

Standard Operating Procedure (SOP) #12

Managing Photographic Images

Version 2.01 (June 2, 2022)

Change History

New Version #	Revision Date	Author	Changes Made	Reasons for Change	Previous Version #
2.0	7/28/2021	Kelly Kozar	Updates to how images are managed.	Fish images are processed and stored differently than other protocols.	1.0
2.01	6/2/2022	Kim Weisenborn	Updated content to refer to new PACN I&M SharePoint. Updated figures to reflect change.	PACN data is no longer stored on a networked server (I:\ drive) and is now stored on the PACN I&M SharePoint site.	2.0

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 describes how to process photographic images collected by project staff or volunteers during the course of conducting Pacific Island Inventory and Monitoring (PACN I&M) Marine Fish Monitoring. Images that are acquired by other means – e.g., downloaded from a website or those taken by a cooperating researcher – are not project records and should be handled separately.

Care should be taken to distinguish data photos from incidental or opportunistic photos taken by project staff. It should be noted that Marine Fish Monitoring protocol does not utilize photographic images as part of the core data record, but photographs may be taken of distinctive assemblages, rare fish species, fish species for identification and/or unique habitats. Data photos are those taken for at least one of the following reasons:

1. To document a particular feature or perspective for the purpose of site relocation. Typically, this will be done in conjunction with the co-located Benthic Marine Community Protocol.
2. To capture site habitat characteristics and possibly to indicate gross structural changes over time.
3. To document a fish species detection that is also recorded in the data.
4. To document a fish species for identification.

5. To document the first observation or record of a fish species that has not been previously observed in the park marine boundary.

Effectively managing hundreds of photographic images requires a consistent method for downloading, naming, editing and documenting the images. The general process for managing data photos proceeds as follows:

1. File Structure Setup – Set up the file organization for images prior to acquisition
2. Image Acquisition
3. Download and Process
 - a. Download the files from the camera
 - b. Rename the image files according to convention
 - c. Copy and store the original, unedited versions
 - d. Review and edit or delete the photos
 - a. Move into appropriate folders for storage
4. Notify the PACN Data Manager that images are ready for archival in [PACN Monitoring Archive Library](#)¹ in the [PACN I&M SharePoint site](#)² (see [SOP #10 Workspace Setup and Project Records Management](#)).

File Structure Setup

Prior to data collection for any given year, project staff will need to set up a new folder under the “[Images](#)” folder (Figure SOP 12.1) in the [Marine Fish Monitoring project workspace](#) in SharePoint. Folder structure should be setup as follows:

[Images](#)

[YEAR]	The appropriate year (e.g., 2021, 2022, etc.; Figure SOP 12.1)
[PARK]	Arrange files by park 4-letter park code (e.g., WAPA, NPSA, etc.; Figure SOP 12.2)
Data	Data images arranged by date (Figure SOP 12.3)
Misc	Non-data images taken by project staff and arranged by date (Figure SOP 12.3)
Originals	Data images that are downloaded from a field camera and arranged by date (Figure SOP 12.3)

¹ PACN Monitoring Archive Library, https://doimspp.sharepoint.com/sites/nps-PWR-PACNIM/monitoring_archive/ (accessed 2 June 2022).

² PACN I&M SharePoint site, <https://doimspp.sharepoint.com/sites/nps-PWR-PACNIM> (accessed 2 June 2022).

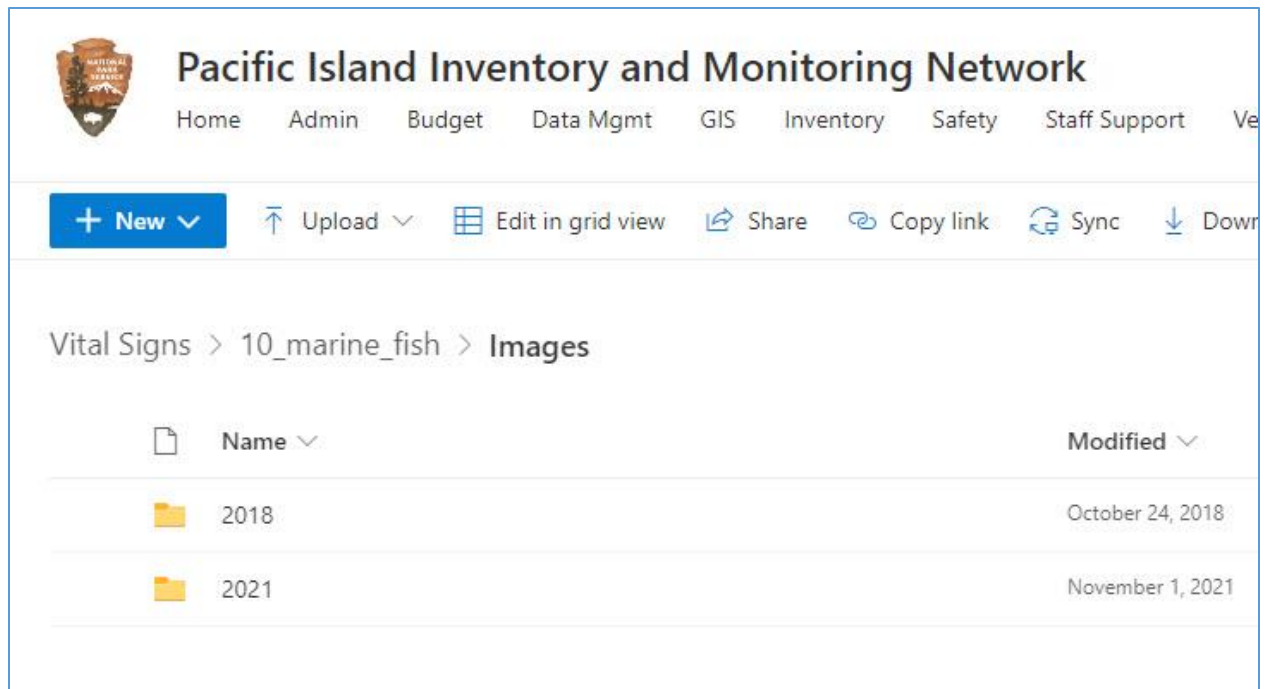


Figure SOP 12.1. File structure for “Images” folder within the Marine Fish Monitoring project workspace in SharePoint.

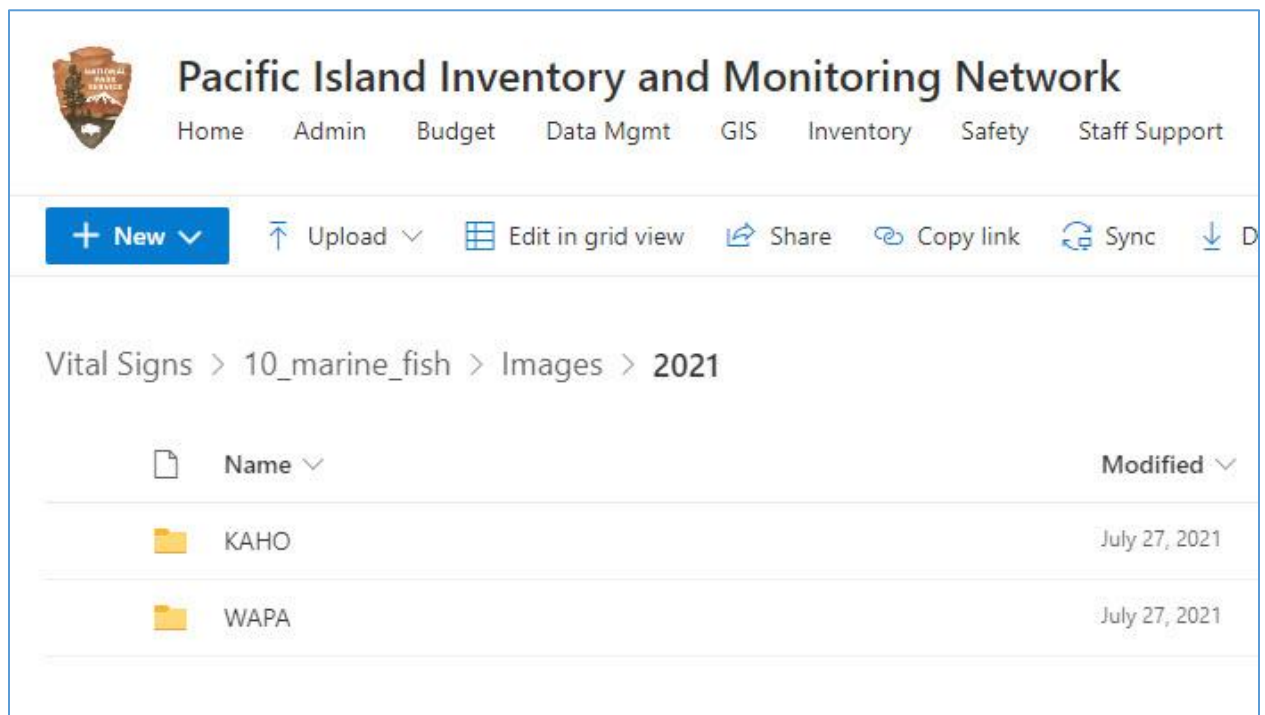


Figure SOP 12.2. Example of where to place Marine Fish images for each park for a sampling year within the Marine Fish Monitoring project workspace in SharePoint.

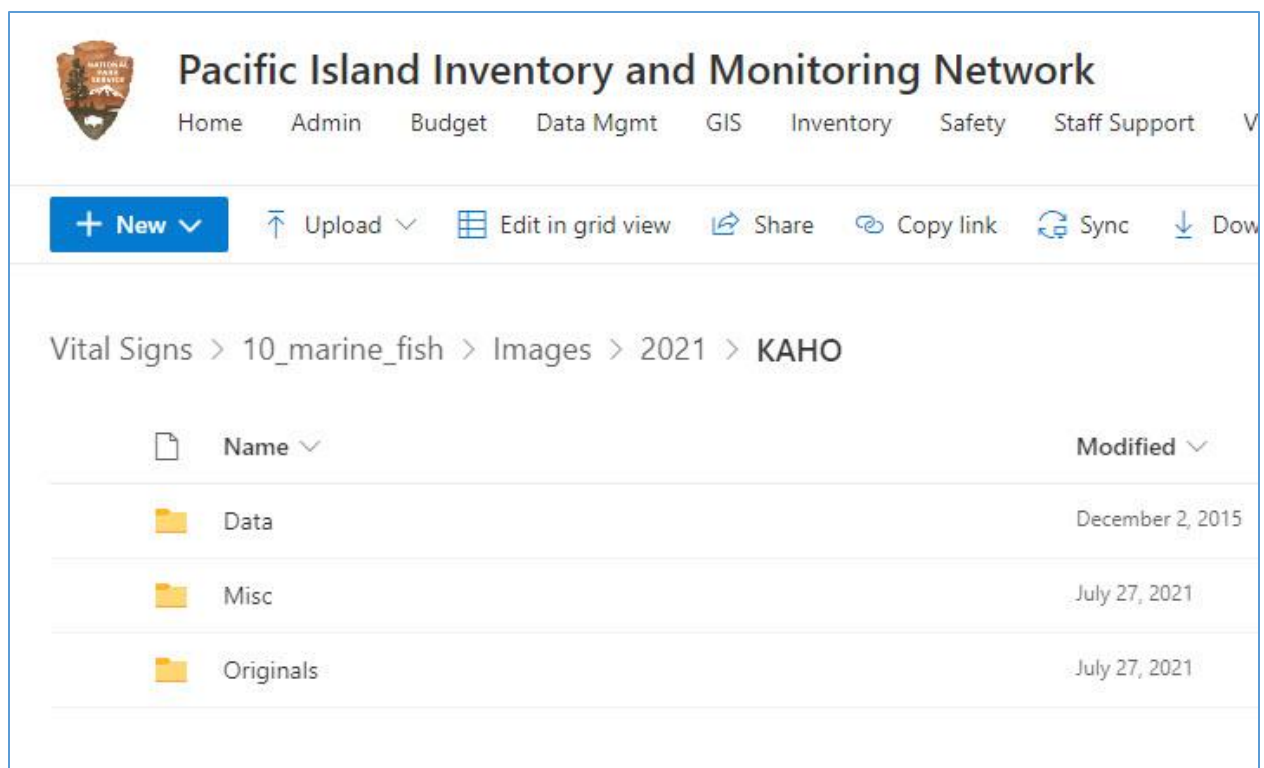


Figure SOP 12.3. Example of file structure for each park folder for a sampling year within the Marine Fish Monitoring project workspace in SharePoint.

This folder structure permits data images to be stored and managed separately from non-record and miscellaneous images collected during the course of the project. It also provides separate space for storage of originals. For additional information about the project workspace, refer to [SOP #10 Workspace Setup and Project Records Management](#).

Folder Naming Standards

In all cases, folder names should follow these guidelines:

- No spaces or special characters in the folder name
- Use the underscore (“_”) character to separate words in folder names
- Try to limit folder names to 20 characters or fewer
- Dates within folder names should be formatted as YYYYMMDD³ (for better sorting)

Within the “Data” and “Originals” folders, additional folders should be created for each sampling event in the format YYYYMMDD. **When a sampling event is multiple days long, use the first date of the sampling event for folder name.** All data images for a sampling event should go in the

³ YYYYMMDD = 4-digit year, 2-digit month, 2-digit day

appropriate sampling event folder.

Image Acquisition

Digital photographs should be captured at a resolution and quality setting appropriate for the highest detail intended use. Although photographs taken to facilitate future navigation to the site do not need to be stored at the same resolution as those that may be used to indicate gross environmental change at the site, it may be more efficient to capture all images at the same resolution initially. A recommended minimum raw resolution is 1600 x 1200 pixels (approximately 2 megapixels).

As a general rule, images destined for printing or publication should be of a higher quality and resolution than images that will be used for email or internet use. If the camera will allow, the resolution should be set at 1760 x 1168 or higher. The quality should be set for “super fine” or “high”. Uncompressed TIFF files retain the greatest amount of image information, but the trade-off for the highest image quality is that these image files are large, and fewer images can be saved to any single memory card.

Publication quality photos should be taken at a minimum of 5 megapixels. Because the destination of a photo is unknown at the time it is taken, all photos should be taken with this resolution, or for lower resolution cameras, the highest resolution possible. Any resizing or file compression should be done during post processing using image editing software.

Though most digital cameras can digitally imprint the date and time directly onto the photo image, this feature usually should not be used. Date and time data are automatically recorded in the EXIF metadata by most digital cameras. If the image is being cataloged and documented, it has value – imprinting the image reduces the image quality and hence the image value.

Different brands of digital cameras name photos differently. Some cameras will have several file naming options that may include:

- Sequential numbering which resets each time a memory card is formatted, or a new card is put in.
- Sequential numbering which loops from 0001 to 9999.
- Numbering based on date-photo sequence.

As a general rule, the most useful setting is a date-photo sequence, then the 0001-9999 loop and the least useful the card-based sequence. Projects must carefully review the naming options of the project cameras for the most useful convention. Projects must also ensure the same convention is used by all cameras collecting data photos. Photos will be renamed later following the naming conventions described below.

Download and Processing Image Files

When returning from the field, images must be downloaded from the camera, placed in the appropriate folders, and processed as soon as possible.

1. Once datasheets are dry, photocopy all datasheets and store in a labeled three ring binder showing year and type of data (See [SOP #11 Datasheet Handling Procedures](#)).
2. Download the images off the camera onto your laptop computer in a folder designated for the park and sampling year (i.e., KAHŌ → 2021)
3. Upload a copy of the original images to the “Originals” folder for the appropriate year and park in SharePoint (Figure SOP 12.3). These originals are the image backup to be referred to in case of unintended file alteration or deletion.
4. Process and rename the images in the park/sampling year folder on your laptop. At a minimum, the following processing steps should be performed on all image files:
 - a. Delete any poor-quality photos, repeats, blurred or otherwise unnecessary photos. Low quality photos might be retained if the subject is highly unique, or the photo is an irreplaceable data photo.
 - b. Rotate the image to make the horizon level.
 - c. Photos of people should have ‘red eye’ glare removed.
 - d. Photos should be cropped to remove edge areas that grossly distract from the subject.
 - e. Rename the images according to convention (refer to the image file naming standards section below).
 - i. If images are for identified fish species, rename the images as the species are identified.
5. When finished, upload the renamed image files that are to be retained to the appropriate SharePoint folder—data images (including fish species images) under the “Data” folder, other images under the “Misc” folder (Figure SOP 12.3).
6. Depending on the size of the files and storage limitations, contents of the “Originals” folder may be deleted if all desired files are accounted for after processing.

Large groups of photos acquired under sub-optimal exposure or lighting can be batch processed to enhance contrast or brightness. Batch processing can also be used to resize groups of photos for use on the web. Batch processing may be done in Adobe Photoshop® or a similar image software package.

Image File Naming Standards

In all cases, image names should follow these guidelines:

1. No spaces or special characters in the file name
2. Use the underscore (“_”) character to separate file name components
3. Try to limit file names to 30 characters or fewer, up to a maximum of 50 characters
4. Park code and year should either be included in the file name or conclusive by the directory structure
5. For fish species identifications, use the family name followed by the genus and species names. Be sure to use the underscore (“_”) between names (i.e., 20210727_Pomacentridae_Abudefdud_abdominalis.jpg).

The image file name should consist of the following parts:

1. The date of data capture (formatted as YYYYMMDD)
2. The sampling location (if recorded at a sampling location)
3. Optional: a brief descriptive word or phrase
4. Optional: a sequential number if multiple images were captured
5. Optional: time (formatted as HHMM)

Example: 20210727_training_004.jpg (4th photo taken during training on July 27, 2021)

In cases where there are small quantities of photos it is practical to individually rename these files. However, for larger numbers it may be useful to rename files in batches. This may be done in Bulk Rename Utility® (contact the PACN Data Manager for software installation information).

Renaming photos may be most efficient as a two-part event—one step performed as a batch process which inserts the date and transect number at the beginning of the photo name, and a second step in which a descriptive component is manually added to each file name.

Final Storage

At the end of the season, and once the year’s data are certified, inform the PACN Data Manager that the data images for the year are ready for archival in the [PACN Monitoring Archive Library](#) in SharePoint. Please refer to [SOP #17 Product Delivery Specifications](#) for more details.