Standard Operation Procedure (SOP) #11

Conducting Surveys in Hawaii

Version 1.01 (June 28, 2021)

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

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.

Conducting Surveys in Hawaii

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 (ʻoʻopu) and Shrimp (ʻōpae) 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 habitat survey*. See SOP #22 Habitat characterization at the Reach and Transect Scales. This includes the reach characterization, pebble count, and stream discharge measurements.

7. *Take transect photographs.* See SOP #6 Collecting Stream Transect Photographs. This step can be conducted simultaneously with the habitat survey (Step 6).