

South Florida/Caribbean Network

National Park Service
Inventory and Monitoring Division



Standard Operating Procedure WT03

HOBO[®] Temperature Pro v2 Field Data Collection using the HOBO[®] Waterproof Shuttle - U-DTW-1—Version 1.1

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Purpose

This standard operating procedure (SOP) describes the process for collecting temperature data from the HOBO[®] loggers using the waterproof shuttle. The HOBO[®] waterproof shuttle is a standalone device used to obtain data from the HOBO[®] loggers. This process is done while diving and does not require bringing the HOBO[®] loggers to the surface. When the data are transferred from the logger to the shuttle, the data no longer reside on the logger. The logger will continue collecting data at the next scheduled interval.

Revision Log

Revision Date	Author	Changes Made	Reason for Change	New Version #
6/29/2020	Lee Richter?	Update SOP references, minor edits for clarity.	Protocol operational review	1.1

Procedures

Office Preparation—Synchronize the Shuttle Clock to the Computer Clock

At each site, two loggers are deployed in case one logger fails or is lost. It is important the internal clocks within the loggers are synchronized as closely as possible. This assures data are collected by each logger at the same time. When the data are transferred to the shuttle, the clock time of the logger is updated to that of the shuttle.

1. Update the time on your laptop or desktop computer using [NIST Official U.S. Time website](#).
2. Connect the shuttle to a laptop or desktop computer using the USB cable.
3. Open HOBOWare[®] Pro (latest version—update as necessary).
4. Select “Device” from the drop down menu, then select “Manage Shuttle.”
5. In the Waterproof Shuttle Management dialog box, click the box “Sync Shuttle Clock.”
6. Check the shuttle memory. There are 63 “banks” to store data in the shuttle. If data have been transferred off the shuttle to a laptop, or server, they may be deleted. Do not delete data unless you are sure that the data have been transferred. Once data are transferred from the logger to the shuttle, they are no longer stored on the logger.
7. Evaluate the battery life in the shuttle as indicated in the display within the dialog box. If battery life is less than 50% remaining, replace the batteries.
8. Close the dialog box, and shut down HOBOWare[®] Pro.
9. Disconnect the shuttle. Replace the end cap immediately.

Field Activities

1. The following equipment will be needed (along with standard dive equipment):
 - a. GPS coordinates and/or laminated map showing the specific locations of the loggers
 - b. Underwater shuttle—**handle with care while diving. The shuttle is positively buoyant and will easily float away from a diver.**
 - c. Two 12-inch (30.5-centimeter) cable ties per logger
 - d. Dive knife or shears
 - e. Water temperature field log and pen
 - f. Field notebook
 - g. Extra loggers in case one is missing or has failed.
2. Dive to the specific location where the loggers are attached. Use knife or shears to remove one logger at a time from mounting device, remembering to retrieve the used cable ties from the bottom for disposal. **Use caution as the loggers are positively buoyant.**



Figure 1. HOBO® Water Temp Pro v2 logger inside boot and cap.

3. Remove the protective rubber boot and cap from the logger. **Use caution as the rubber boot is positively buoyant.**
4. Align the mark on the logger with the line on the shuttle, inserting the logger completely into the shuttle (Figure 1). Complete insertion minimizes space between the logger and shuttle and provides the best chance for a complete download.
5. Squeeze the plastic handle on the shuttle **once** to begin data transfer. The yellow “Transfer” light will blink when downloading. The green “OK” light will blink when the transfer is complete. Take care to only depress the lever once. **Depressing the lever again after the transfer has started will cause data to be unreadable.**

6. Upon successful transfer, remove the logger from the shuttle and replace the protective boot/cap on the logger. If the transfer fails the logger may have to be replaced, in which case the instrument may have to be returned to the manufacturer for data retrieval.
7. Attach the loggers (in rubber boots and caps) to the appropriate location with two cable ties. One cable tie goes through the eye of the logger; the second goes around the logger body. Assure the cable ties are very snug (loggers should withstand hurricanes that may pass over the site). The loggers are positioned vertically and inverted with respect to each other.
8. When removing the second logger for data transfer, ensure that the correct logger is retrieved. New cable ties attach the reinstalled logger, thus remove the logger with the old ties.
9. Return to the surface with the shuttle and the old cable ties. **Remember to use care with the shuttle. It is positively buoyant and easily floats away from divers. When the data are transferred to the shuttle from the loggers, they no longer exist on the loggers; only in the shuttle. If the shuttle is lost, so are the data!**
10. At completion of the dive record the following information in the field logbook:
 - a. Date
 - b. Site Name
 - c. Number of loggers transferred
 - d. Comments: Any pertinent information not mentioned above shall be recorded here

Transferring Files from the Waterproof Shuttle

1. Rinse with fresh water and dry the shuttle.
2. Unscrew the back port of the shuttle and connect the USB cable to the computer.
3. Open the HOBOWare® Pro program (program is under the “Onset Computer Corporation” folder)
4. Open the “Device” drop down menu, click on “readout.”
5. At the Select Device dialog box, click “ok” when the program recognizes the shuttle.
6. In the dialog box “Waterproof Shuttle Management,” put a check in each “save” box in front of the files to be saved to the computer.
7. Click on the “choose” box and browse to the appropriate storage file for temperature data.
8. Click on the “Save checked” box—you will not need to rename the files at this time. Allow the files to be downloaded with the name that comes from the shuttle. The file extension will be “*.hobo.”

9. Open the downloaded files to make sure they have been saved properly, then close the files
10. Once the files have been downloaded and checked, go to the “Device” drop down menu and select “Manage Shuttle.”
11. Put a check in the box in front of the files that have been transferred then click “Delete checked” box. This removes the files from the shuttle. The files now only exist where they were placed in step 8 above.