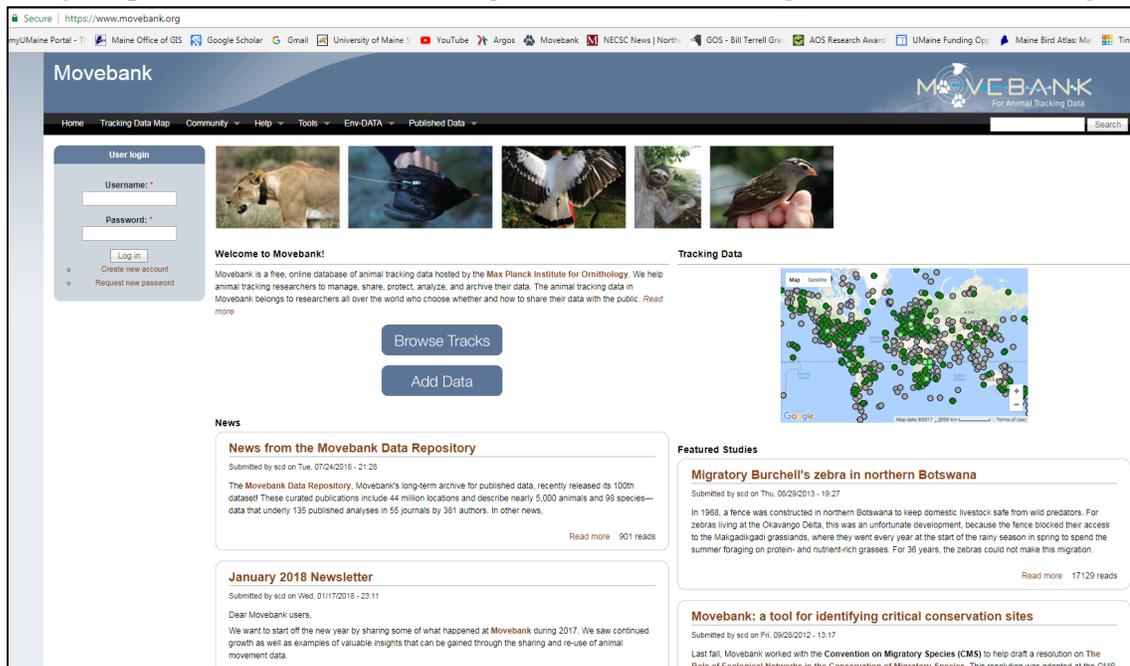


# Accessing and Downloading Movebank Data and Viewing Data in GoogleEarth

Created by  
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Last Updated: December 2018

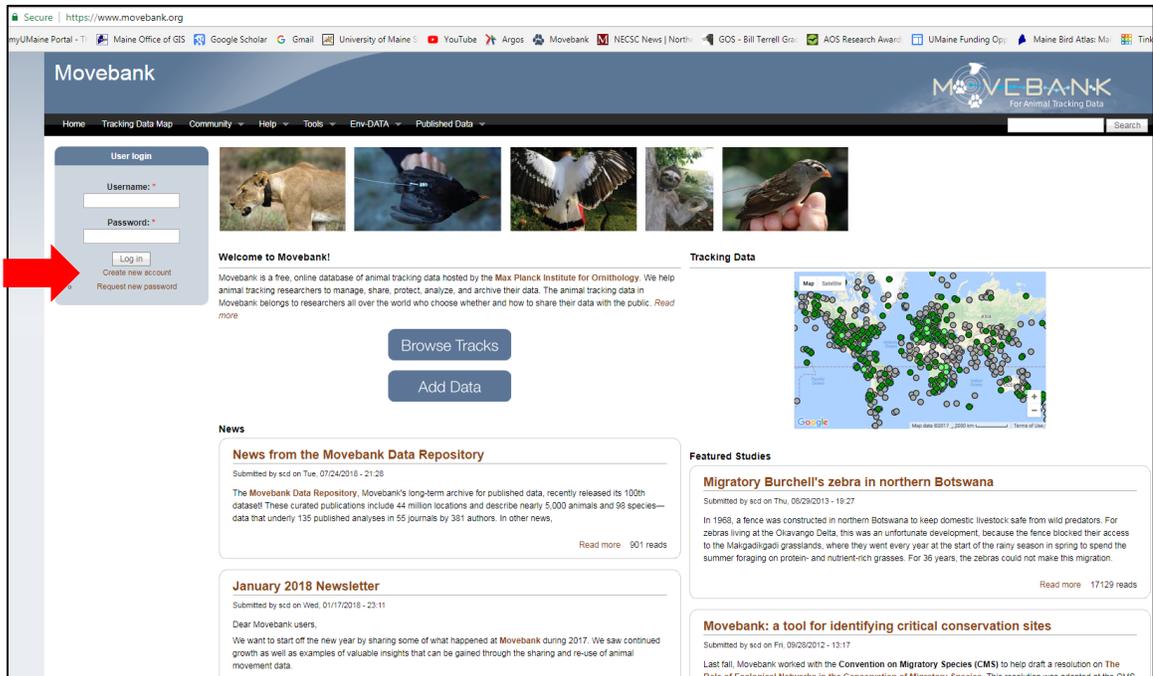
## I. Creating User Account

1. Use your preferred web browser, navigate to Movebank < <https://www.movebank.org/>>.

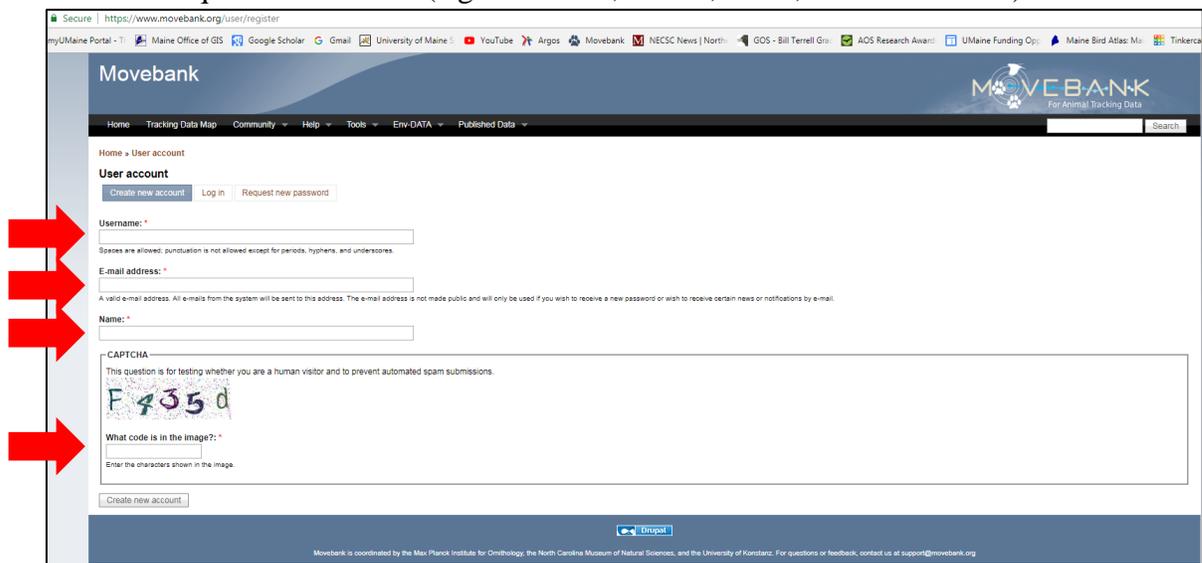


The screenshot shows the Movebank website homepage. At the top, there is a navigation bar with links for Home, Tracking Data Map, Community, Help, Tools, Env-DATA, and Published Data. A search bar is located on the right side of the navigation bar. Below the navigation bar, there is a "User login" section with fields for Username and Password, and a "Log in" button. To the right of the login section, there are five small images showing various animals: a lion, a bird, a hawk, a monkey, and a turtle. Below the images, there is a "Welcome to Movebank!" section with a brief description of the platform and two buttons: "Browse Tracks" and "Add Data". To the right of the welcome section, there is a "Tracking Data" section with a map showing animal tracks. Below the map, there is a "News" section with two articles: "News from the Movebank Data Repository" and "January 2018 Newsletter". To the right of the news section, there is a "Featured Studies" section with two articles: "Migratory Burchell's zebra in northern Botswana" and "Movebank: a tool for identifying critical conservation sites".

2. Click on 'Create new account'. If you have a pre-existing account, log into the account rather than creating a new account.



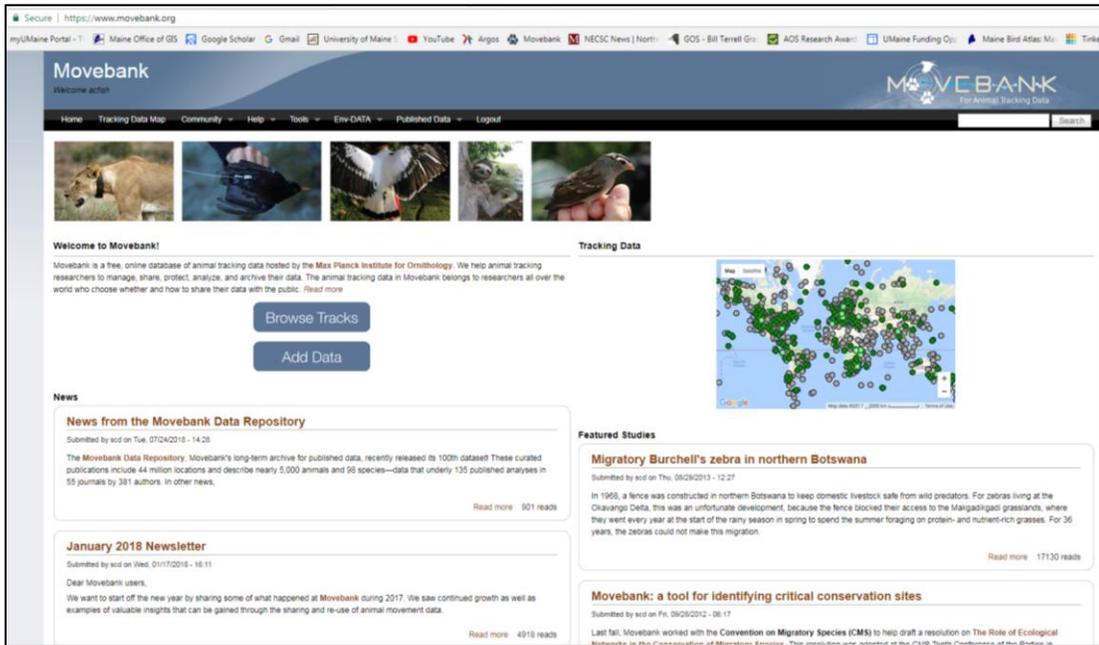
3. Fill in all required data boxes (e.g. username, e-mail, name, and CAPTCHA).



4. After creating an account, you will be e-mailed your password. You can then use your password and username to login to Movebank.

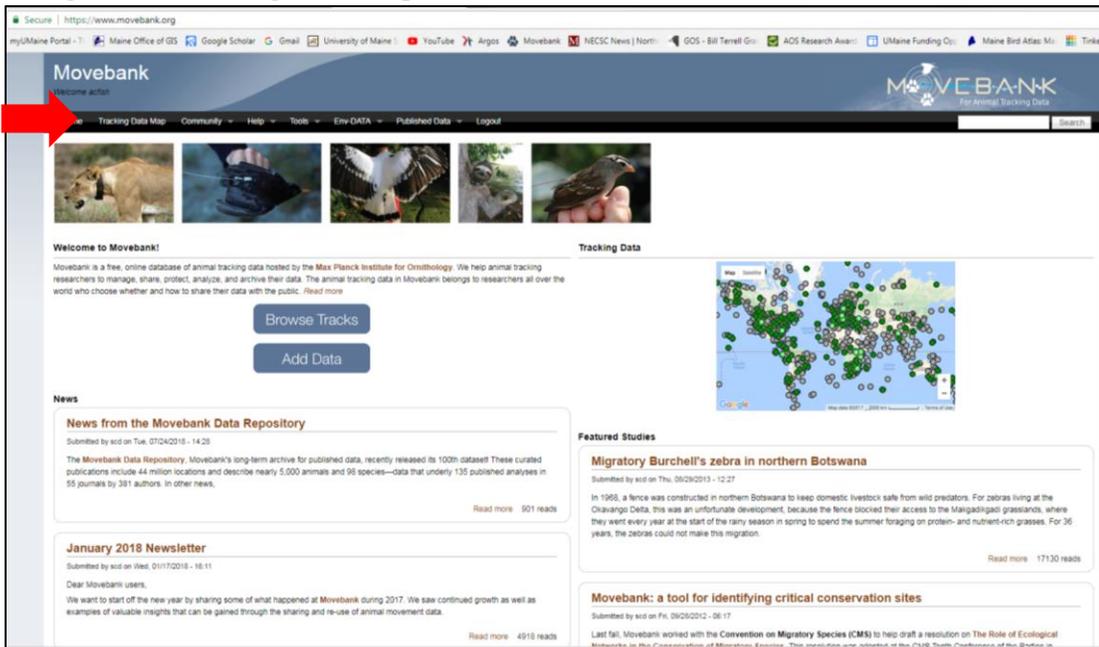
## II. Accessing the American Woodcock Migration Ecology in Eastern North America study

### 1. Log into your user account on Movebank.



The screenshot shows the Movebank homepage. At the top, there is a navigation bar with links for Home, Tracking Data Map, Community, Help, Tools, Env-DATA, Published Data, and Logout. Below the navigation bar, there are several images of animals. The main content area includes a 'Welcome to Movebank!' section with 'Browse Tracks' and 'Add Data' buttons. There is also a 'News' section with articles like 'News from the Movebank Data Repository' and 'January 2018 Newsletter'. A 'Tracking Data' map is visible on the right side of the page.

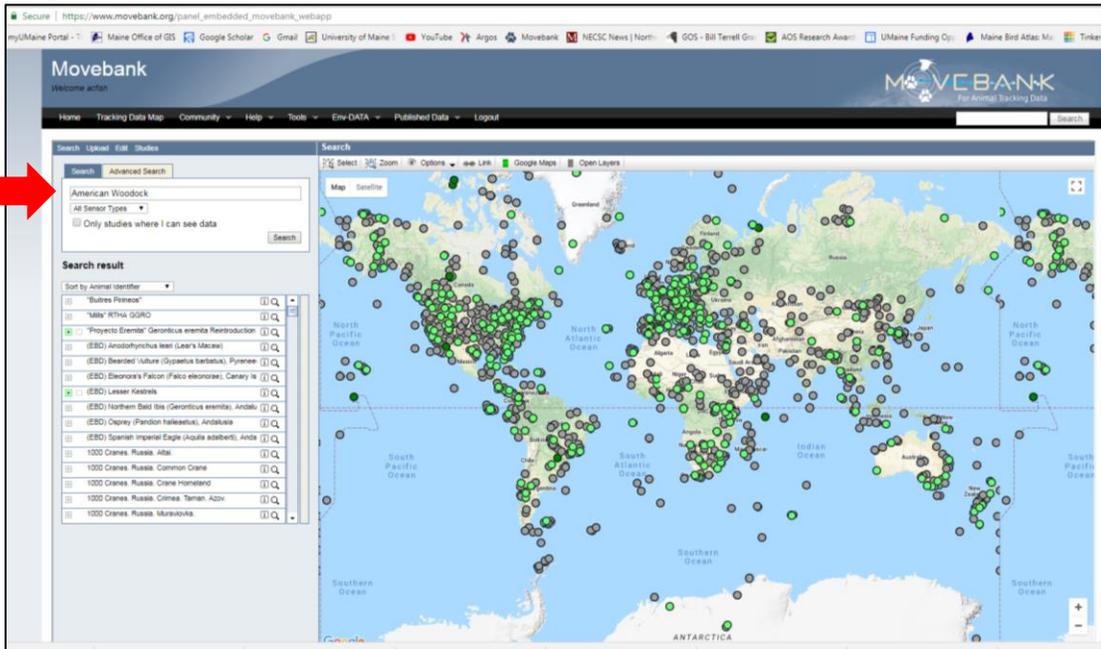
### 2. Navigate to 'Tracking Data Map'.



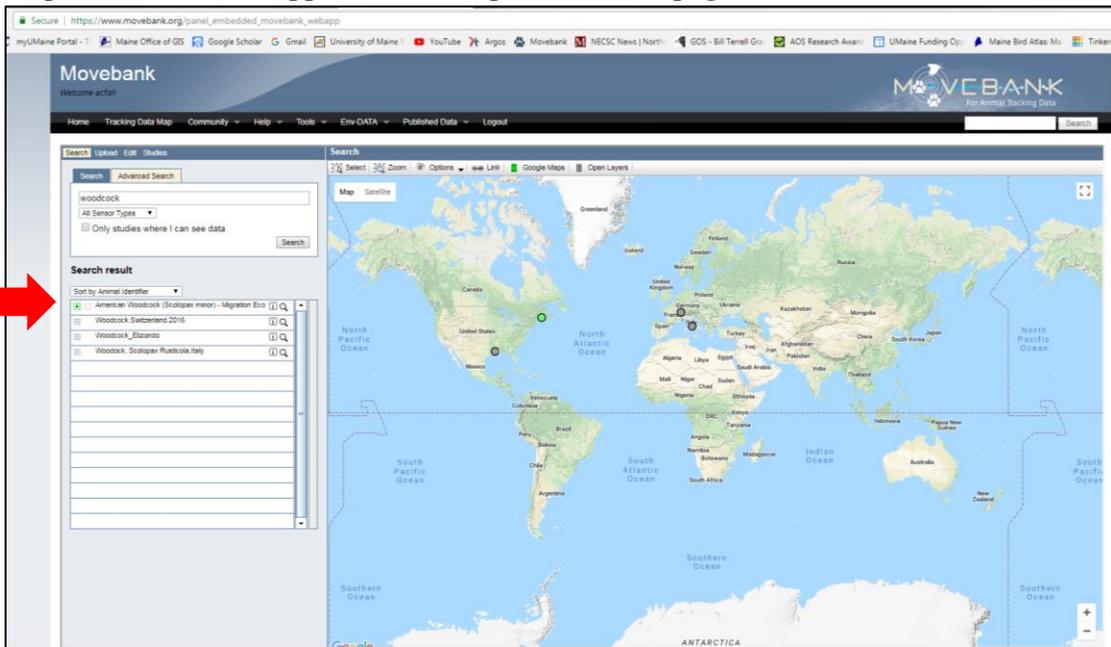
This screenshot is identical to the one above, but with a red arrow pointing to the 'Tracking Data Map' link in the navigation bar. The rest of the page content remains the same.

### 3. Using the 'Tracking Data Map' interface, you can search for and view data from numerous studies stored in Movebank. Data from some studies is publically available and can be viewed by anyone, while other studies can only be accessed by Movebank users, and other studies can only be viewed by designated collaborators. The 'American Woodcock Migration Ecology in Eastern North America' study for the Eastern

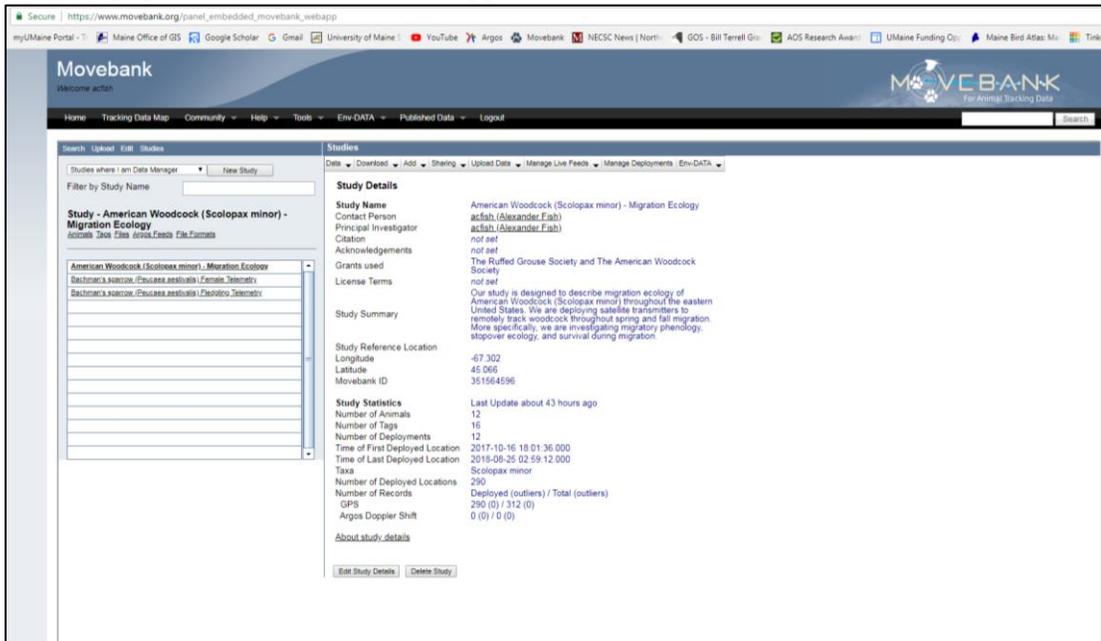
Woodcock Migration Research Cooperative (EWMRC) can only be accessed by cooperators and you will need to be added as a collaborator to view/access data.



Using the search bar in the upper left, you can search using 'woodcock'. Approximately 4 studies will appear, you can then select and click on the small 'i' symbol to the right of the 'American Woodcock Migration Research Ecology in North America' study. A dropdown menu will appear, select 'Open in studies page'.



A study page similar to this should appear.



- Using the sharing tab, you may be able to request collaborator permission. If not, then please send me (alexander.fish@maine.edu) your username, and I will manually add you as a study collaborator. As a collaborator, you will be able to access, view, and download the data at your convenience. UMaine will send monthly updates, but will update woodcock location data stored on Movebank weekly. Downloading locations data will provide you with the most ‘up to date’ locations data possible.

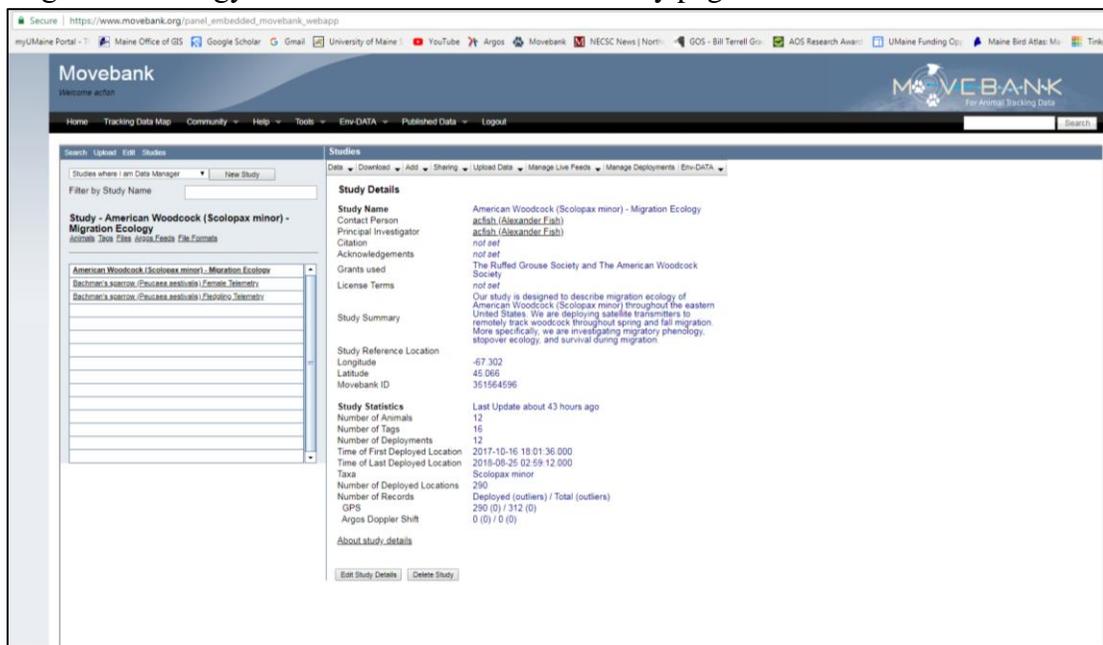
### III. Downloading Woodcock Location Data

- Once you have collaborator permission to access the study, you can view or download locations data through Movebank. We have found GoogleEarth to be the most user friendly way to view data. The Movebank study viewer (provided on the Movebank website) has limited display options and it can be difficult to distinguish between individuals.
- Prior to explaining data download options, I want to briefly explain how animals are labeled in our study. To identify which woodcock originated from each state, we have labeled animals using the following format: ‘State/Province-Year-Count’. When data is exported from Movebank, excel will include a column for ‘Animal ID’ and ‘Tag ID’. Google Tracks will combine both columns into a single label: ‘Animal ID’ followed by the ‘Tag ID’.

Examples: If a woodcock was captured fall 2018 in Ontario, the ID will read ‘**ONT-2018-01 – 174529**’. (The animal ID is in **yellow** and the tag ID is in **blue**.) For the third woodcock marked in Virginia summer of 2018, the ID will read ‘VA-2018-03 – 174343’. We choose this formatting as we expect some birds will be recaptured and followed for multiple years, and some tags will likely be recovered and re-deployed on more than one woodcock over the duration of the study.

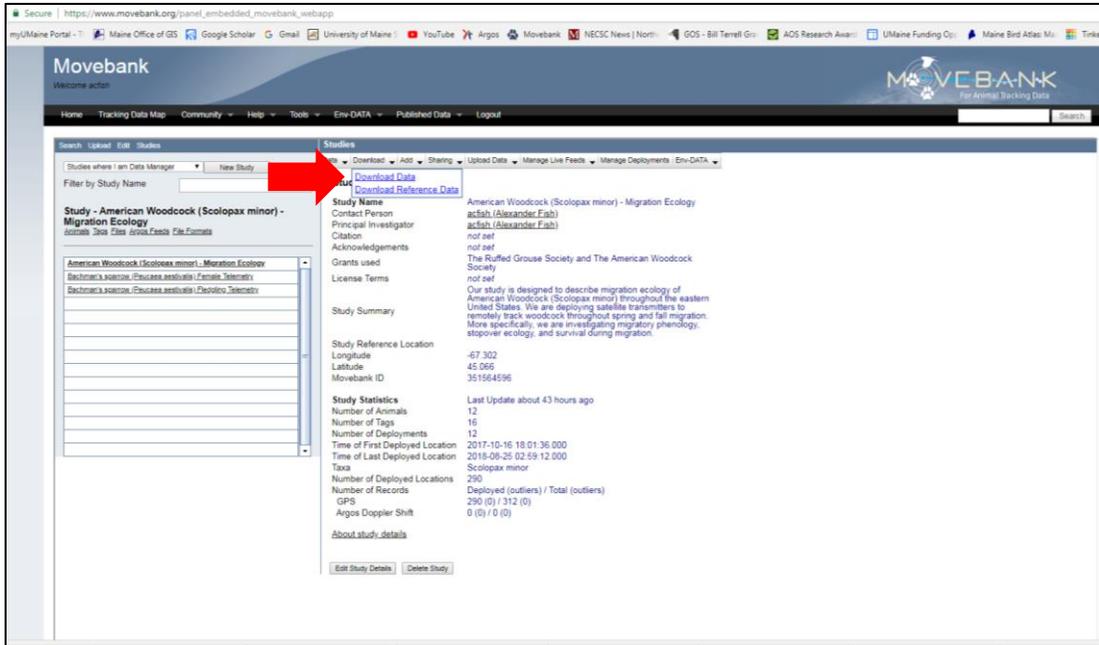
- Data can be downloaded in one of three ways, 1) the entire dataset, 2) as a group [e.g., by state], or 3) as an individual.

First sign into your Movebank account, and navigate to the ‘American Woodcock Migration Ecology in Eastern North America’ study page.



*Downloading ‘all’ location data in single file. If you are interested in downloading locations data for by a group or only 1 woodcock at a time, skip steps 3-5 and proceed to step 6.*

4. Select 'Download', then select 'Download Data' from the dropdown menu.



5. A pop-up window will appear, allowing you to select the data type, file format, and a few secondary options. (see below)

Under the 'Available Sensor Types' heading, you can download either GPS data or Argos Satellite (Doppler shift) locations. For most practical purposes we will only use the GPS data as these locations are more precise, but note that you can access Argos satellite locations if needed.

Next you will select the file format for the data from six options: 'Csv', 'Excel 97', 'Excel 2007', 'ESRI shapefile', 'GoogleEarth (Tracks)', and 'GoogleEarth (Home Range)'. We recommend using 'GoogleEarth (Tracks)' to view the data and 'Excel 2007', to view the raw location data. However, if you prefer working in ArcGIS, you may want to use the 'ESRI shapefile' option.

Lastly, there are 4 secondary options that can be included in the file: 'Include undeployed locations', 'Include points marked as outliers', 'Add UTM coordinates', and 'Add study local time'. We recommend including UTM coordinates and study local time.

Transmitters are programmed to collect locations in Greenwich Mean Time, and must be converted 4-5 hours back to Eastern Standard Time. Having Movebank automatically convert data is much easier than converting manually. We do not recommend including undeployed locations or outliers as these locations were collected prior to deployment on a woodcock or removed due to data transcription issues.

Download tracking data

Available Sensor Types

GPS ▾

Filter by date

Csv       ESRI shapefile

Excel 97       GoogleEarth (Tracks)

Excel 2007       GoogleEarth (Home Range) ?

Include undeployed locations ?

Include points marked as outliers ?

Add UTM coordinates

Add study local time ?

Download Close

6. Select 'Download' and your data will be downloaded in whichever file format you selected.

*Downloading 'group' or 'individual' location date in single file. Skip steps 6-10 if you performed steps 3-5 and proceed to section IV.*

7. Click on 'Data' and then select the 'Show in Map' option from the drop down menu.

https://www.movebank.org/panel\_embedded\_movebank\_webapp

Movebank  
Welcome aefan

Home Tracking Data Map Community Help Tools Env-DATA Published Data Logout

Search Upload Edit Studies

Studies where I am Data Manager New

Filter by Study Name

**Study - American Woodcock Migration Ecology in Eastern North America**  
Animals Tags Files Avias Feeds File Formats

American Woodcock Migration Ecology in Eastern North America

Bachman's sparrow / Peuceaea aestivalis / Female Telemetry  
Bachman's sparrow / Peuceaea aestivalis / Female Telemetry

Studies

Data Download Add Sharing Upload Data Manage Live Feeds Manage Deployments Env-DATA

Show in Map  
Show in Map (include undeployed)  
Edit

Contact Person  
Principal Investigator  
Citation  
Acknowledgements  
Grants used  
License Terms  
Study Summary  
Study Reference Location  
Longitude  
Latitude  
Movebank ID  
Study Statistics  
Number of Animals  
Number of Tags  
Number of Deployments  
Time of First Deployed Location  
Time of Last Deployed Location  
Taxa  
Number of Deployed Locations  
Number of Records  
GPS

American Woodcock Migration Ecology in Eastern North America  
acfish (Alexander Fish)  
afk.blomberg (Erik Blomberg)  
not set  
Research conducted in cooperation with The United States Geological Survey - Patuxent Wildlife Research Center, The University of Rhode Island, State University of New York - Cobleskill, North Carolina Wildlife Resources Commission, South Carolina Department of Natural Resources  
Cooperators that have also provided funding include: The Ruffed Grouse Society, The American Woodcock Society, The University of Maine, Maine Department of Inland Fisheries and Wildlife, The United States Fish and Wildlife Service, Environment Canada, Rhode Island Department of Environmental Management, New York Department of Environmental Conservation, Pennsylvania Game Commission, Virginia Game Commission, Eastern Bird Banding Association, Maine Audubon - Penobscot County Chapter, Maine Agricultural and Forest Experiment Station, New Jersey Department of Environmental Protection, Maryland Department of Natural Resources  
not set  
We seek to understand the migratory ecology of American woodcock (Scolopax minor) in the eastern United States. We are particularly interested in phenology, duration, and survival of migrating woodcock, influence of breeding latitude on migration, and population ecology of woodcock in the eastern United States.  
-67.302  
45.066  
351564596  
87  
91  
83  
2017-10-16 18:01:36.000  
2018-12-20 14:02:40.000  
Scolopax minor  
2351  
Deployed (outliers) / Total (outliers)  
2351 (0) / 2584 (0)

You will be directed to the Movebank Map Viewer and the all woodcock locations will be displayed. You can change the viewing options by selecting the 'options'. You may want to increase the size of Points or draw connected lines.

https://www.movebank.org/panel\_embedded\_movebank\_webapp

Movebank  
Welcome aefan

Home Tracking Data Map Community Help Tools Env-DATA Published Data Logout

Search Upload Edit Studies

Search for study American Woodcock Migration Ecology in Eastern North America

Search result

Sort by Animal Identifier

American Woodcock Migration Ecology in Eastern North America

ME-2017-01 [n=38] Scolopax minor  
ME-2017-02 [n=93] Scolopax minor  
ME-2017-03 [n=14] Scolopax minor  
ME-2017-04 [n=15] Scolopax minor  
ME-2017-05 [n=27] Scolopax minor  
ME-2017-06 [n=26] Scolopax minor  
ME-2018-08 [n=56] Scolopax minor  
ME-2018-09 [n=57] Scolopax minor  
ME-2018-10 [n=58] Scolopax minor  
ME-2018-11 [n=12] Scolopax minor  
ME-2018-12 [n=57] Scolopax minor  
ME-2018-13 [n=53] Scolopax minor  
NJ-2018-01 [n=9] Scolopax minor

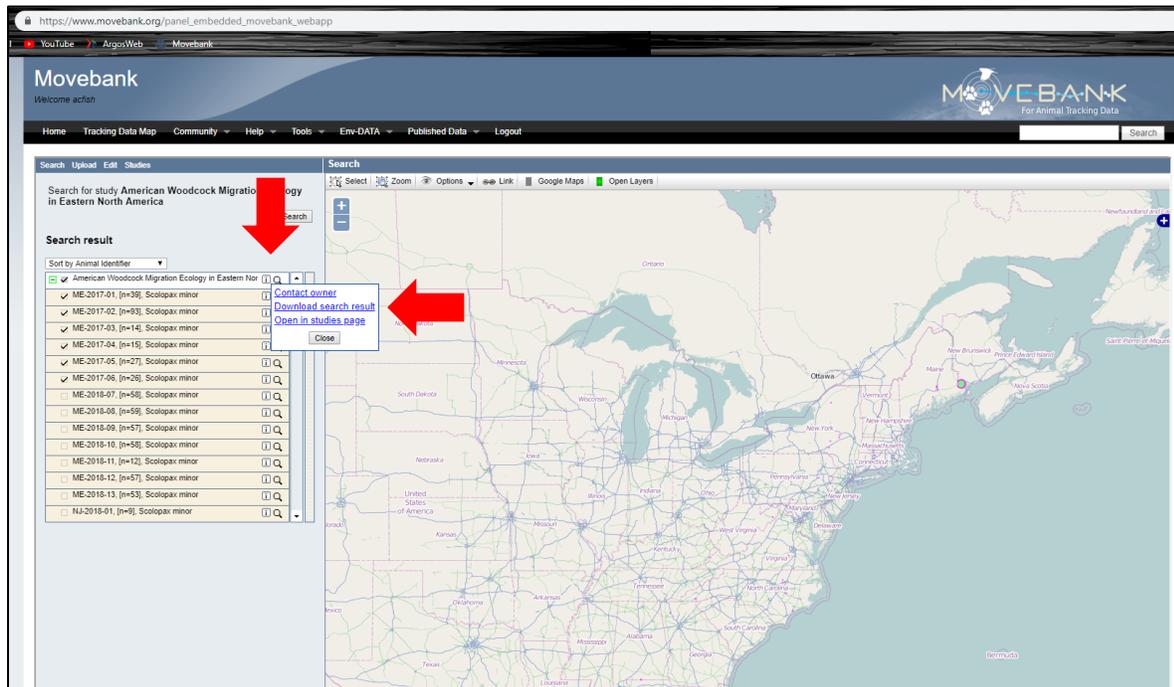
Select Zoom Options Link Google Maps Open Layers

Draw Study Markers  
Draw lines for selected animals  
Draw lines for highlighted animals  
Draw density  
Point Size  
Small Intermediate Large  
Color Schema  
Pink/Blue Pink/Orange

8. On the left side of the screen is a list of all woodcock included in the project. I would recommend deselecting all individuals (top box [red arrow]) then select the individuals you would like to export [bracket]. You may select and export a single individual or export any number of individuals. In this example I selected the 2017 woodcock marked in Maine. Exporting a group is recommended when you wish to show a specific state, year, or trap site.

The screenshot displays the Movebank web application interface. The top navigation bar includes 'Home', 'Tracking Data Map', 'Community', 'Help', 'Tools', 'Env-DATA', 'Published Data', and 'Logout'. The main content area is divided into two panels. The left panel, titled 'Search result', shows a search for 'American Woodcock Migration Ecology in Eastern North America'. Below the search title, there is a 'Sort by Animal Identifier' dropdown menu, which is highlighted by a red arrow. Below this menu is a list of search results, each with a checkbox and a 'Q' icon. The results are sorted by year and location, with 2017 results for Maine highlighted. The right panel shows a map of Eastern North America with a search bar and various map controls. The map displays the geographical distribution of the woodcock, with a red dot indicating the location of the selected 2017 woodcock in Maine.

- To export a group, select the 'view details' option, small [i] symbol, next to the 'American Woodcock Migration Ecology in North America' title in the dialog box. Then select the 'Download search result' option in the drop down box.



- A pop-up window will appear, allowing you to select the data type, file format, and a few secondary options. (see below)

Under the 'Available Sensor Types' heading, you can download either GPS data or Argos Satellite (Doppler shift - PTT) locations. For most practical purposes we will only use the GPS data as these locations are more precise, but note that you can access Argos satellite locations if needed.

Next you will select the file format for the data from six options: 'Csv', 'Excel 97', 'Excel 2007', 'ESRI shapefile', 'GoogleEarth (Tracks)', and 'GoogleEarth (Home Range)'. We recommend using 'GoogleEarth (Tracks)' to view the data and 'Excel 2007', to view the raw location data. However, if you prefer working in ArcGIS, you may want to use the 'ESRI shapefile' option.

Lastly, there are 4 secondary options that can be included in the file: 'Include undeployed locations', 'Include points marked as outliers', 'Add UTM coordinates', and 'Add study local time'. We recommend including UTM coordinates and study local time.

Transmitters are programmed to collect locations in Greenwich Mean Time, and must be

converted 4-5 hours back to Eastern Standard Time. Having Movebank automatically convert data is much easier than converting manually. We do not recommend including undeployed locations or outliers as these locations were collected prior to deployment on a woodcock or removed due to data transcription issues.

Lastly, you will need to select 'Restrict to selected animals' to export only the animals you selected in the Movebank Map Viewer. Failure to select this option will result in all woodcock locations being collected.

The screenshot shows a dialog box titled "Download tracking data". It contains the following elements:

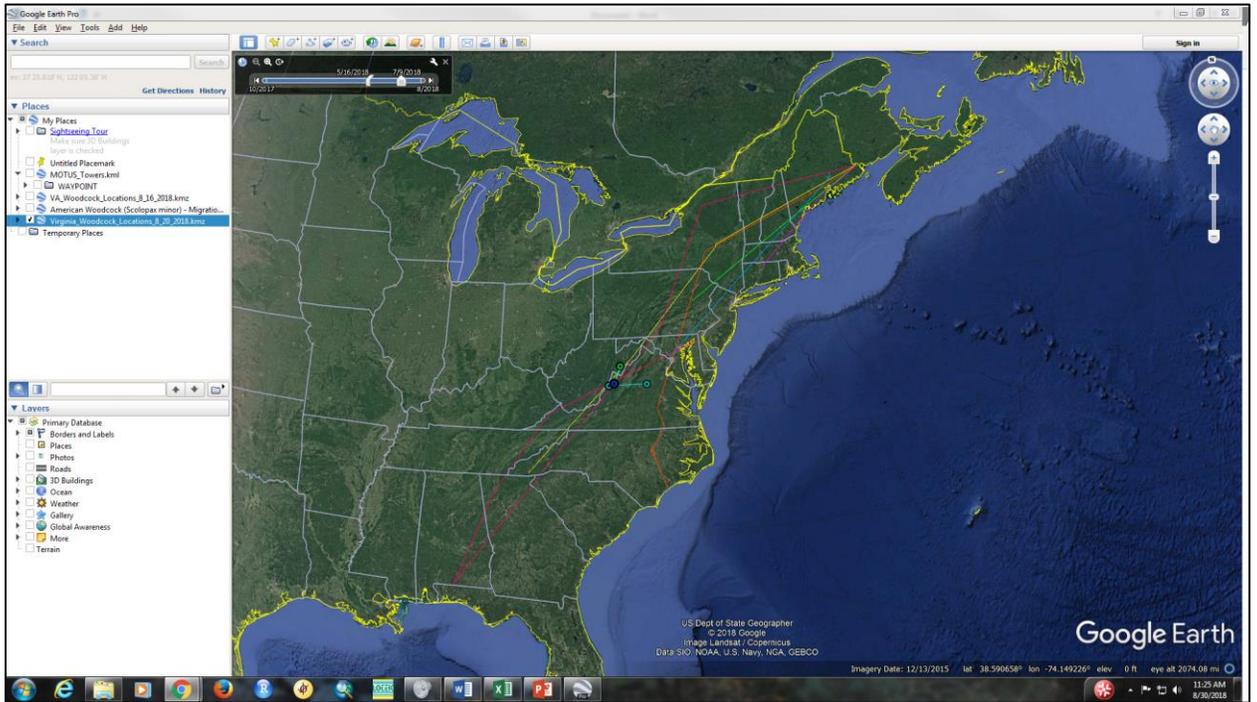
- Available Sensor Types:** A dropdown menu set to "GPS".
- Filter by date:** An unchecked checkbox.
- File Formats:** Radio buttons for "Csv", "Excel 97", "Excel 2007", "ESRI shapefile", "GoogleEarth (Tracks)", and "GoogleEarth (Home Range)". "GoogleEarth (Tracks)" is selected.
- Inclusion Options:** Unchecked checkboxes for "Include undeployed locations" and "Include points marked as outliers".
- Coordinate and Time Options:** Checked checkboxes for "Add UTM coordinates" and "Add study local time".
- Restriction Option:** A checked checkbox for "Restrict to selected animals".
- Buttons:** "Download" and "Close" buttons at the bottom.

Red arrows are overlaid on the image: one points to the "GPS" dropdown, three point to the "Restrict to selected animals" checkbox, and one points to the "Download" button.

11. Select 'Download' and your data will be downloaded in the specified file format.

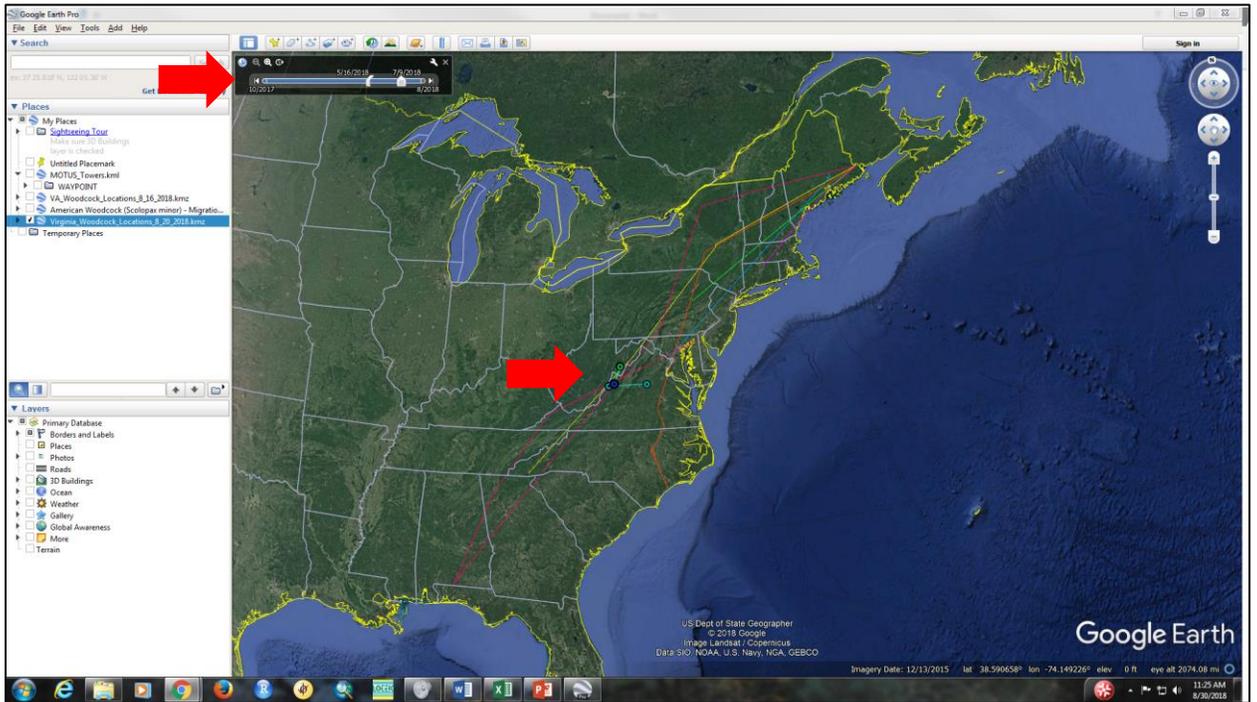
#### IV. Visualizing Data in GoogleEarth

1. ‘GoogleEarth (Tracks)’ data will be downloaded in a .kmz file format and can be immediately opened and viewed in GoogleEarth.

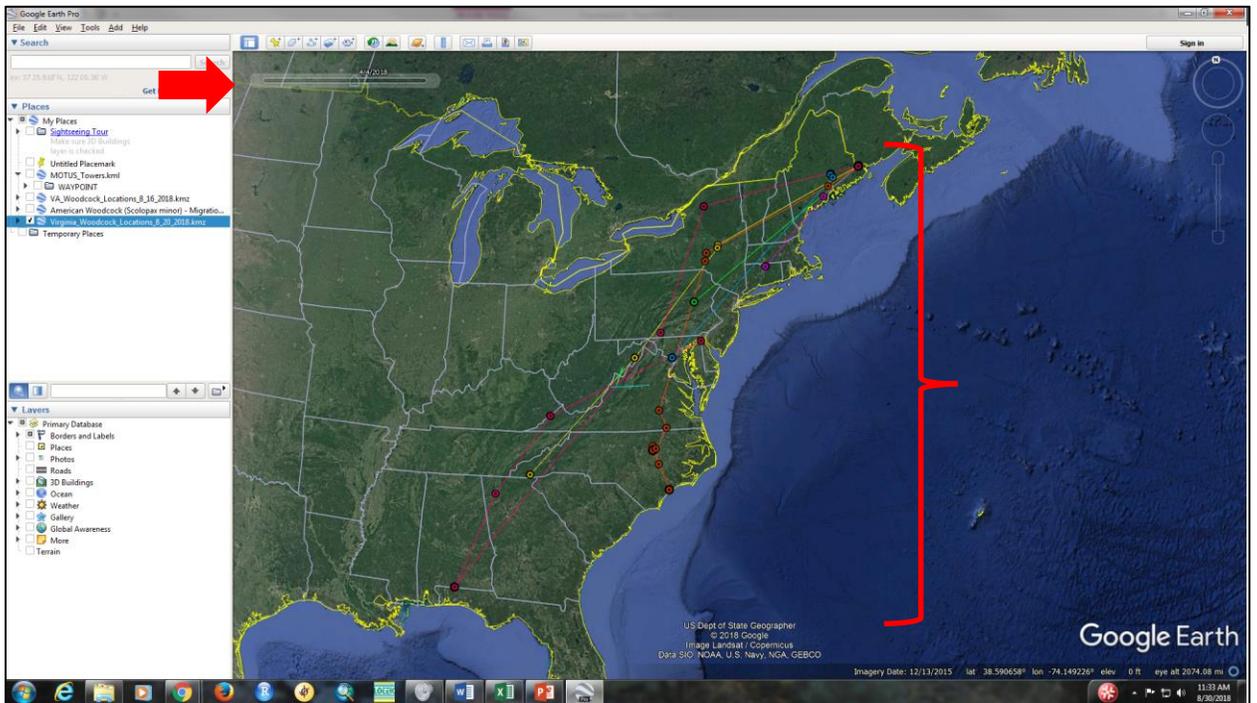


2. ‘GoogleEarth (Tracks)’ files construct a line between locations sequentially. The line roughly represent how the woodcock may have flown between locations, during migration, or how the woodcock moved around a staging area.
3. Viewing Data by Time. You can make locations appear and disappear by using the sliding scale bar in the upper left corner of your GoogleEarth browser. The sliding scale bar has two tab, which allow you to specify the start and end date in your viewing range.

All woodcock locations collected during the summer of 2018 (Virginia).



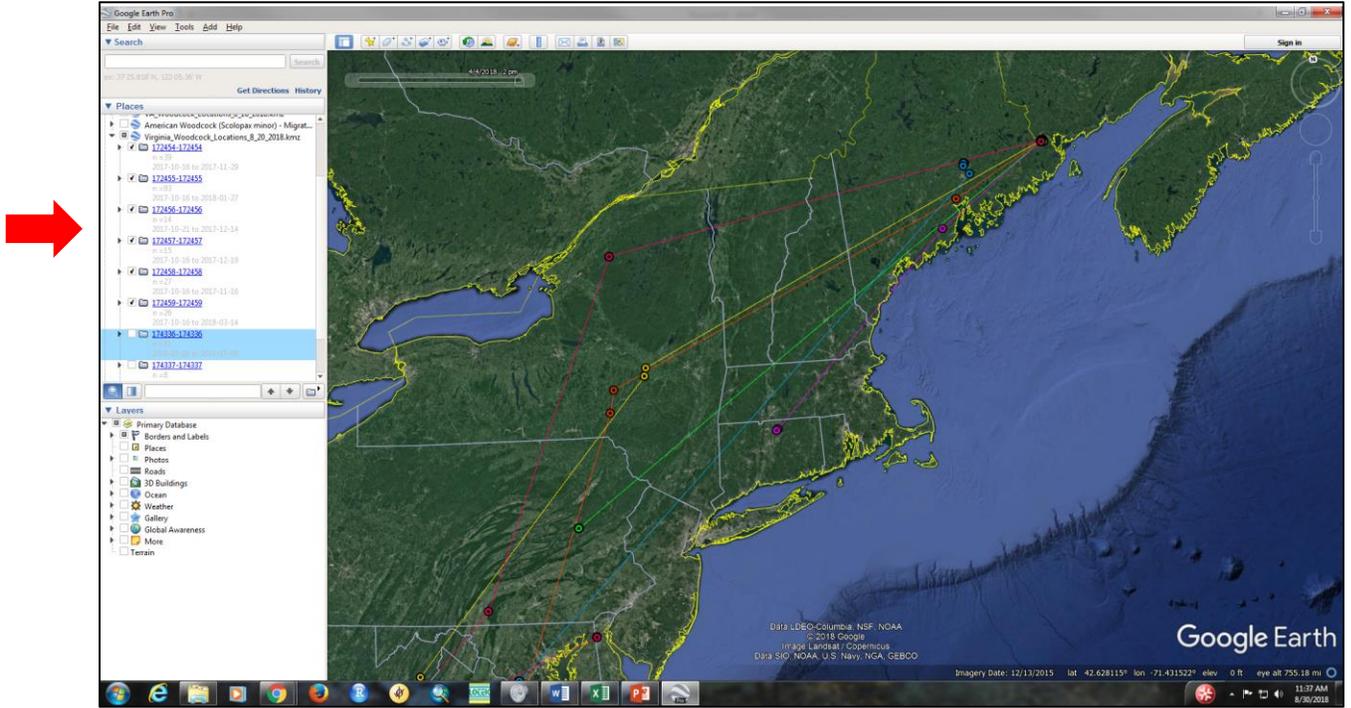
All woodcock locations collected during the Fall 2017-Spring 2018 (Maine to Alabama).



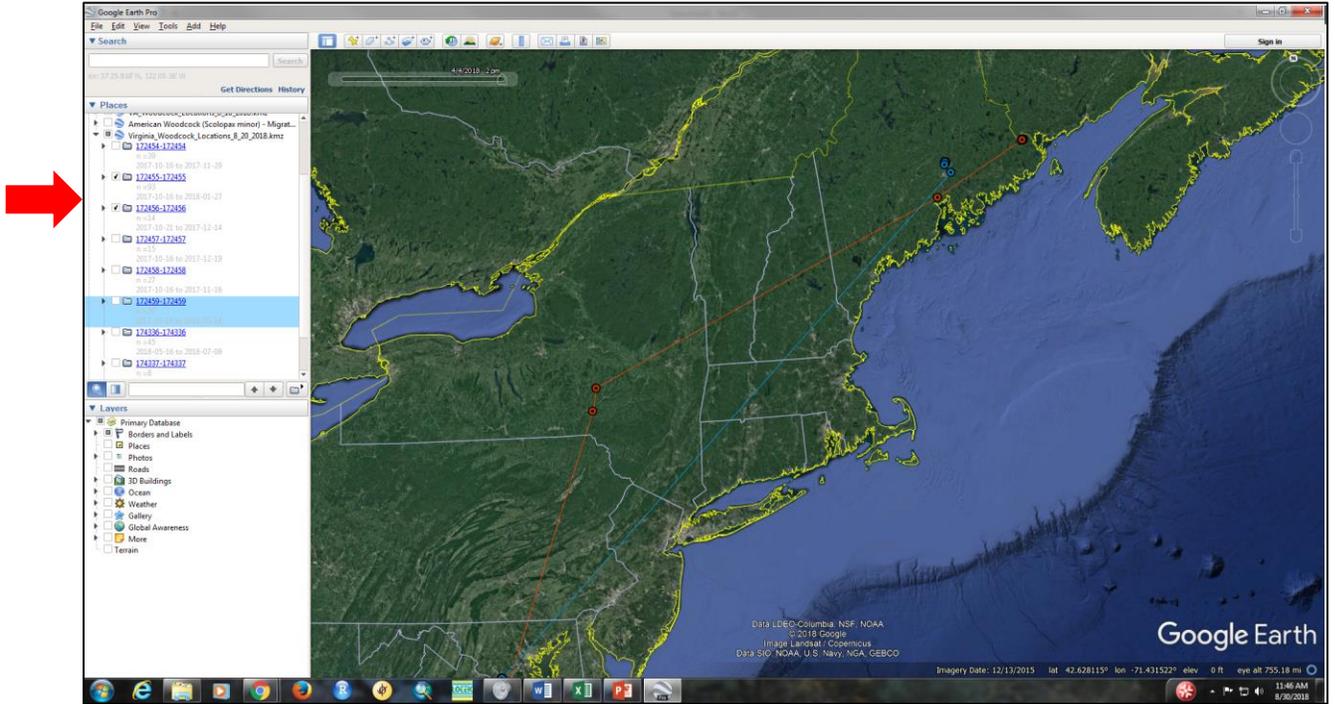
If you are interested in specific date ranges or years, use the sliding bar to visualize your data of interest.

- If you are interested in viewing a subset of woodcock, you can select and deselect woodcock from the viewing window in GoogleEarth. Using the Navigation panel on the left side of the screen, you can display all of the birds included in the .kmz file and choose which birds you want or do not want to display.

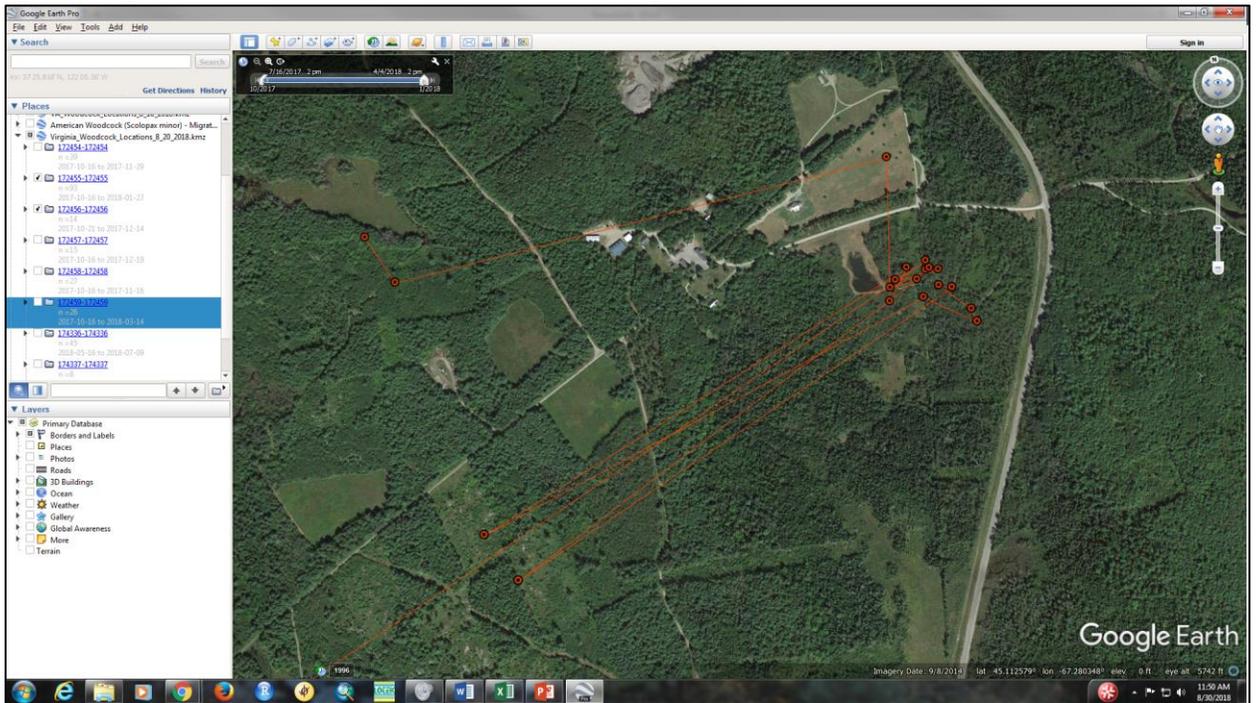
All woodcock (n = 6) from Fall 2017- Spring 2018.



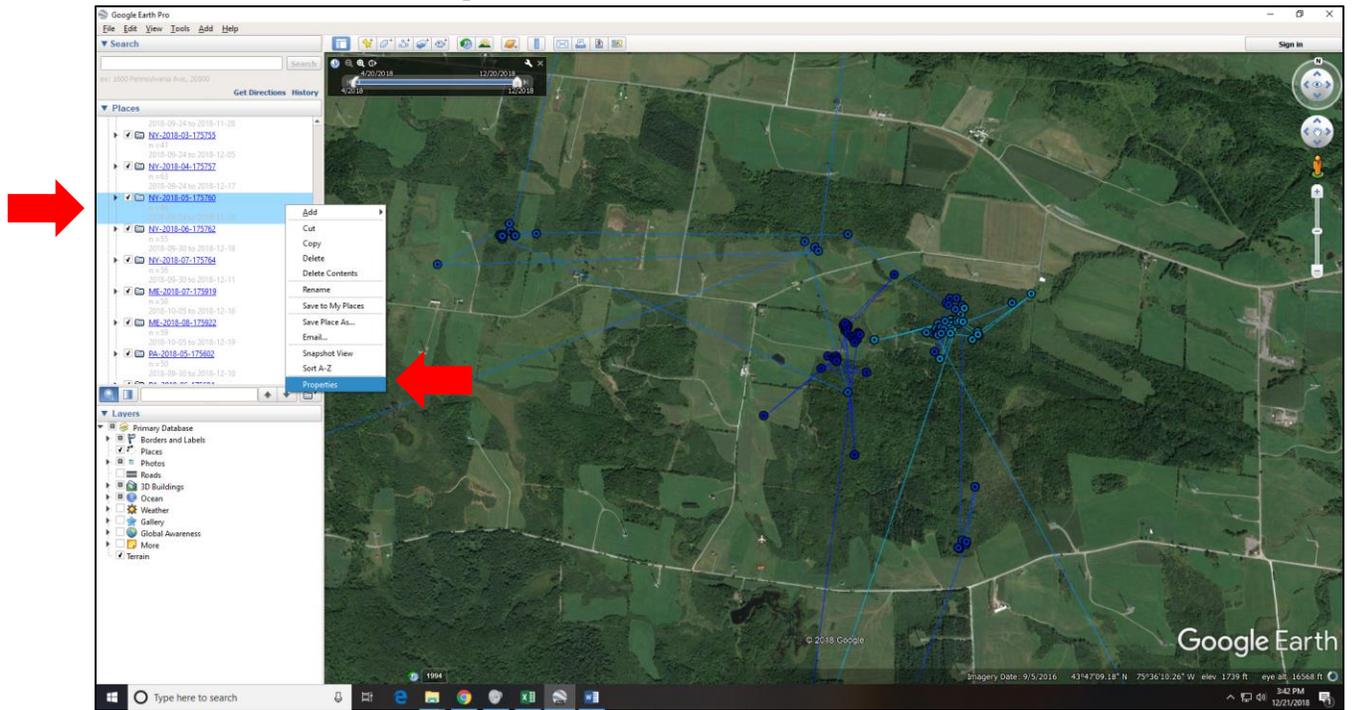
By deselecting all of the male woodcock, I was able to display only the female (n = 2) woodcock from Fall 2017- Spring 2018.



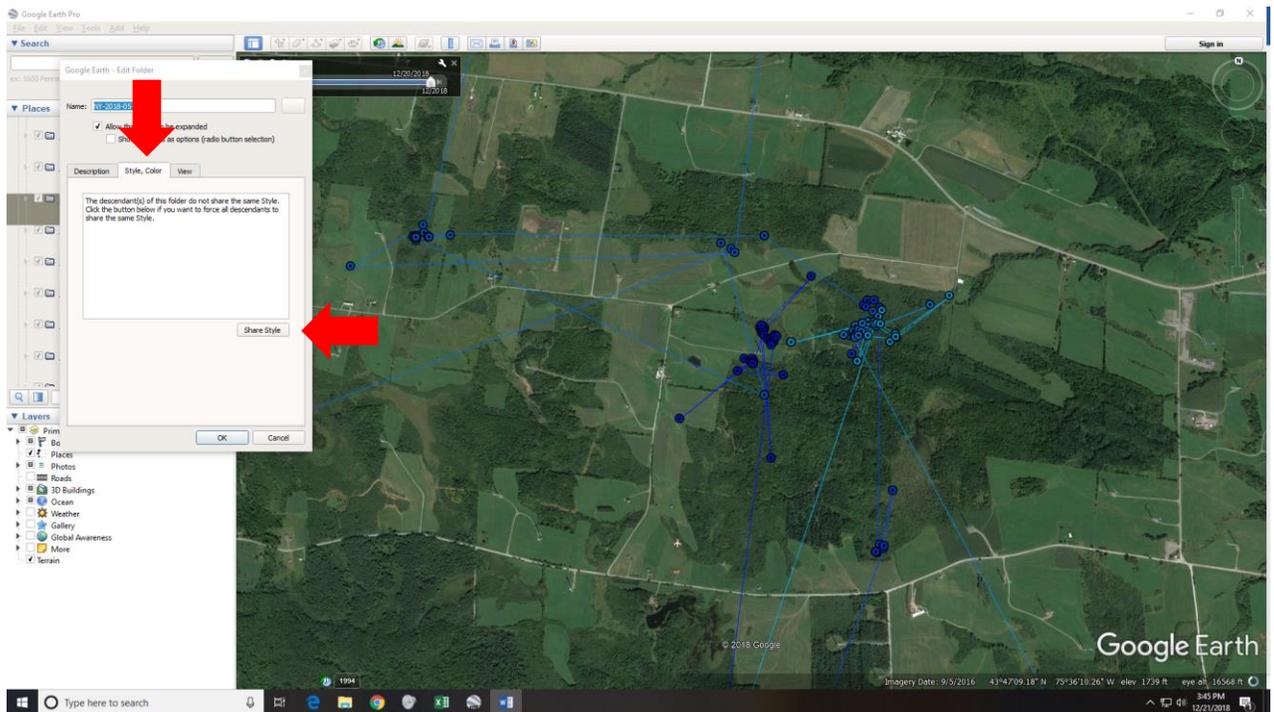
5. GoogleEarth (Tracks) option is a convenient way to view what woodcock activity/movement. It is relatively easy to make visuals for presentations, include in agency reports, or share with administrators and supervisors.



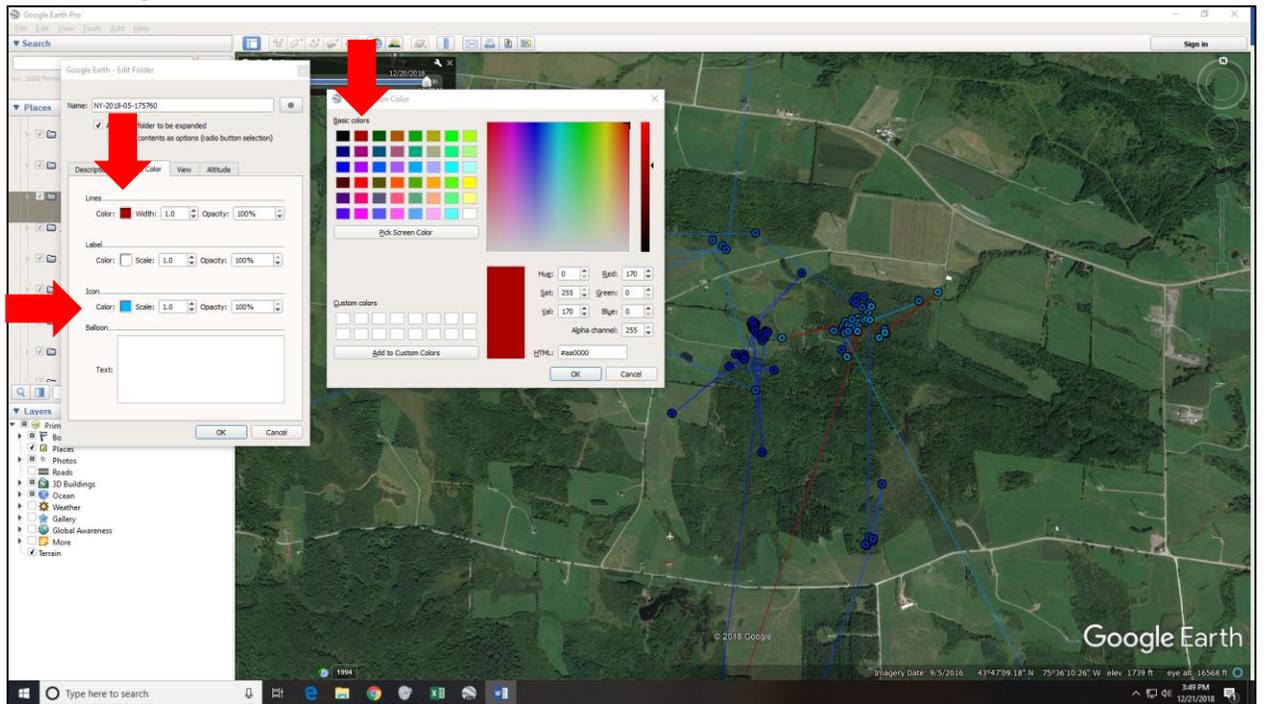
6. Lastly, you may notice that the tracks from some individuals are the same color as others. If you would like to change colors you will need to first select the animal and right click on the animal and select 'Properties'.



7. A pop-up box will appear. Select the 'Style, Color' tab and then click 'Share Style'.



- With the 'Style , Color' tab selected, click on the color boxes for both 'Lines' and 'Icon'. Change them to the same color or your choice. Click 'OK' in all pop-ups to finalize the color changes for the animal.



The final result will be an animal with the newly selected color displayed in the in Google Earth. Repeat the process until it is easy to differentiate between different individuals.

