Studying Great Egrets with Movebank

Following the egret associated with your school can be fun on its own, but how can you use the data in your classroom to provide a more scientific learning experience for your students? There is a lot you can do with the data from your bird! The following activity will guide you through the process of tracking your bird during various stages of its life so that you can learn about your bird's habitat preferences in each stage.

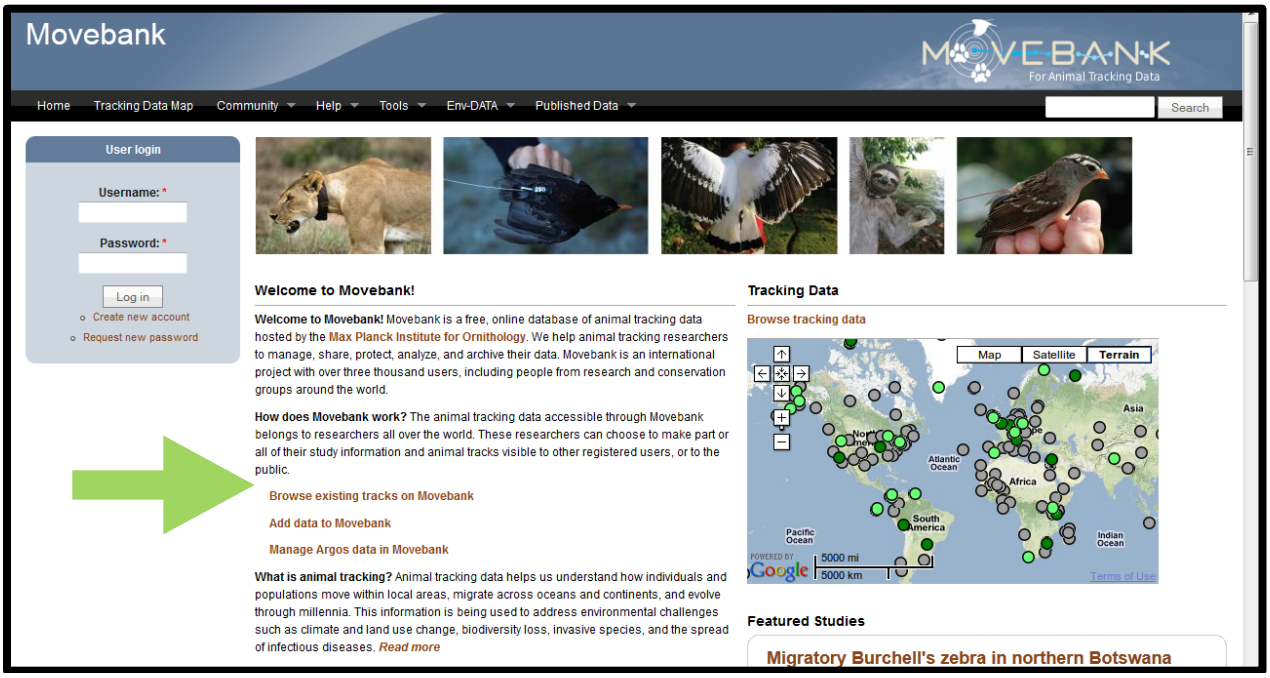
Tools Required:

Computer with internet access, Google Earth installed
Data sheet or notebook so you can record your data

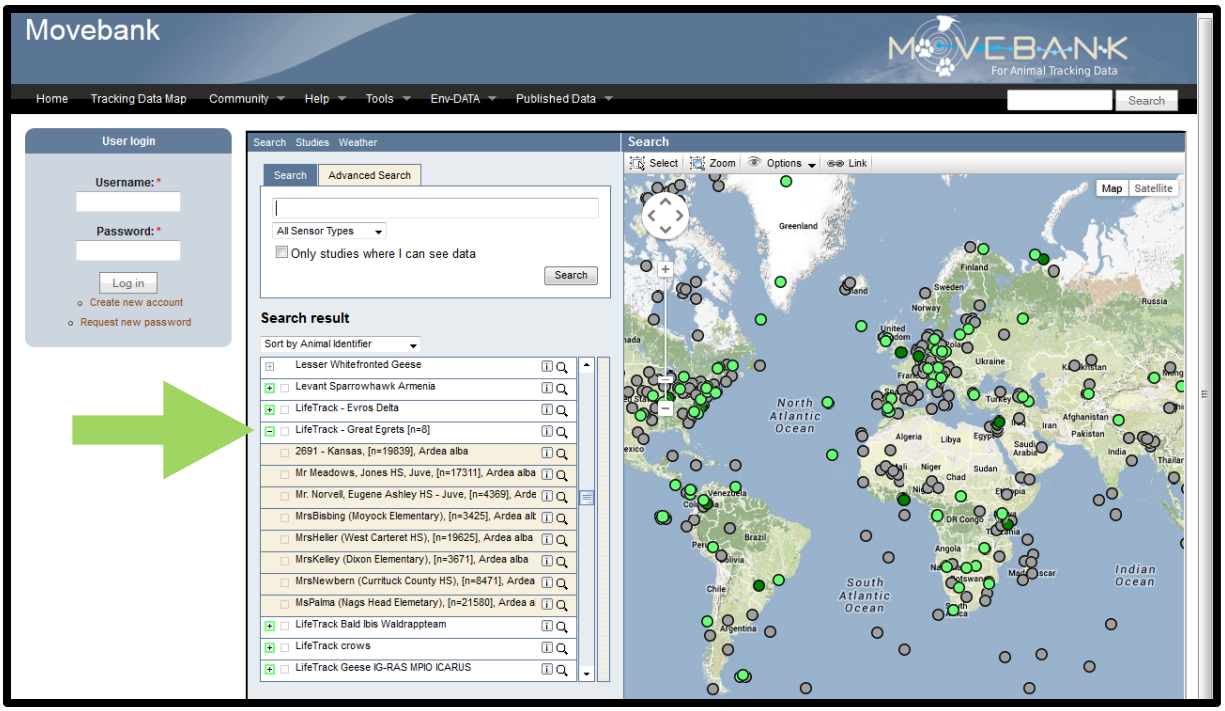
Instructions:

Accessing and Downloading the Data

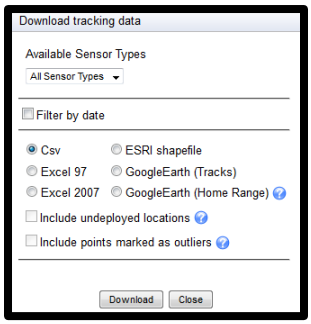
The first thing you'll need to do is download the dataset for your bird from Movebank. To do this, visit movebank.org. On the homepage, you'll see a link to "Browse existing tracks on Movebank." Click it:



Under the section called "Search studies," you'll see a link to "Tracking Data Map." Click the link. You'll see several sets of tracks appear to the left of the map, so scroll down until you see the tracks for LifeTracks: Great Egrets. Click on the + next to the track name to show the birds included in the study:



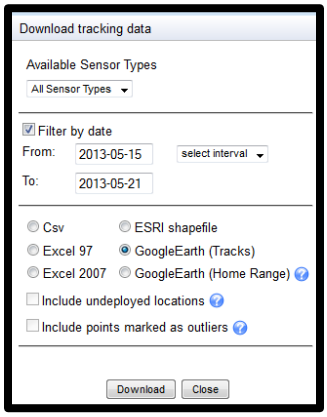
Next you'll download the data specific to your bird. Click the information box to the right of your bird (the box with an "i" in the center) and you'll see some options pop up. Select the "Download search result" option and another box will pop up:



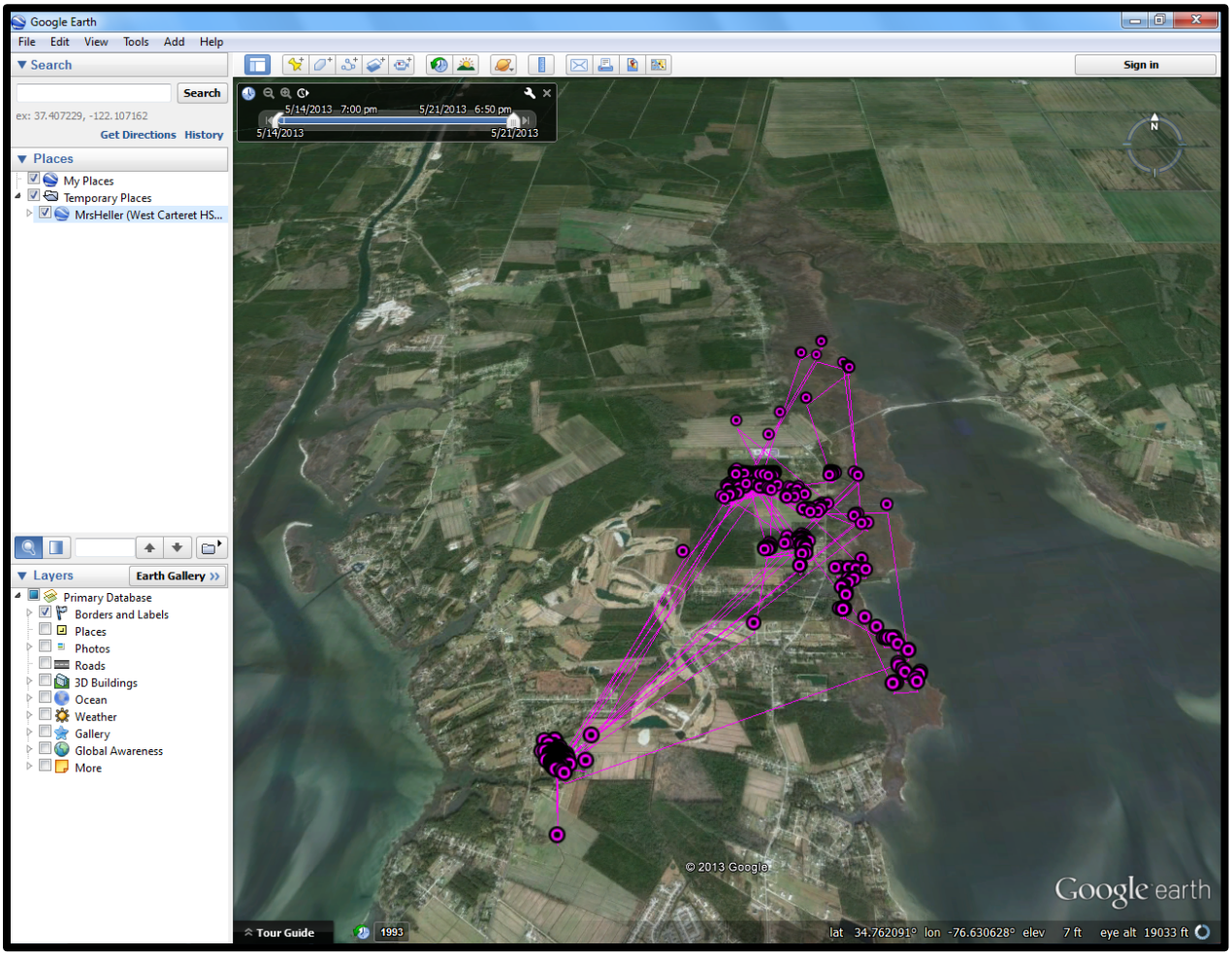
These datasets are huge and we want to look at some key time periods in which the birds were doing interesting things, such as breeding, migrating, or foraging in the post-breeding season, so we're going to download a subset of the data. Check the box that says "Filter by date" and choose a set of dates from the table:

Bird	Breeding	Post Breeding	Winter	Migration Stopover
MsKelly	05/15/13	08/01/13	03/30/13	10/12/13
MsPalma	05/15/13	n/a	4/1/2013	10/28/2013
MsHeller	05/15/13	08/01/13	03/30/13	10/12/13
Mrs Bisbing	05/15/13	08/01/13	12/2/2013	11/16/2013
MsNewbern	05/15/13	8/6/2013	?	?
Kansas	6/1/2013	n/a	10/21/2013	10/9/2013

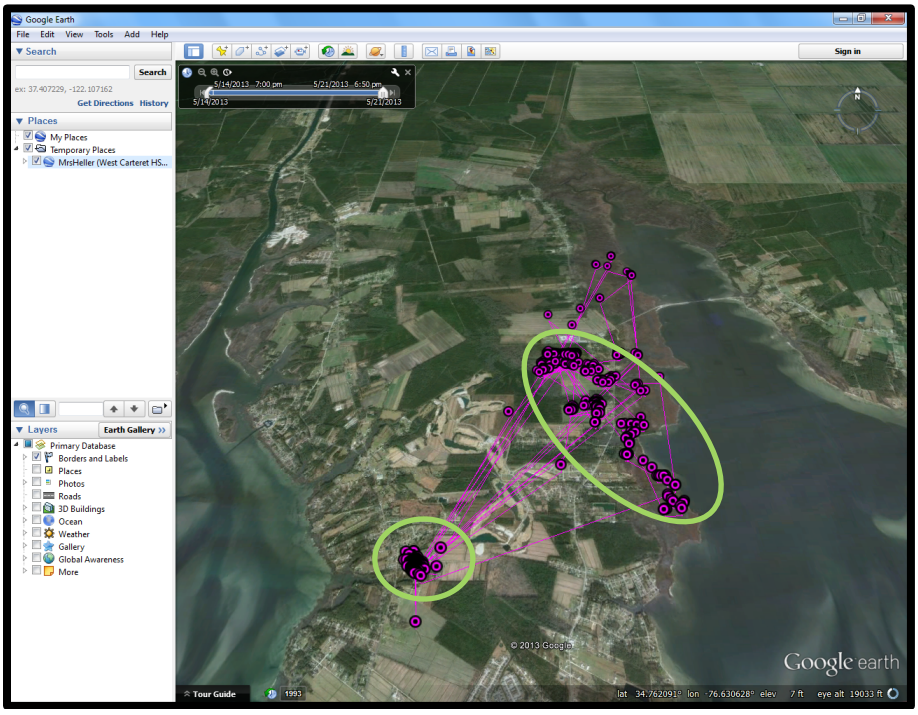
Enter the date from the table into the “From” box, then choose the date a week later to enter into the “To” box (record these dates and the activity on your data sheet!). Select the “Google Earth (Tracks)” option from the file options and click download:



You will be prompted to tell your computer whether you want to save or open the file. If you save, remember where you saved the file, navigate to that location, and open the file in Google Earth. Otherwise, click “Open” and you will see a series of data points in Google Earth:

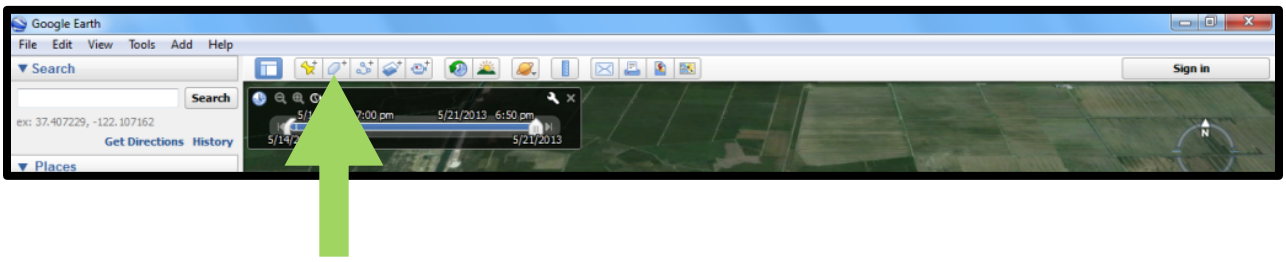


The image above represents Mrs. Heller's breeding ground. You'll notice that there are two main clumps of dots:

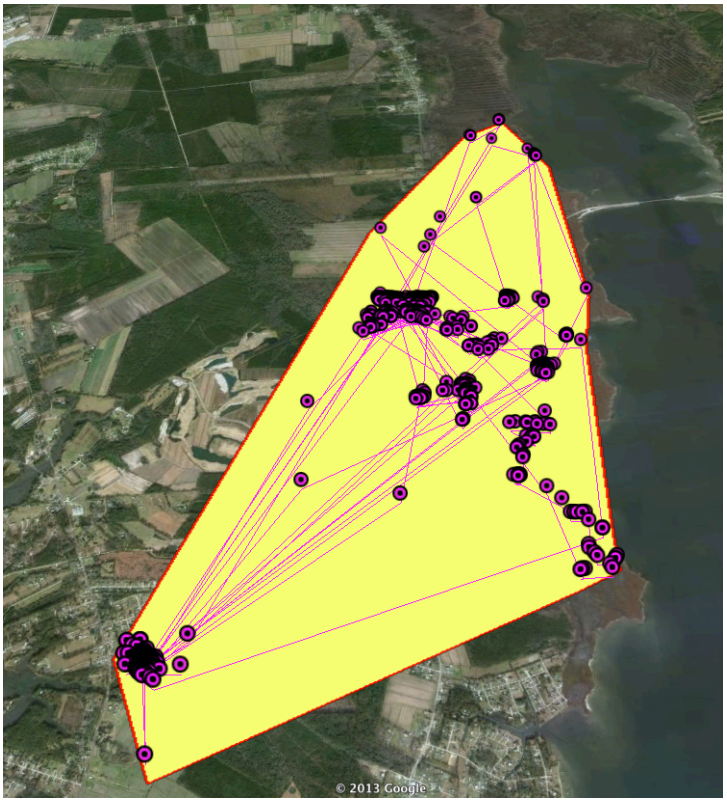


These are the primary areas in which this bird was active during the breeding season. But what sort of habitat did she prefer during her breeding season? Let's make some calculations!

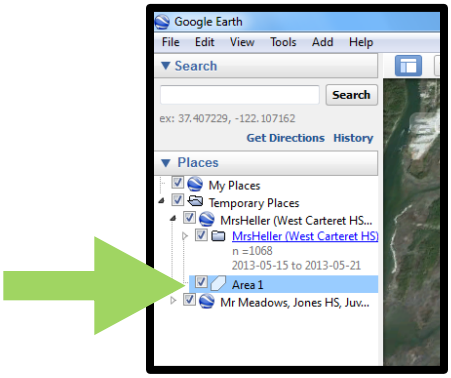
First, measure the size of the area being used by the bird. To do this, you'll need to highlight all areas where you see lots of dots clustered in groups, those primary areas in which the bird was active. Select the polygon tool from the row of tools at the top of the screen:



Position your cursor along the edge of the clump of dots you want to measure, click, and drag the cursor along the outer edge of the clump of dots, following the contours of the area:

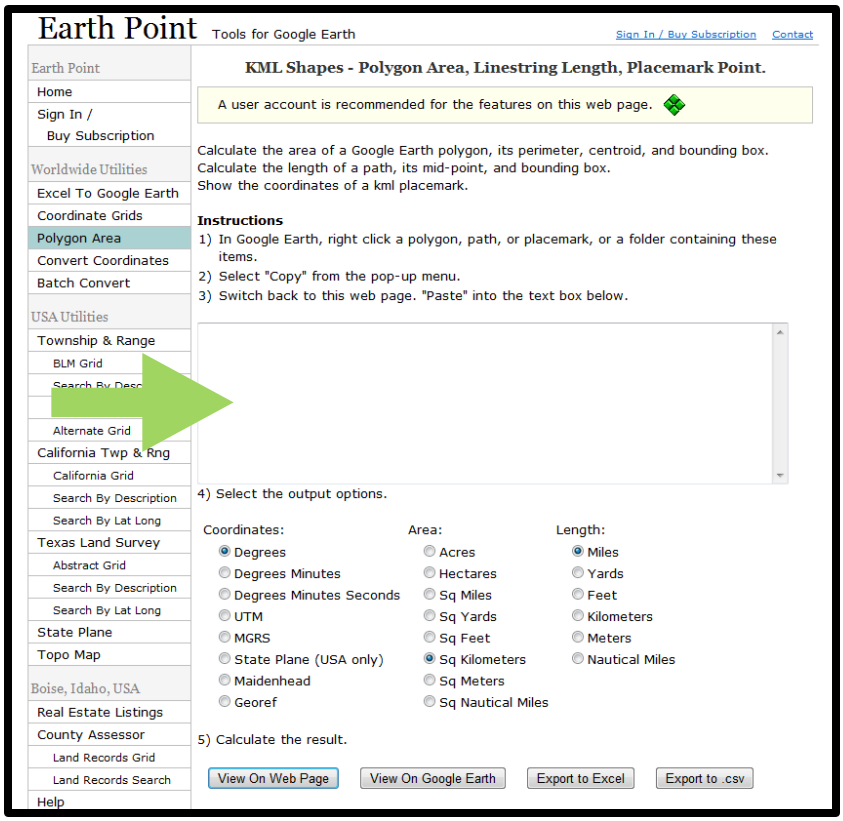


Give your area a name in the box on the left so you'll remember which one it is, then click "OK." You'll see the new polygon appear in the Places in the upper left area of the screen:



Unless you have Google Earth Pro, you're going to need to use an external service to measure the area of your polygon. To do this, right click on the name you've given your polygon and click "Copy." Then visit this website:

http://www.earthpoint.us/shapes.aspx
You'll see something like this when you arrive at the webpage:



Click inside the box marked with the arrow and paste the text you copied from Google Earth into the box. We want to measure the area of the polygon we created, so click the "Sq Kilometers" option below the "Area" heading below the box. Click the "View on Web Page" button to calculate the area, then scroll down a bit the page reloads. You'll see a summary of your data listed. Record the area listed on the back of the data sheet or in your notebook – you'll need to add the measurements for each area together to get the total area of the home range.

Calculate the area of any other clusters of dots on your map and record the area for each on your data sheet or in your notebook. When you have measured all of them, add up the values to get the total size of the habitat. Record the value in the "Total Size of Home Range" column on the data sheet.

Now take a look at the areas under the polygons. Zoom into an area where one of your polygons is marked and uncheck the box for that polygon in the "Places" area of Google Earth so you can see the landscape underneath. What kinds of habitats are dominant in that area? Possible habitat types include marsh, farm, urban, suburban, forest, etc. Record the dominant habitat types in the "Home Range Habitat" column on the data sheet.

Next, we want to see how urban your area is. Estimate the total number of houses in the area under all of your polygons combined. Choose one of these options:

0
1-100
100-1000
More than 1000

The number of houses is important to note because they might impact behavior. For example, your egret might prefer to be away from houses when they breed, but are more tolerant of people when their offspring have fledged and they return to normal foraging.

Last, make any notes about the habitat under the polygons you've measured. You might be surprised by how important this information is when you compare several birds, so jot down anything you notice.

You've now collected the data for one of the life stages of your bird! Your bird probably has other interesting life stages to examine, so choose another date from the table on page 2 and calculate the total area of the home range, describe the habitat of the home range, record the number of houses in the area, and make notes for the remaining date ranges using the same process from the first sequence.

Once you have all of the sequences completed, take a look at your data. You may be able to answer questions such as these:

1) Does your bird prefer a less urban environment during the breeding season than at other times of the year?
2) Is the habitat where your bird stopped over on its migration similar to other habitats that it used?
3) Does your bird prefer a certain habitat type over others? Does this change depending on the life stage it is in?

If time allows, it can be worthwhile to examine the data from multiple birds. You might start to notice trends in the data when you compare several birds that you can't see with a single bird. Scientists usually study the behavior, habitat preferences, and other characteristics of a species by observing several different animals specifically so they can spot some of the larger trends. Although your school has a single bird associated with it, the research team involved in this project is looking at several birds so that we can learn more about them as a group. However, the individual behaviors of a single animal can be interesting too. Think of it as your bird's "personality!"

There are many questions that you can answer with the data sets for the egrets in this study. You could examine whether the habitat preferences of the birds change throughout the day (do they prefer marshy habitats in the morning and move to farm fields in the afternoon?), the average distance your bird flies in a single day during its migrations, or whether the timing of the migration of your bird is similar to others in the area. Try to think of a few questions you might answer using the data for your bird on Movebank and record them on the back of this sheet!