

South Florida/Caribbean Network

National Park Service
Inventory and Monitoring Division



Standard Operating Procedure CNB04

GPS Track Downloading, Photo Downloading and Archiving, Photo Geotagging, Photo Renaming, and Photo Tagging in ThumbsPlus—Version 1.1

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Summary

The purpose of this SOP is to describe the procedures for downloading GPS track; downloading photos and archiving them; geotagging photos; renaming photos; and tagging photos in ThumbsPlus.

Revision Log

Revision Date	Author	Changes Made	Reason for Change	New Version #
3/4/20	Robert Muxo	Minor editorial corrections. Added new colonies. Updated DNR Garmin to DNRGPS.	To keep the document current	1.1

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Introduction

Photographs are essential for obtaining data to document colonial nesting bird activities at Biscayne National Park (BISC). With the use of photography and field observations, the South Florida/Caribbean Network will document the size of the rookery by counting as many nests and observing as many species as possible.

The series of steps below are to be followed immediately by field personnel upon return to ensure all photographs are properly processed.

GPS Track Downloading Using DNRGPS:

1. Connect GPS unit to computer via USB cable and turn GPS device on.
2. Open DNRGPS program (version 5.4.1).
3. DNRGPS should automatically detect the GPS device (if device is on). DNRGPS window should show **Connected** in the lower left-hand corner. If GPS device is not automatically detected, select **GPS** from the menu bar, then select **Set Port**, and then **USB**.
4. The projection should read NAD83 – UTM zone 17N. If this projection is correct, skip to step 6.
5. The projection may need to be set the first time a GPS unit is connected to the computer. A prompt will appear and provide the user with a projection. If the initial projection is not NAD83 – UTM zone 17N, then select **No** and click on **ESRI** to select the correct projection. Click **Project** and then load the correct projection from your program files. The file path is: Z:\GIS\Tools\Coordinate Systems\Projected Coordinate Systems\UTM\NAD 1983\NAD 1983 UTM Zone 17N.prj. Once this is done you may proceed.
6. If downloading tracks, select **Track** from the menu bar and then select **Download** from that menu.
7. If you have a Garmin 60CSx GPS receiver, once the track records are successfully downloaded, a dialog window will appear informing how many records were collected. You will need to select **OK** in the window.
8. Select **File** from the menu bar, then select **Save To**, and then **File...**
9. Navigate to Z:\GIS\GPS\Garmin (model)\ (appropriate unit # as written on side of unit).
10. From the **Save as type:** drop-down menu, select “ArcView Shapefile (Projected)”.
11. In the **File name:** box, name file according to convention. Example:
Garmin60Unit2_20110119_Tracklines.

- a. Note: the date in the convention above is the date the data is being downloaded (usually the flight date).
12. Click **Save**.
13. DNRGPS will ask for an output shape: Point, Line, or Polygon. Tracks can be saved as either lines or points. Saving a track output as points will allow GeoSetter to match the photos taken to the corresponding points along the track. **This type of track output (points) is necessary when a gpx file is not available.** However, saving a track file as lines is a faster process than saving it as points. Select **Line** and click **OK**.
14. A window should appear indicating that the file was written successfully, and where the file was written to. Click **OK**.
15. If using a Garmin 60CSx (if using a Garmin 62S, skip to step 17) and you want to download waypoints, select **Waypoint** from the menu bar and then select **Download** from that menu. Repeat steps 8 – 10 for the waypoints.
16. A window should appear indicating that the file was written successfully, and where the file was written to. Click **OK**.
17. If using a Garmin 62s and you want to download waypoints, select **File**, **Load From >** and **File...** and then navigate to **J:\Garmin\GPX** (J varies depending on the port you connected the unit to). From the **Files of Type:** drop-down menu, select **GPS eXchange Format (*.gpx)**
 - a. You then need to select the appropriate file to load, the name of which should begin with the word “Waypoints” and have the date the data was collected. Click on **Open**.
 - b. A box will pop up asking you to define the feature type. Click on **Waypoint** and **Ok**.
 - c. A dialog window will appear informing you if the file loaded successfully. Click **Ok**.
 - d. To save the file, follow steps 7 – 10 above.
 - e. A window should pop up indicating that the file was written successfully, and where the file was written to. Click **OK**.
18. If downloading from a Garmin 60CSx or 62S, download the gpx file next. Turn off the DNRGPS software either by clicking on the **X** on the top right of the screen or selecting **File** and **Exit**. Next, proceed as follows, depending on the GPS model:
 - a. If using a Garmin 60CSx (if using a Garmin 62S, skip to step c) press the **Menu** key on the GPS unit twice, select the **Setup** icon, and press **Enter** key. Next, select the **Interface** icon and press **Enter** key. Next, select the **USB Mass Storage** option at bottom of the screen and press **Enter** key.

- b. Your GPS device will now function as a removable USB Mass Storage drive. A new window should appear with all the GPX files on the unit. Select and **Copy** the desired GPX files and **Paste** into the appropriate folder, such as:
Z:\GIS\GPS\Garmin_60CSx\2\GPX
 - c. If using a Garmin 62S, navigate from **My Computer** to **Garmin GPSMAP 62s** and then to **J:\Garmin\GPX** (J varies depending on the port you connected the unit to).
 - d. **Copy** the file or files with the appropriate date (when the data was collected) and **Paste** it into the appropriate folder, such as Z:\GIS\GPS\Garmin_62s\6\GPX and then rename it according to the date the information was collected, using the YYYYMMDD convention.
 - e. When finished, safely remove hardware from computer.
19. Now make a copy of all the files you just downloaded to your working folder in spatial info.
Example: Z:\SFCN\Vital_Signs\Colonial_Nesting_Birds\spatial_info\BISC\2014.
- a. First, the shapefiles need to be cleaned up to remove data from other projects not related to the Birds protocol. Open up ArcMap and drag in the tracklines shapefile or the waypoints shapefile.
 - b. Right-click on the shapefile you are editing and select Open Attribute Table.
 - c. Select/Highlight all the records by the date you flew, using the TIME field.
 - d. Right-click on the shapefile, select **Data**, then **Export Data**.
 - e. When the window pops up, navigate to your spatial_info folder. Example:
Z:\SFCN\Vital_Signs\Colonial_Nesting_Birds\spatial_info\BISC\2014.
 - f. Name your file by using the Garmin unit name and the field date. Example:
Garmin60Unit3_20140827_Tracklines. Select Save. Click OK.
 - g. When a window pops up prompting you to “add the exported data to the map as a layer?” select yes and inspect your new shapefile.
 - h. Do the same for the waypoints shapefile if applicable.
 - i. Make a copy of the GPX file to your GPX folder inside spatial_info by copying and pasting it to:
Z:\SFCN\Vital_Signs\Colonial_Nesting_Birds\spatial_info\BISC\2014\gpx.

Photo Downloading and Archiving Using Adobe Bridge CS4:

1. Connect Nikon D300s digital SLR camera to computer via USB cable and turn camera on.
2. Open the Adobe Bridge program.
3. From the **File** drop-down menu, select the **Get Photos from Camera...** option.
4. The “Photo Downloader” dialog box will open. From the **Get Photos from:** drop-down menu in the “Source” section (at the top of the dialog box), select the camera device which the photographs will be downloaded from. The device name (in this case, D300s) should already appear as a selection in the drop-down menu.
 - a. A smaller dialog box will appear temporarily, indicating a successful connection to the device and location of photos. This smaller box will automatically close when done.
 - b. The total number of photos, total memory, and date created will now appear underneath the drop-down menu in the “Source” section.
5. From the “Import Settings” section of the “Photo Downloader” dialog box, select the proper location where the photographs will be downloaded to. Use the **Browse...** button to select the proper drive/folder/subfolder.
6. Create subfolder by selecting the **Custom Name** option from the **Create Subfolder(s):** drop-down menu. A box will appear directly underneath the drop-down menu. Type in the subfolder name using the following convention: shot date (yyyymmdd) park code_abbreviated project description (Example: 20110119_BISC_BirdFlight). All photographs will be downloaded into this subfolder. **Important: Do not rename files at this point.**
7. Next, click on the **Get Photos** button at the bottom of the dialog box. A smaller window showing the download progress will automatically appear and will disappear when the download is complete.
8. Once photographs are copied into the folder, copy those same images and corresponding GPX file to a DVD, flash drive, or other appropriate form of storage of the original images before proceeding to the next step.

Photo Geotagging Using GeoSetter:

(Note: Geotagging photos while a nice enhancement, is not necessary for the protocol to proceed)

1. Open GeoSetter and if the settings window opens, go ahead and close it.
2. Use the left side of the screen to navigate to the folder where your photographs are stored.

3. Highlight all the images that you want to geotag and go to **Images** drop-down menu and click on the **Synchronize with GPS Data Files** option (Ctrl+G).
 - a. In the **Synchronize with Data File** textbox browse for the appropriate GPX file.
 - b. Set the **Assignment of Found Positions** to **Interpolate Regarding Shoot Time With Last or Next Position**
 - c. Set the **Maximum Time Difference between Taken Dates and Trackpoints** to 30 seconds.
 - d. Assuming that the camera time was synchronized before the photographs were taken, you should not need to adjust the **Additional time Adjustment**. If synchronization was not done before photographs were taken, then determine the current offset between the camera and the official time at www.time.gov and enter the appropriate numbers.
 - e. When complete, click **OK** to geotag the photographs.
4. A box will come up saying **Synchronize with GPS Data Files**, click **Yes**. If the number of images not paired with coordinates is significant, then either you selected the wrong GPX track file or you had an inappropriate time offset. You can try synchronizing the photographs again.
5. Another box will come up saying **Do you want to save the assigned track(s) in the current directory?**, click **Yes**.
6. Another box will come up saying **Save the directory track file name** use with the following naming convention YYYYMMDD_BISC_BirdFlight (Example: 20120225_BISC_BirdFlight) then click **OK**.
7. A map should show up on the right-hand side of the window containing the trackline and small map markers. If you click on the map markers the corresponding picture will be highlighted with a blue outline.
8. At this point, you have temporarily geotagged the photographs, but this metadata has not been permanently embedded inside the image files. To do this, keep all images selected, and from the **Images** menu select **Save Changes**. This will save the metadata in the original file and create an unedited copy of the file with a “.JPG_ORIGINAL” extension. These “.JPG_ORIGINAL” files can be deleted to save space once you confirm a successful geotagging. These files can be found in the image folder that the original photos were found in.
9. Finally, if you want to export your geotagged trackline into Google Earth you need to select all the photographs. Click on **Images** and scroll down to **Export to Google Earth**. The option to open the KMZ file you’ve just created in Google Earth should pop up. Click **OK**.

10. If you want to confirm that latitude/longitude information was indeed saved inside your image files, you can view this metadata in many programs including Adobe Bridge.
- Go to the **Start** button at the left hand bottom of the screen. Click on **All Programs** navigate to **Adobe Bridge CS4**.
 - In Adobe Bridge in the upper right-hand side of the window, navigate to the file you want using the selection bar. For this tutorial you will need to navigate to:
Z:/Photos/Other/GeoSetter.
 - Let it scan the folder of images, click on an individual image, and then scroll through the available metadata on the lower right. You should see an entry for GPS latitude and longitude with values provided by the geotagging process.

Photo Renaming Using Adobe Bridge CS4:

- Now rename all the photos, as follows:
 - Use the following convention (similar to the subfolder in which the photos are stored): shot date (yyyymmdd)_park code_abbreviated project description_four digit number sequence beginning with the number 1 for the first photo taken in the day (Example: **20100827_BISC_BirdFlight_0001**).
 - First make sure to select all photos, otherwise only the selected photo will be renamed. You can do this by clicking inside the “Content” window where all the photos are located, and then clicking **Ctrl+A**. Then, from the **Tools** drop-down menu, select the **Batch Rename...** option.
 - From the “Batch Rename” dialog box, select **Rename in same folder** under the “Destination Folder” section. From the “New Filenames section” select the appropriate options to rename the file the following way:
YYYYMMDD_BISC_BirdFlight_0001. To do this, follow these steps:
 - On the first row, select **Date Time** on the first drop-down menu, then **Date Created** in the drop-down menu to the right, and **YYYYMMDD** from the next drop-down menu to the right.
 - On the second row, select **Text** from the first drop-down menu and on the box to the right type in _park code (Example: **_BISC**).
 - On the third row, select **Text** from the first drop-down menu, and on the box to the right type in _abbreviated project description_ (Example: **_BirdFlight_**).

- iv. On the fourth row, select **Sequence Number** from the first drop-down menu, type in **1** on the box to the right, and select **Four Digits** from the drop-down menu to the right.
 - v. Note that, as you make the changes above, under the “Preview” section on the bottom of this dialog box, the sample “New filename” will change accordingly. When you are done, be sure the “New filename” displays correctly and according to convention. Ensure that it has no spaces, and the appropriate underscores.
 - vi. Click **Rename**.
- d. At this time you can add each island code to the naming convention. The nesting colonies are differentiated by the islands they inhabit. There are nine islands currently used for nesting. Listed in the order photographed, the islands and their codes are: Kings Road (KRIS), Mangrove Key (MAKE), West Arsenicker (WEAR), Arsenicker Key (ARKE), Jones Lagoon (JOLA), Ragged Key 5 (RAKE), Ragged Key 4 (RAG4), Soldier Key (SOKE), and Kings Bay (KIBA). Other sites monitored for potential colonies during the annual survey are: Black Point (BLPO), Mangrove Point (MAPO), Old Rhodes Key (ORKE), Elliott Key (ELKE), Sands Key (SAKE), and the western shoreline (SHOR) of Biscayne National Park. Each island is photographed in its entirety from a distance prior to any photographs taken for nest detection. This helps to identify and separate each island’s photographs from the next island. Adding the island code to the previously sequenced photos can be done the following way using Adobe Bridge:
- i. First, make sure to select photos by each island. The islands can be distinguished from each other by using the ‘entire island’ photographs as mentioned above. Photos can be selected by clicking a specific photo which will highlight it. To highlight a group of photos (e.g. a single island group) click on the first photo of the island then, hold the **Shift** key and click on the last photo of the group/ island. Then, from the **Tools** drop-down menu, select the **Batch Rename...** option.
 - ii. On the third row, select **Text** from the first drop-down menu and on the box to the right type in _abbreviated project description and the island code_ (Example: **_BirdFlight_MAKE**). Make sure to use the appropriate island code. Remember the islands are separated by a distance photograph of the entire island. The entire island photographs provide a start and stop point for the batch renaming. A photograph of water only differentiates a new pass of photographs at the same island.
- e. With the photos labeled using the island code it is now time to create folders for the photos of each island. This can be accomplished by:

- i. Right-click on the photo of the ‘entire island’ photo and select **New Folder**. Name the folder with the abbreviated island name (Example: MAKE).
- ii. Next, click on the ‘entire island’ photo to highlight it. Next, press and hold the ‘Shift’ key and scroll through island photos until you reach the last photo of that island. Next, click on the last photo of the island. This will highlight the island group and then these photos can be dragged into the new folder just created.
- iii. Use the same method to create new folders for the other island colonies and repeat the steps to put photos into the appropriate folder. A folder can be created for non-bird related photographs that may have been taken of other park interests such as vegetation work or other resource related subject. With the photographs safely copied onto a DVD, it is now safe to clean the memory in the camera. This will help prevent future storage issues.

Photo Tagging in ThumbsPlus:

1. Open ThumbsPlus and navigate to the colonial bird monitoring Microsoft Access database. Do this by clicking on **File** then **Database** and then **Open Database**, and then navigate to the appropriate folder as follows:
Z:\SFCN\Vital_Signs\Colonial_Nesting_Birds\data\SFCN_ColonialBirds.mdb
 - a. If the file is not visible within the dialog window change the “Files name:” drop-down type to **Microsoft Access Database**.
 - b. Select the SFCN_ColonialBirds.mdb database and click **Open**.
2. Using the main window navigate to the folder where your photos are stored.
3. Allow the program a moment to scan the photos in the folder in which you are going to work.
4. You should now see the photos you want to tag in the large viewing window in the program.
5. In order to tag an individual photo, begin by clicking on the photo you want to tag.
 - a. You may also want to batch tag a group of photos all at once, if they are all to be tagged with a common user field.
 - b. Select all the photos you want to tag by clicking on the first photo, then clicking and holding the **Shift** key and clicking the last photo you want to tag.
6. Click **Thumbnail** menu, and then click **Assign User Fields**. You can also do this by clicking on the photo and then clicking **CTRL** + **U**.
7. The following fields must be completed for all photos:

- a. Flight Date – this is the date on which the photographs were taken, format MM-DD-YYYY (Example: 01-16-2014).
- b. Site Name – this is the location of the colony. Currently, acceptable values are:
Arsenicker Key, Black Point, Elliot Key, Jones Lagoon, Kings Bay, Kings Road, Mangrove Key, Mangrove Point, Old Rhodes Key, Ragged Key 4, Ragged Key 5, Sands Key, Soldier Key, and West Arsenicker.
- c. In order for the data to be stored, check box beside the “Flight_Date” and “Site_Name” must be checked. If this does not automatically happen, please manually check the box. When you are done typing in the appropriate values for the field names, click . The field names are then stored in the database. You do not have to do anything else to save the data. Repeat steps 3–7 for each island.