

Standard Operating Procedure (SOP) #15

Managing Photographic Images

Version 4.0 (July 22, 2022)

Change History

New Version #	Revision Date	Author	Changes Made	Reasons for Change	Previous Version #
2.0	6/30/2007	Eric Brown	See Track Changes	Response to reviewer's comments	1.0
2.01	7/20/2007	Larry Basch	See Track Changes	Corrections, additions	2.0
3.0	8/22/2019	Kelly Kozar, Amanda McCutcheon	Updates to folder structure, photo renaming, and file renaming software. Updated SOP #s	To accurately describe the PACN folder structure for benthic images and to provide instructions for current renaming software. Added a geospatial SOP and had to renumber subsequent SOPs.	2.01
4.0	7/22/2022	Kim Weisenborn	Updated content to refer to new PACN I&M SharePoint. Updated figures to reflect change. Updated settlement images sections. Updated section on renaming images. Added section on creating new folders and uploading images to SharePoint.	PACN data is no longer stored on a networked server (I:\ drive) and is now stored on the PACN I&M SharePoint site.	3.0

Only changes in this specific SOP will be logged here. Version numbers increase incrementally by hundredths (e.g., version 1.01, version 1.02) for minor changes. Major revisions should be designated with the next whole number (e.g., version 2.0, 3.0, 4.0). Record the previous version number, date of revision, author of the revision, changes made, and reason for the change along with the new version number.

Purpose

This SOP documents the downloading, renaming, and storing of images taken during Pacific Island Inventory and Monitoring Network (PACN I&M) Benthic Marine Community Monitoring surveys. Images are initially downloaded and renamed on the user's local workspace and then uploaded to the [Benthic Marine Community Monitoring project workspace](#) in the [PACN I&M SharePoint site](#)¹ for storage.

Refer to [SOP #12 Workspace Setup and Project Records Management](#) for details on setting up the user's local workspace prior to downloading, renaming, and storing images.

¹ PACN I&M SharePoint site, <https://doimspp.sharepoint.com/sites/nps-PWR-PACNIM> (accessed 22 July 2022).

A master equipment list for the entire Benthic Marine Community Monitoring Protocol can be found in Appendix SOP 1.a of [SOP #1 Before the Field Season](#). The master equipment list should be updated simultaneously if any SOP requiring an equipment list is revised. A list of equipment required to complete the tasks specified in this SOP has been provided in [Appendix SOP 15.a](#).

Downloading Images

Data will be downloaded from the camera as soon as possible, following the dive. This SOP assumes that photos have been taken according to the procedures in [SOP #8 Conducting Benthic Marine and Rugosity Surveys](#). Refer to the equipment list needed for downloading images in [Appendix SOP 15.a](#).

Follow the steps in the sections below to download the images from either a card reader or cable.

Downloading Using Card Reader

1. Turn on computer and make sure the card reader is inserted into USB port.
2. Open the program File Explorer by clicking the search menu icon from the bottom-left of the Microsoft Windows® toolbar → File Explorer (Figure SOP 15.1). A shortcut to open File Explorer is to press the **Window icon + E keys** on the keyboard.

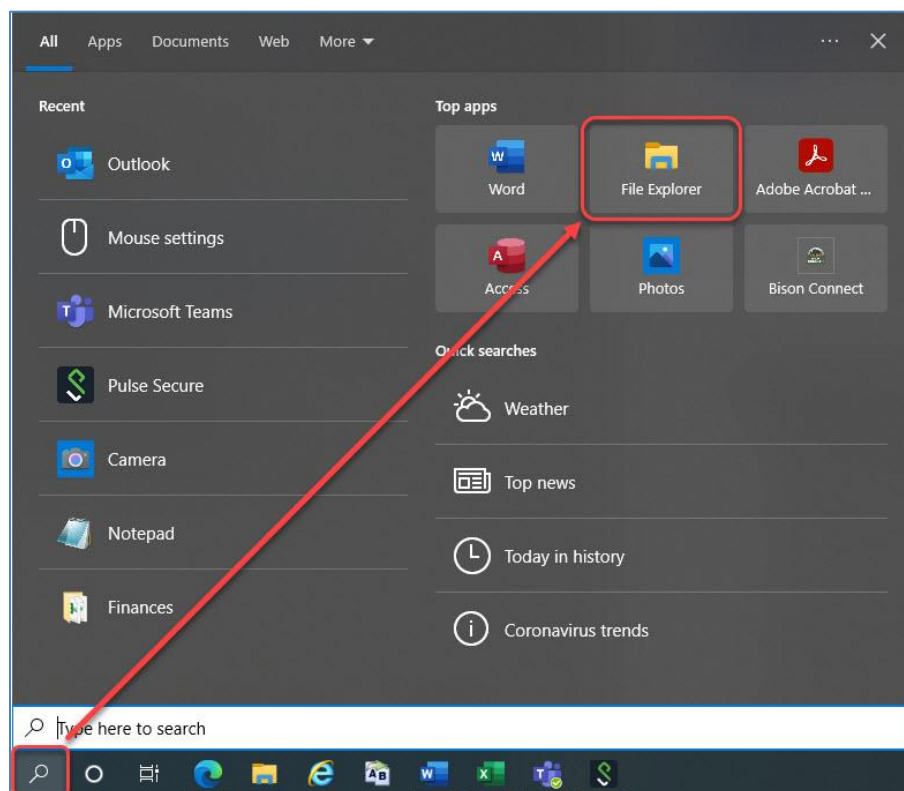


Figure SOP 15.1. Opening File Explorer from the search menu.

3. Insert the media card from the camera into the appropriate slot on the card reader.

4. The card reader will appear in File Explorer as a separate drive.
5. Click on the appropriate drive in File Explorer. You will see a “**DCIM**” folder.
6. Open the DCIM folder. Inside there will be a subfolder. The name of this subfolder depends on the camera used.
7. Open the DCIM subfolder and examine the image files from the camera.
8. Copy images to the user’s local project Desktop (or an external hard drive). This may involve creating a project desktop folder, and subfolders for the year, park, original raw images, and sampling event (e.g., C:\Users\[UserName]\Desktop\Benthic_marine\Images → Year folder → Park folder → “Originals” → sampling event folder in the format YYYYMMDD²) (Figure SOP 15.2).

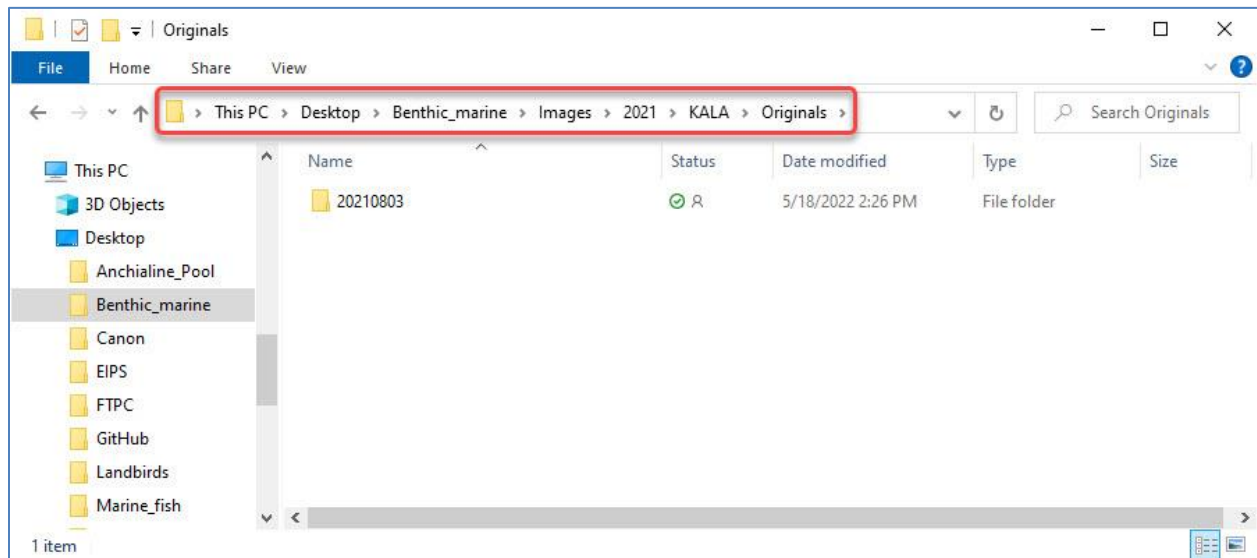


Figure SOP 15.2. Example of where to download images from the camera to the user’s local workspace.

9. Ensure that images have been copied to local external hard drive.
10. Eject the media card by right-clicking on the drive within File Explorer and selecting “**Eject**” from the menu. Then click “**OK**”.
11. Follow instructions in [SOP #11 Post-Dive Procedures and Equipment Maintenance](#) for other instructions on caring for the camera, storage media cards, and batteries.
12. At the end of the field season, before deleting images on the media card, double-check that all images have been copied to the hard drive and to the [PACN I&M SharePoint site](#) (procedure described below). Then reformat media card to minimize potential problems in file storage or transfer.

² YYYYMMDD = 4-digit year, 2-digit month, 2-digit day representing the sampling event date

Downloading Using a Cable

1. Connect the camera to the computer using the USB cable.
2. Turn the camera on. The computer should recognize the camera as a new drive. If it does not, go to This PC, hit refresh and the camera should appear; or consult camera manual to troubleshoot.
3. Open the program File Explorer by clicking the search menu icon from the bottom-left of the Microsoft Windows® toolbar → File Explorer (Figure SOP 15.1). Or an alternative method to open File Explorer is to press the **Window + E** keys on the keyboard.
4. Open the new drive, which appears in Microsoft Windows® File Explorer.
5. Open the DCIM folder. Inside there will be a subfolder. The name of this subfolder depends on the camera used. Open this subfolder.
6. Copy images to the user's local project Desktop (or an external hard drive). This may involve creating a project desktop folder, and subfolders for the year, park, original raw images, and sampling event (e.g., C:\Users\[UserName]\Desktop\Benthic_marine\Images → Year folder → Park folder → “Originals” → sampling event folder in the format YYYYMMDD²) (Figure SOP 15.2, above).
7. Ensure that images have been copied to the local project Desktop (or an external hard drive).
8. Stop the removable drive using the “**Safely Remove Hardware and Eject Media**” icon in the system tray along the bottom of Microsoft Windows® 10 (Figure SOP 15.3) to disconnect the camera from the computer.

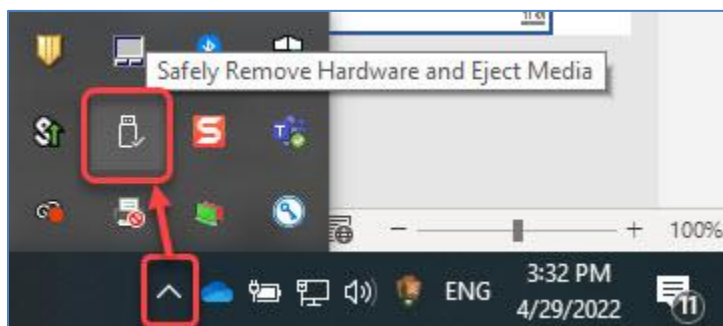


Figure SOP 15.3. Use the Safely Remove Hardware and Eject Media function to safely remove device.

9. Turn the camera off.
10. Disconnect the camera from the computer. Follow instructions in [SOP #11 Post-Dive Procedures and Equipment Maintenance](#) for other instructions on caring for the camera, memory cards, and batteries.

11. At the end of the field season, before deleting images on the media card, double-check that all images have been copied to hard drive and to the [PACN I&M SharePoint site](#) (procedure described below). Then reformat media card to minimize potential problems in file storage or transfer.

Processing Images

After downloading images from the camera to the user's local workspace, the user will review and select quality data images for storing and renaming.

Selecting Images

This section describes what original-raw images and data images to select for renaming and uploading to SharePoint.

1. During the field surveys, multiple photos (at least two) are taken at each meter mark to ensure that a quality photo is achieved. Review any field notes on how the photographs were taken before selecting the data photos.
2. In File Explorer, under the "Data" folder on the user's local Desktop (or an external hard drive) (e.g., C:\Users\[UserName]\Desktop\Benthic_marine\Images → Year folder → Park folder → "Data" folder), create a new transect sampling event folder for the first transect using the folder naming convention in Figure SOP 15.4.

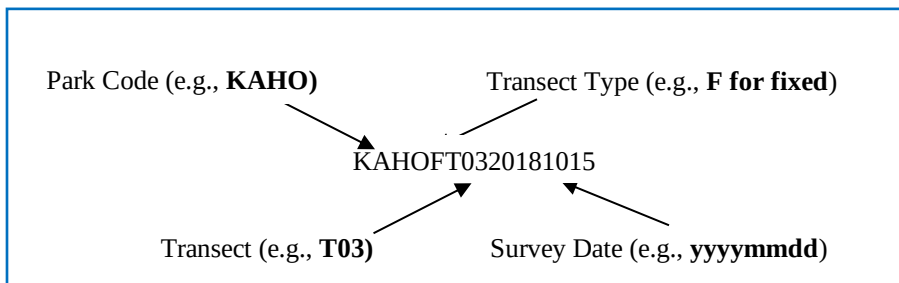


Figure SOP 15.4. Folder naming convention for storing renamed data images.

3. In the "Originals" folder for the first transect on the user's local Desktop (or an external hard drive) (e.g., C:\Users\[UserName]\Desktop\Benthic_marine\Images → Year folder → Park folder → "Originals" → sampling event folder):
 - a. Select the **start photo** (this should be a picture indicating the transect name) and the **four landscape photos from the beginning of the transect**. Copy these five images into the new transect sampling event folder within the "Data" folder, created in Step 2.
 - b. Select **one photo for each meter mark**. Try to choose the best quality photo for each. Avoid photos that include parts of the transect line, fish, or other items that are

not part of the benthos when possible. Copy and Paste each selected photo into the new transect sampling event folder under the “Data” folder, created in Step 2.

4. Repeat Steps 2-3 for each transect.
5. If settlement tile images were taken, then settlement image files should be copied from the “Originals” sampling event folder (e.g., C:\Users\[UserName]\Desktop\Benthic_marine\Images → Year folder → Park folder → “Originals” → sampling event folder) to the “Settlement_images” sampling event folder (e.g., C:\Users\[UserName]\Desktop\Benthic_marine\Images → Year folder → Park folder → “Settlement_images” → sampling event folder). If a sampling event folder needs to be created, then create it using the naming convention in Figure SOP 15.4, above.

Renaming Data Images

Once selected original raw images have been copied to the “Data” and “Settlement_images” folders, data image files need to be renamed on the user’s local workspace prior to uploading to SharePoint.

Renaming Benthic Image Files

1. Use the program Bulk Rename Utility® v3.0.0.1 to rename the data image files in a batch.
2. Launch Bulk Rename Utility® by clicking on the Windows icon from the bottom-left of the Microsoft Windows® toolbar and browsing to the Bulk Rename Utility program (Figure SOP 15.5).

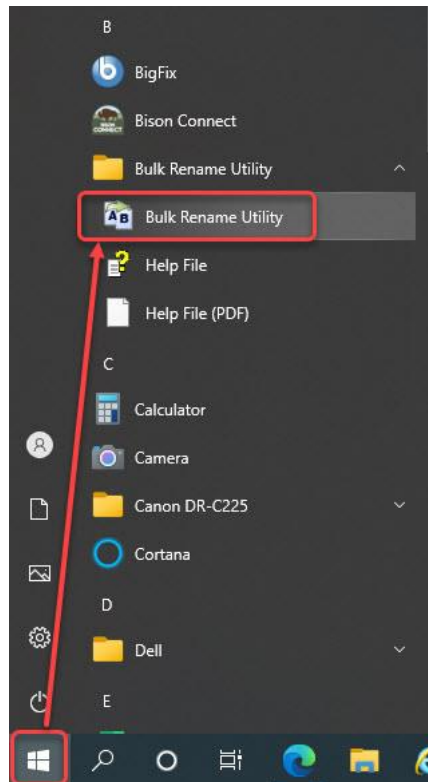


Figure SOP 15.5. Opening Bulk Rename Utility® program from the Microsoft Windows® toolbar.

3. Navigate to the appropriate “Data” sampling event folder on the user’s local workspace (or an external hard drive) where the benthic images were copied to in the [Selecting Images](#) section, Step 2 (Figure SOP 15.6).

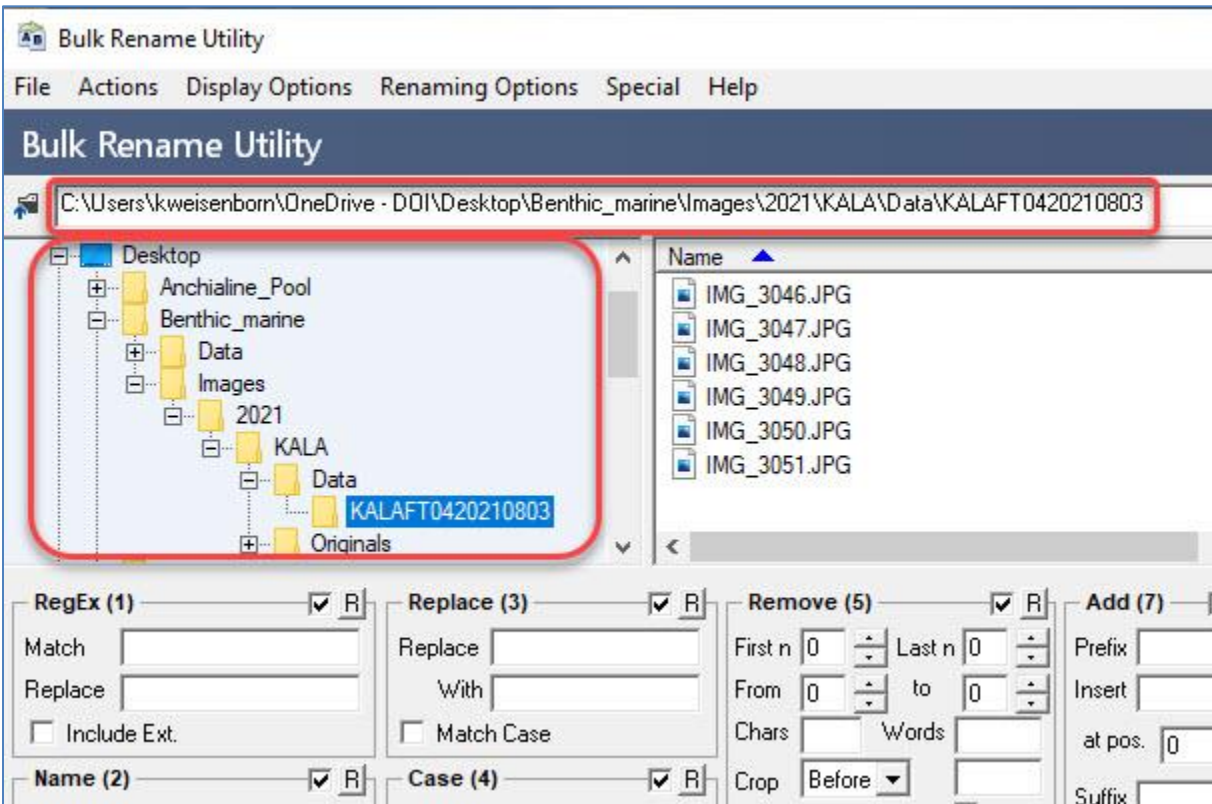


Figure SOP 15.6. Navigating to image file location on user’s local workstation for renaming.

4. Select all images by clicking **Ctrl + a** keys on the keyboard, or **Ctrl key + mouse click** to select multiple individual files. However, **make sure that the five start images (the transect name image and the four landscape photographs) are unselected**—these will be renamed separately. You can unselect files by holding **Ctrl key + mouse click** to unselect files that were previously selected.
5. Files will be renamed following the template in Figure SOP 15.7.

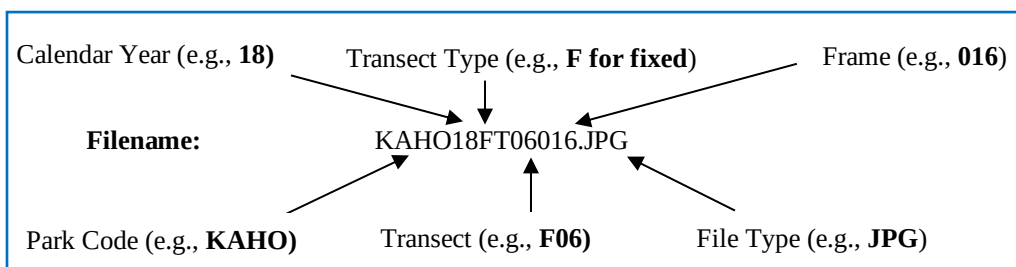


Figure SOP 15.7. Example format for renaming files for benthic image analysis.

6. Select/enter the following criteria in Bulk Rename Utility (Figure SOP 15.8):
 - a. Under the **Name (2)** section, select “Remove” in the *Name* field to remove the entire filename before “.JPG”.
 - b. Under the **Add (7)** section, in the *Prefix* field – enter, **Park Code + 2-digit calendar year + “T” or “F” (temporary or fixed) + “T” for transect + 2-digit transect number** (e.g., “06” for transect 6, “10” for transect 10, etc.). For the example in Figure SOP 15.11, fixed transect 6 at Kaloko-Honokōhau National Historical Park in 2018 would be entered as “KAHO18FT06”.
 - c. Under **Numbering (10)** section – set the *Mode* dropdown field to “Suffix”, *at* field to “0”, *Start* field to “0”, *Incr.* field to “1” and *Pad* field to “3”. This starts the numbering sequence with the number one corresponding to the first image and allows for up to 999 images/frames per transect.
 - d. Double-check the above selected criteria before renaming—**changes cannot be undone after renaming**. Once verified, click “Rename”.

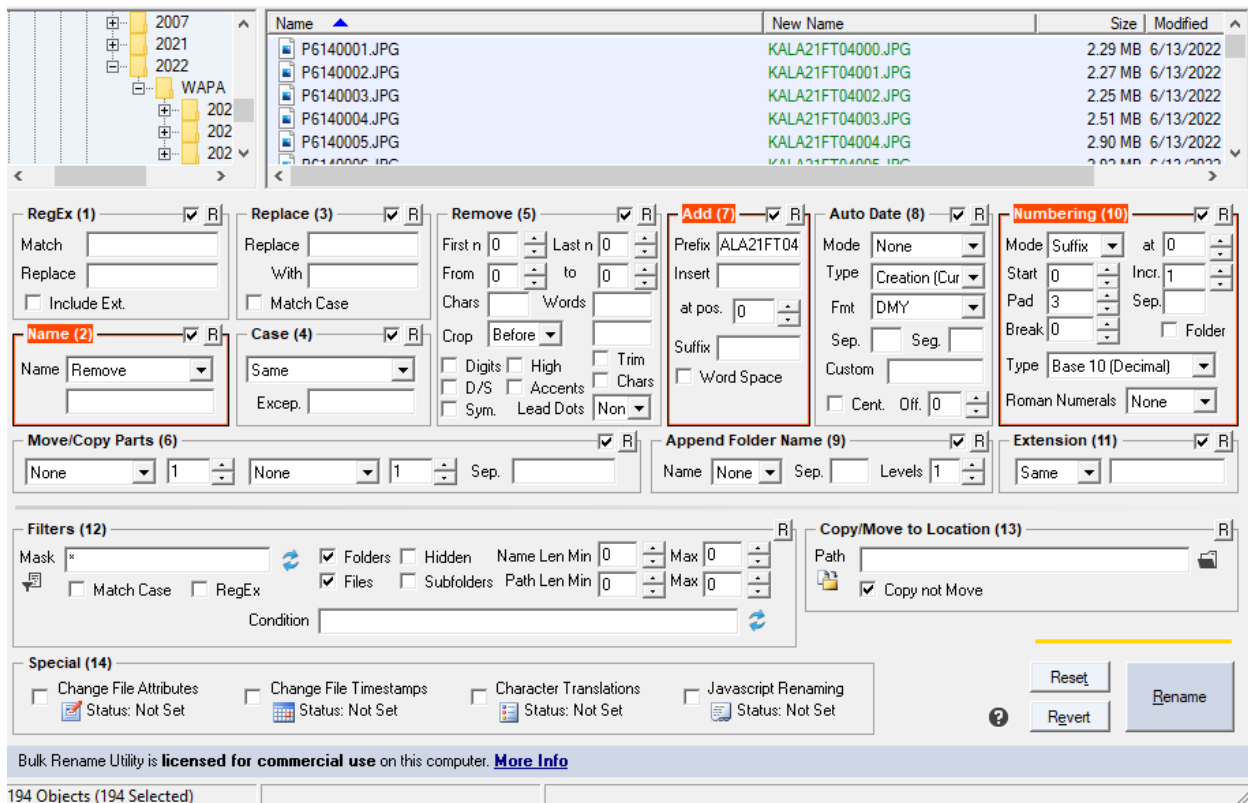


Figure SOP 15.8. Example of renaming KALA 2021 F04 transect image files with the following set criteria.

7. After renaming, close Bulk Rename Utility® and open File Explorer.

8. Manually rename the five start photos by clicking twice (or **right-click → Rename**) on the filename in the File Explorer and typing in the new name. Use the same naming convention for the beginning of the file name (e.g., KAH018FT06) plus “Start” for the first photo; and “_Hd000”, “_Hd090”, “_Hd180”, and “_Hd270” as appropriate for the four landscape photos (Figure SOP 15.9).

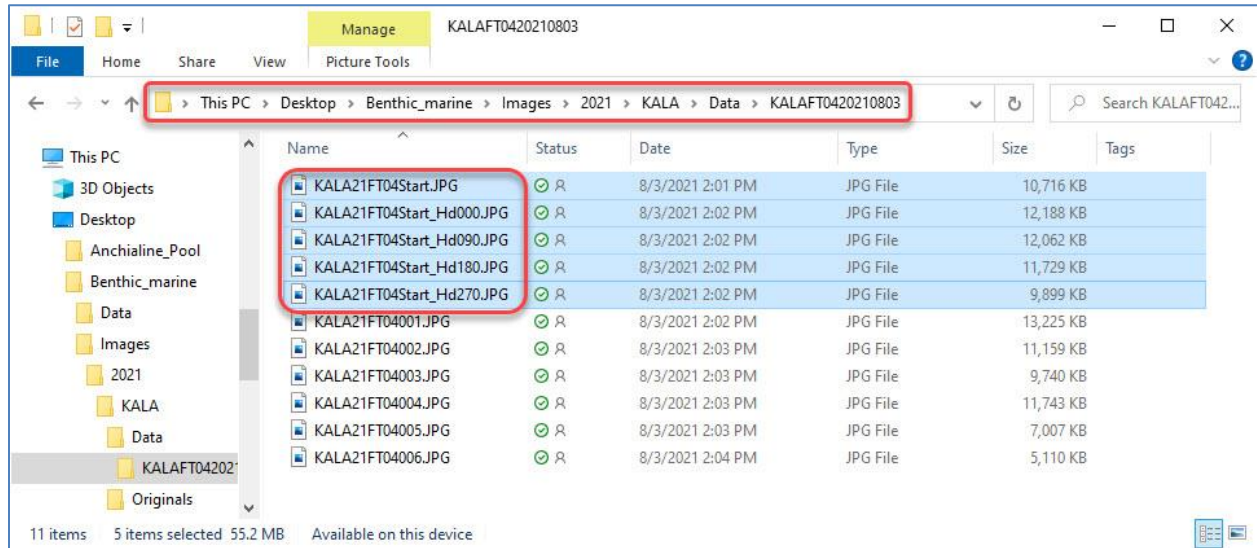


Figure SOP 15.9. Example of manually renaming benthic photos in File Explorer.

Renaming Settlement Image Files

1. Use the program Bulk Rename Utility® v3.0.0.1 to rename the Data image files in a batch.
2. Launch Bulk Rename Utility® by clicking on the Windows icon from the bottom-left of the Microsoft Windows® toolbar and browsing to the Bulk Rename Utility program (Figure SOP 15.4, above).
3. Navigate to the “Settlement_images” sampling event folder on the user’s local workspace where the settlement images were copied to in the [Selecting Images](#) section, Step 6.
4. Highlight the first 4 images, which represent the pictures taken at the first CSA (coral settle arrays) along a transect.
5. Select/enter the following criteria in Bulk Rename Utility:
 - a. Under the **Name (2)** section, select “Remove” in the *Name* field to remove the entire filename before “.JPG”.
 - b. Under the “**Add (7)**” section, in the *Prefix* field – enter, **Park Code + 2-digit calendar year + “T” or “F” (temporary or fixed) + “T” for transect + 2-digit transect number** (e.g., “06” for transect 6, “10” for transect 10, etc.). For the

example in Figure SOP 15.14, fixed transect 3 at National Park of American Samoa in 2018 would be entered as “NPSA18FT03”.

- c. Double-check the above selected criteria before renaming—**changes cannot be undone after renaming**. Once verified, click “Rename”.
6. Manually update the CSA/plate pair number (e.g., “01”, “02”, or “03”), followed by a number for the surface (e.g., “01”, “02”, “03”, or “04” [UT for upper plate top surface; UB for upper bottom; LT for lower top; or LB for lower bottom, respectively) (e.g., for transect 3, the first CSA and plate surface 3, enter “030103”).
7. Files will be renamed following the template in Figure SOP 15.10.

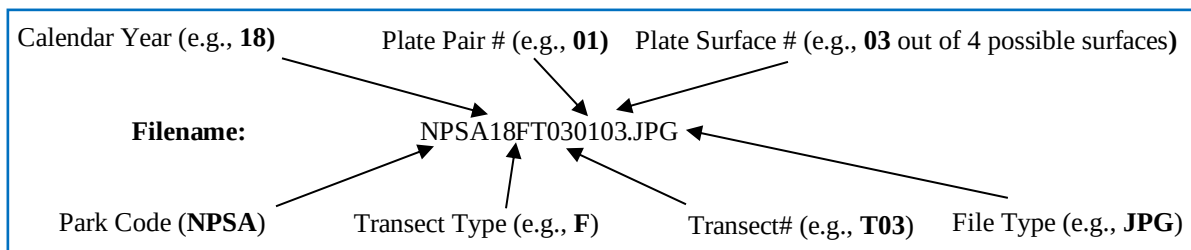


Figure SOP 15.10. Example format for renaming files for settlement image analysis.

The PACN Marine Biological Technician or Park staff should upload the original, data and settlement tile image files to SharePoint as soon as images are finished being processed.

File Structure Setup

Once image files are renamed on the user’s local workspace, files are then uploaded to the [Benthic Marine Community Monitoring project workspace](#) in SharePoint. Original-raw images are uploaded to the “Originals” folder, while renamed data and settlement images are uploaded to the “Data” and “Settlement_images” folders, respectively.

Benthic Analysis Images

1. All of the benthic images for analysis reside in the “[Images](#)” folder in the Benthic Marine Community Monitoring project workspace in SharePoint.
 - a. Within the “[Images](#)” folder are subfolders for each sampling year and park; and within the Park subfolder are “Originals” and “Data” subfolders (Figure SOP 15.11).

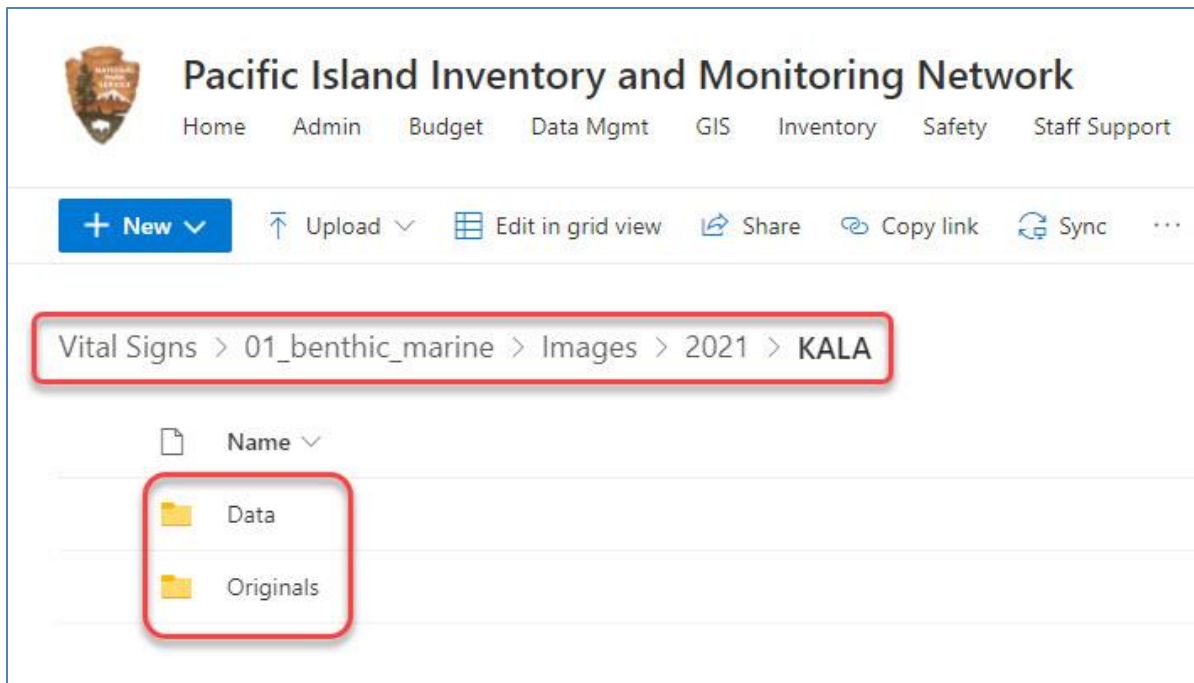


Figure SOP 15.11. Example of the “Images” folder and subfolder setup for a particular sampling year and park in SharePoint.

- i. **Original (raw) Images:** Original-raw images reside in the “Originals” sampling event folder within the respective year and park subfolders (Figure SOP 15.12).

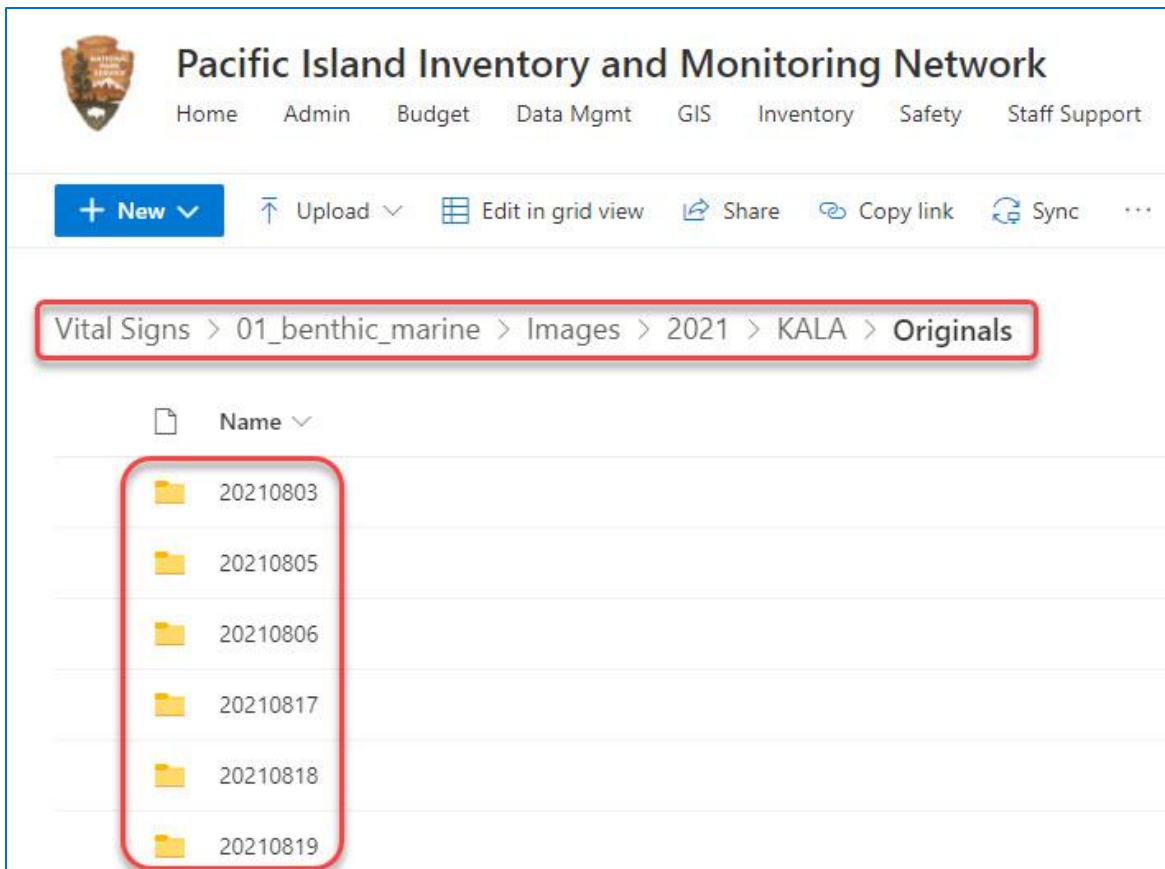


Figure SOP 15.12. Example of sampling event folder structure for storage of the original-raw images within the “Originals” folder for a particular year and park in SharePoint.

- ii. **Data (renamed) Images:** Renamed data images reside within the “Data” folder sampling event folder within the respective year and park subfolders (Figure SOP 15.13 and Figure SOP 15.14).

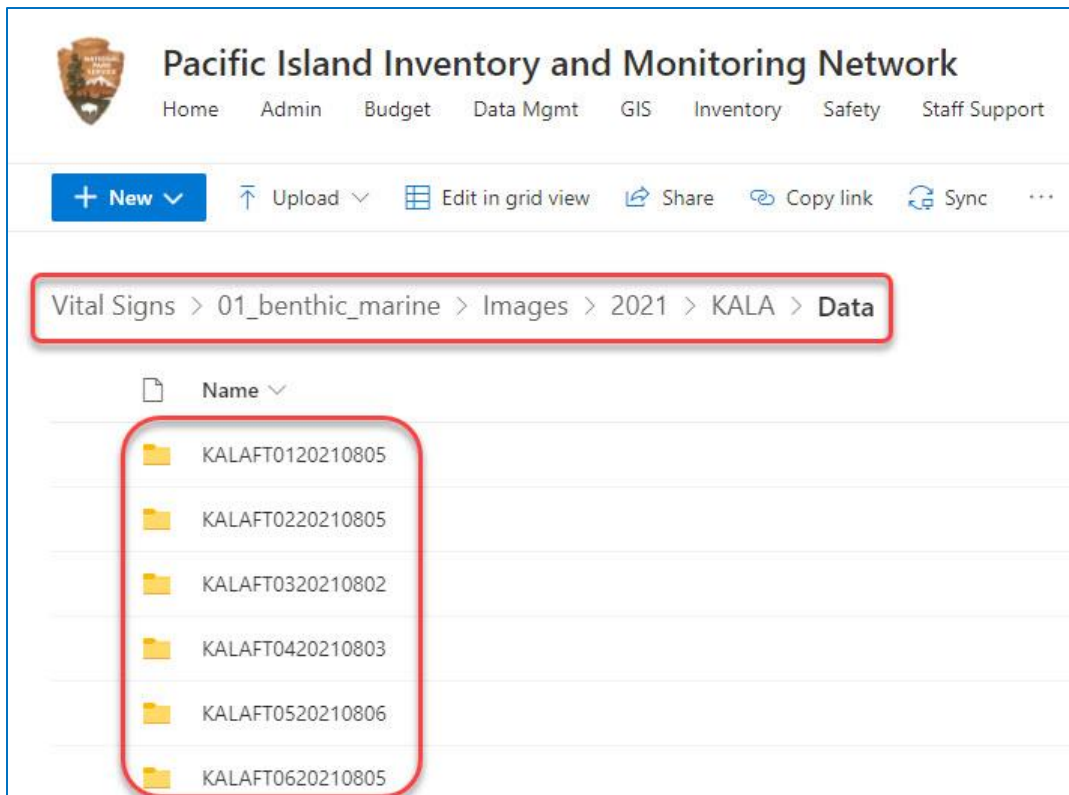


Figure SOP 15.13. Example of sampling event folder structure for storage of renamed data images within the “Data” folder in SharePoint.

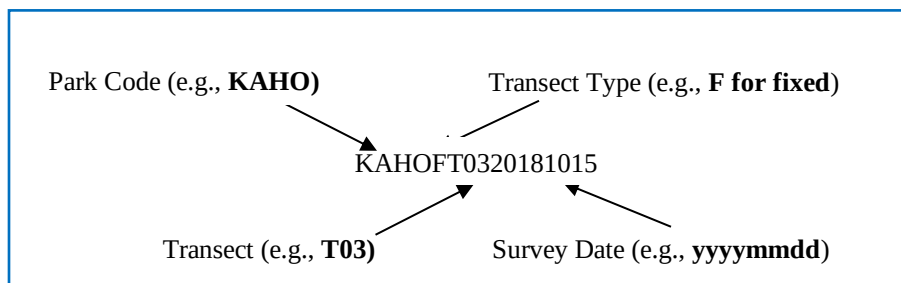


Figure SOP 15.14. Folder naming convention for storing renamed data images.

Settlement Tile Images

Details in this section assume that images of settlement tiles were made following [SOP #9 Conducting Coral Settlement Monitoring](#). Photographing coral settlement tiles is presently an optional but recommended step in this SOP.

Settlement tile images will reside in a “Settlement_images” sampling event folder in SharePoint, in the event that settle images are captured. Settlement tile images are optional and not often captured in the field, therefore a “Settlement_images” folder may need to be created if one does not already exist. This folder would be created within the year and park subfolders in the “Images” folder in

SharePoint (e.g., “[Images](#)” folder → Year folder → Park folder → “Settlement_images” folder). See the [Creating a Folder in SharePoint](#) section for instructions on creating a new folder.

Creating a Folder in SharePoint

Folders may need to be created in SharePoint in order to upload images.

To create a folder in SharePoint:

1. Navigate to the folder location in SharePoint where a new folder is to be created.
2. From the toolbar at the top, click “**New**” → “**Folder**” (Figure SOP 15.15).

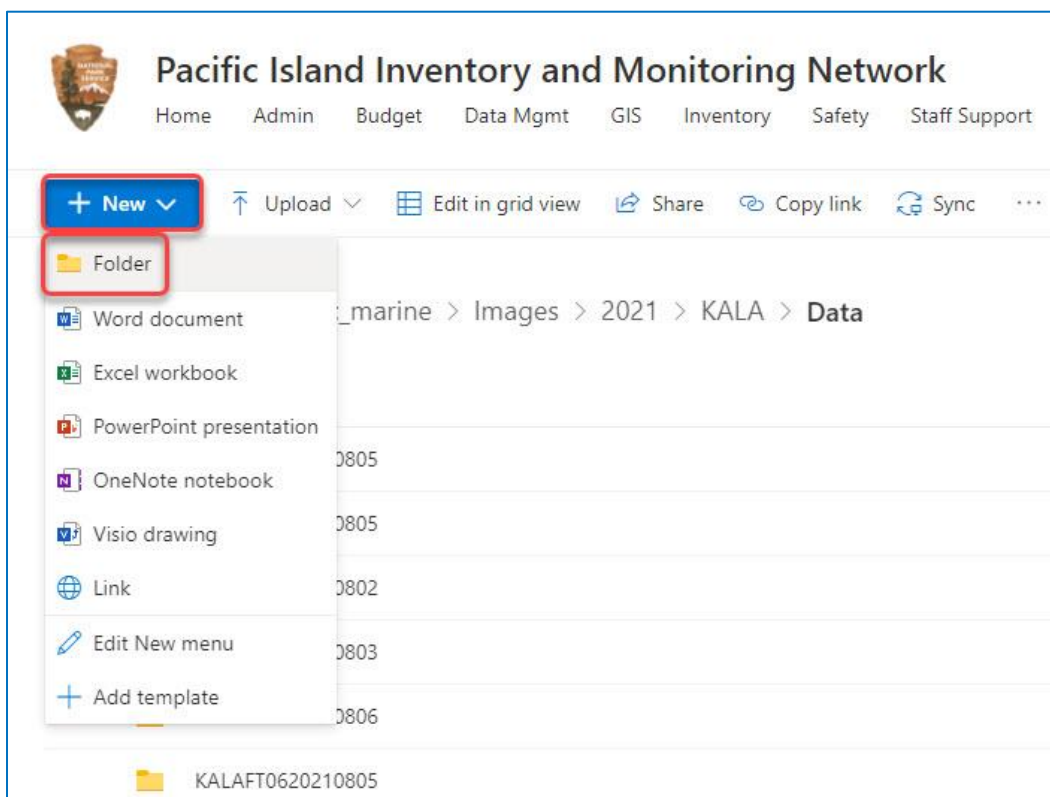


Figure SOP 15.15. Creating a new folder in SharePoint.

3. A prompt window will appear in order to create a new folder name. Type in the new folder name in the textbox and click “**Create**” (Figure SOP 15.16).

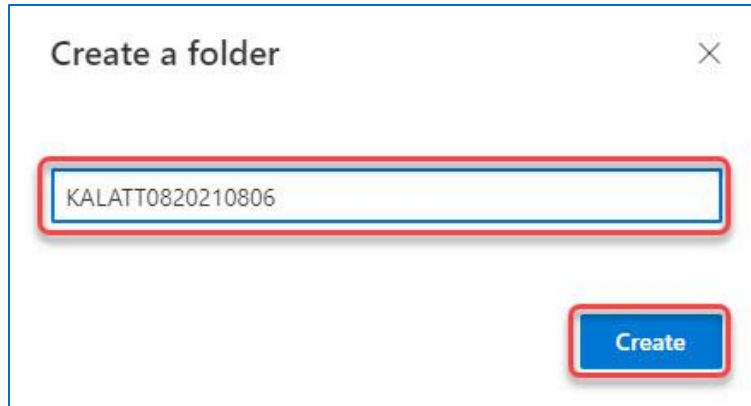


Figure SOP 15.16. Entering a new folder name in the prompt window. In the example, a sampling event folder is being created using the file naming convention from Figure SOP 15.3.

4. The new folder will appear in the chosen root folder location in SharePoint. If you do not see the new folder, click the **Ctrl + r** keys on the keyboard to refresh the browser window.

Uploading Images to SharePoint

Original images and renamed data and settlement images are to be uploaded to SharePoint. Original images are to be uploaded in their raw form, while data and settlement images are to be renamed from the local workspace prior to uploading to SharePoint (see [Renaming Data Images](#)). In the procedures below, the entire sampling event folders for the different image types will be uploaded from the user's local workspace to SharePoint.

1. Navigate to the appropriate "[Images](#)" folder for the image type to be uploaded to SharePoint:
 - a. Original Images: "[Images](#)" folder → Year folder → Park folder → "Originals" folder (Figure SOP 15.12, above)
 - b. Data Images: "[Images](#)" folder → Year folder → Park folder → "Data" folder (Figure SOP 15.13, above)
 - c. Settlement Images: "[Images](#)" folder → Year folder → Park folder → "Settlement_images" folder
2. From the toolbar at the top, click "**Upload**" → "**Folder**" (Figure SOP 15.17).

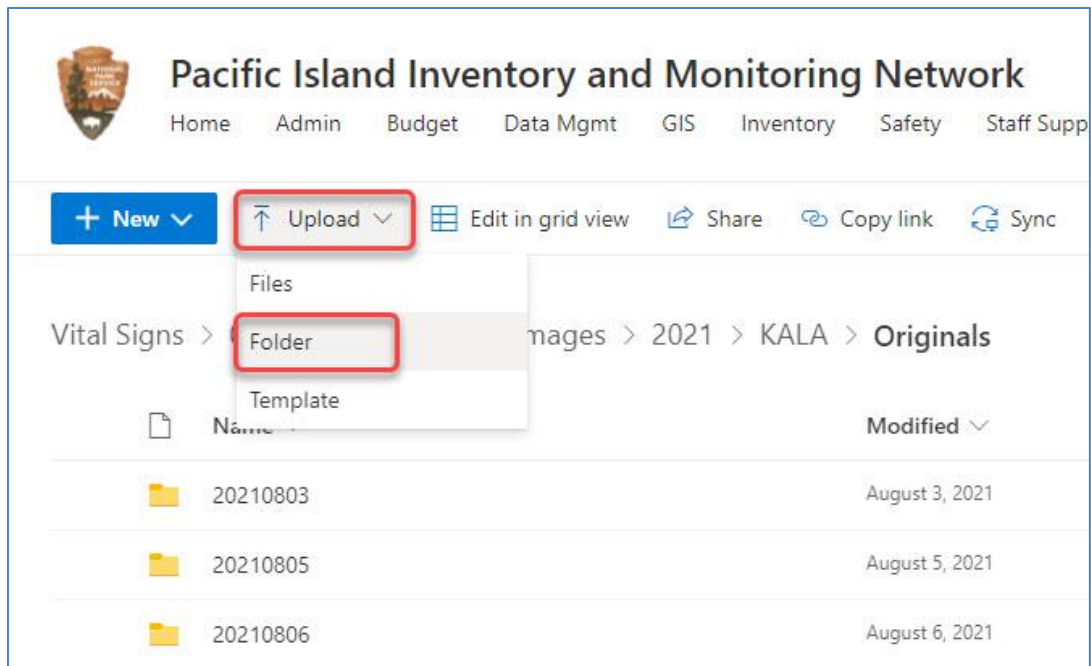


Figure SOP 15.17. Example of uploading a folder to SharePoint.

3. A window will open prompting to select the folder from your PC that you want to upload to SharePoint. Navigate to the location on the user's local workspace where the sampling event folder is located (e.g., C:\Users\[UserName]\Desktop\Benthic_marine\Images\ → Year folder → Park folder → "Originals/Data/Settlement_images" folder → sampling event folder) (Figure SOP 15.18).

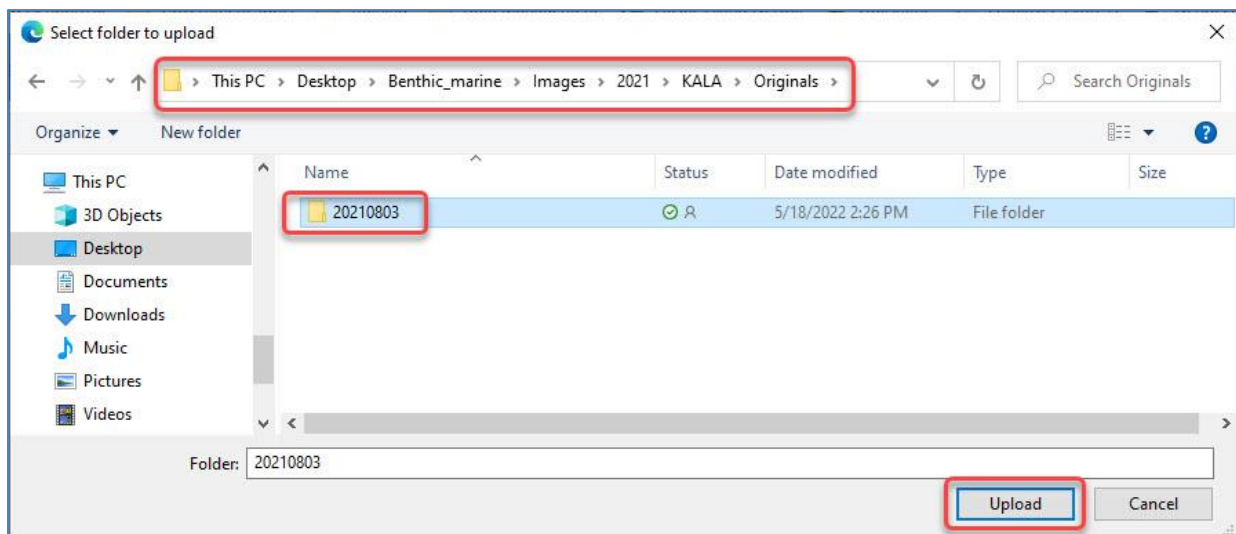


Figure SOP 15.18. Example of selecting a sampling event from the user's local workspace to be uploaded to the "Originals" folder in SharePoint (same procedures for "Data" or "Settlement_images" folder).

4. The folder will upload, and a confirmation message will appear.

Appendix SOP 15.a. Equipment Necessary to Download Images

Table SOP 15.1 Equipment list for downloading images.

Equipment	Quantity	Notes
Compact Flash Card reader	1	If using a card reader
USB cable	1	If using the camera and cable
Camera	1	
Computer	1	