be tied in with the log in system already in place for MammalWeb. The userMode variable pertains to the current log in mode, so this would need to be edited to integrate a different log in system.