

Standard Operating Procedure (SOP) #11

Post-Dive Procedures and Equipment Maintenance

Version 2.04 (June 2, 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	1.0
2.01	7/20/2007	Larry Basch	See Track Changes	Corrections, additions	2.0
2.02	8/22/2019	Amanda McCutcheon, Kelly Kozar	Updated camera instructions. Updated SOP #s.	Camera model and housing has changed. Added a geospatial SOP and had to renumber subsequent SOPs.	2.01
2.03	8/11/2021	Sheila McKenna	Updated camera and associated equipment so methods applicable in general to all camera set up as per SOP #6 Pre-Dive Equipment Preparation. Minor content change.	To be consistent with the general approach for camera set ups as per SOP #6 Pre-Dive Equipment Preparation. To make consistent with Marine Fish Post-Dive SOP.	2.02
2.04	6/2/2022	Kim Weisenborn	Updated content to refer to new PACN I&M SharePoint. Updated footnote.	PACN data is no longer stored on a networked server (I:\ drive) and is now stored on the PACN I&M SharePoint site.	2.03

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 covers post dive equipment maintenance for SCUBA gear and the photographic equipment. This procedure has been written generally to be applicable to all dive gear, cameras and their associated underwater housings.

A master equipment list for the entire Benthic Marine Community Vital Sign 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.

Post-Dive Instructions for Equipment Care and Maintenance

Rinse Equipment - Step by Step procedures

1. At the end of each field day, all equipment must be rinsed with freshwater. Seawater left on the equipment for an extended period of time will reduce the safe, reliable, functional operational life of the equipment. For reference, a scuba equipment list can be found in Appendix SOP 1.a of SOP #1 Before the Field Season.
2. Ensure that electronic gear and other sensitive equipment such as regulators get rinsed quickly to reduce damage from salt crystallization.
3. Rinse all SCUBA gear including the inner bladder of the buoyancy compensators devices (BCD). The more that buoyancy is manipulated underwater the more seawater can enter a BCD.
4. Rinse the boat (if removed from the water), trailer, and vehicle. Apply WD-40[®] or other lubricant such as Corrosion Block[®] to moving parts on the trailer (e.g., winch) and boat engine. Rinse the engine and use a motor flusher attachment (rabbit ears) for the internal parts.
5. Rinse each datasheet with fresh water and then dry them by hanging sheets with clothes pins overnight in a secure area.
6. Rinse all other gear used each day.
7. Once dry, all equipment should be stored until needed again. If this is the final dive of the season, see SOP #23 After the Field Season for additional steps required when storing equipment.

Camera Maintenance - Step by Step procedures

The camera will need to be rinsed and dried prior to opening housing and storage of it.

1. Rinse and soak the camera housing. Place camera housing in its own rinse container (e.g., bucket) to avoid damage. Never put anything heavy or hard in the rinse container with the camera housing. Fill rinse container with fresh water and soak camera housing for at least 30 minutes and push all buttons and other controls to flush out any seawater or embedded salt crystals.
2. Remove the camera housing from the fresh water and allow it to air dry before opening it. Using a towel to dry may be done, however care should be taken to use lint-free cloth to avoid introducing particles or contaminants that could stick to O-rings, etc., and cause flooding of housing. Ensure that the lens cap is in place on the housing so that it is not scratched or otherwise damaged while removing the camera.
3. Following manufacturer's directions for your particular camera model and housing set up (see SOP #6 Pre-Dive Equipment Preparation), unlock the camera housing and carefully remove the camera.

4. Return camera to its storage case. Never store the camera with batteries in it. Camera batteries can potentially leak, damaging the camera. Follow the steps outlined in SOP #15 Managing Photographic Images for instructions on how to download data from the camera.
5. Be sure underwater camera housing and associated accessories are stored safely and securely following manufacturer's instructions.

Complete Dive Log

Each diver must log dive information as required by NPS Reference Manual 4 - Diving Safety and Operations Manual (RM-4)¹. For more detailed information on post-dive requirements, see SOP #2 Training Observers.

Post-Dive Instructions for Handling Data

Datasheets - Step by Step procedures

1. Once datasheets are dry, photocopy all datasheets and store them in a labeled three ring binder showing year and type of data, preferably in a metal fire-proof filing cabinet.
2. Scan all datasheets and upload to appropriate park folder in the "[Datasheets](#)" folder in the [Benthic Marine Community Monitoring project workspace](#) on SharePoint.
3. Archive original datasheets according to SOP #12 Workspace Setup and Project Records Management guidelines.

At this step, data for each type of sampling should then be treated according to further instructions found in respective data management SOPs. For general data archiving and entry see SOP #14 Data Entry, Verification, and Certification. For settlement sampling, see SOP #17 Settlement Analysis. For percent cover sampling, first see SOP #15 Managing Photographic Images and then SOP #16 Benthic Image Analysis.

Download Photographs - Step by Step procedures

Photographs should be downloaded from the camera as soon as possible following the dive. The process of downloading photographs will be the same regardless of the sampling type. Further instruction on downloading images can be found in SOP #15 Managing Photographic Images.

1. Download the images from the camera to the computer.
2. Once downloading is complete, check to see that all image files were transferred intact to the computer.
3. Delete images from memory storage card in the camera and reformat the card to ensure its proper function in the future.

¹ NPS Reference Manual 4 - Diving Safety and Operations Manual (RM-4), https://www.nps.gov/policy/DOrders/RM-4_6-2014.pdf (accessed 2 June 2022).

4. Turn the camera off and disconnect it from the computer.
5. Remove the SD card and store.
6. Remove the batteries and recharge them in the battery charger.
7. Return the camera to its proper storage place. Never store the camera with batteries in it. Camera batteries can potentially leak, damaging the camera.