

Standard Operation Procedure (SOP) #11

Conducting Surveys in Hawaii

Version 1.02 (June 3, 2024)

Change History

New Version #	Revision Date	Author	Changes Made	Reason for Change	Previous Version #
1.01	6/28/2021	Amanda McCutcheon	Minor text updates.	Clarification was needed.	1.0
1.02	6/3/2024	Kim Weisenborn, Anne Farahi	Updated SOP references. Added details about odonate survey.	A new SOP has been added to the protocol therefore some SOP reference #s have changed. Odonate surveys are a new addition to the protocol.	1.01

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, identify paragraphs and pages where changes are made, who approved the revision, and the reason for making the changes along with the new version number.

Purpose

This SOP describes setting up a sampling station (reach) and the general sampling order. This SOP will be used in Hawaii on the island of Maui at HALE and on the island of Moloka'i at KALA.

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1. *Mark the reach.* Each reach is thirty meters long following the thalweg of the stream. The start of the reach (0 m) is marked with flagging tape on the bank where the mark can be easily seen from the stream. Locations are then marked at 15 m and 30 m. It is important not to enter the stream when marking the reach because this will disturb the fish which will be surveyed first. If it is impossible not to enter the stream at any point during this procedure, stop and wait for the fish and shrimp observers to finish their surveys before continuing to mark the reach.
2. *Mark the location using a Global Positioning System (GPS).* See [SOP #4 Using Garmin GPS Units](#).

3. *Conduct water quality sampling.* See Water Quality Monitoring Protocol. Water quality nutrient samples and physical parameters (measured with the YSI sonde) are taken at the top of the reach above the 30-m mark. Nutrient samples are taken only at select sampling stations (FHALE01, 02, 11, 05, 06, and 10, and 4 temporary stations at HALE; FKALA01, 02, 03 ,04 and 4 temporary sites at KALA). Physical parameters are recorded at all fixed and temporary sampling stations.
4. *Conduct the fish and shrimp survey.* See [SOP #20 Fish \(‘o‘opu\) and Shrimp \(‘ōpae\) Surveys in Hawaii](#). It is important that the fish and shrimp observers are the only people in the water while conducting a survey.
5. *Conduct the snail survey.* See [SOP #21 Snail \(hīhīwai\) Surveys in Hawaii](#). Snail observers use the same coordinate locations as the fish and shrimp observers. They work from downstream to upstream. The fish and shrimp observer must be in a location where the snail observers will not disturb the fish. For instance, the snail observers cannot begin their survey until the fish and shrimp observer has finished their survey in a pool where the water would be disturbed with another person in the water.
6. *Conduct the odonate survey.* See [SOP #22 Odonate Survey in Hawaiian Streams](#). This can be done with one observer slowing walking the transect banks and looking for odonates in riparian areas with good habitat (margins of streams, small tributary, marshy areas, etc.).
7. *Conduct the habitat survey.* See [SOP #23 Habitat characterization at the Reach and Transect Scales](#). This includes the reach characterization, pebble count, and stream discharge measurements.
8. *Take transect photographs.* See [SOP #6 Collecting Stream Transect Photographs](#). This step can be conducted simultaneously with the habitat survey (Step 7).