

Standard Operating Procedure #13

Baited Trap Shrimp Survey

Version 1.01 (April 9, 2020)

Change History

New Version #	Revision Date	Author	Changes Made	Reasons for Change	Previous Version #
1.01	4/9/2020	David Raikow	Trap photo replaced. Photo of trap in pool removed. Traps deployed overnight.	New trap design. Successful pilot study showed overnight deployment captures many shrimp.	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, changes made, and reason for the change along with the new version number.

Purpose

This SOP describes conducting a baited trap shrimp survey for the Pacific Island Network Anchialine Pool Monitoring Protocol.

Overview of Sampling Procedure

This procedure is done after water quality measurements have been made and should correspond with fish trap deployment. Previous field trials of traps and procedures showed that 5-10 traps per pool can be processed in 30 minutes or less (A. Farahi, *personal observation*). The number of shrimp observed to generally be captured ranges in the tens of individuals, as opposed to hundreds of individuals. A maximum of six baited shrimp traps are deployed. The number of traps deployed depends on the size of the pool (Table SOP 13.1). Traps are deployed at least 0.5 m from the edge and dispersed haphazardly across the pool. If different substrates are present in the pool (e.g., cobbles, sand, emergent vegetation), traps locations are stratified between substrates. Traps are deployed, allowed to stay in place overnight, and enumerated the next morning. Observer(s) identify and count all shrimp and fish in the shrimp traps. Trap placement details will be recorded on the data sheet. The baited trap shrimp survey returns relative abundance data. Traps should be deployed in the same approximate location each year.

Table SOP 13.1. Number of traps to be deployed as a function of pool surface area. A minimum of two shrimp traps and a maximum of six shrimp traps will be deployed in each pool.

Surface Area (m2)	Shrimp Traps
0-5	2
5-10	3
10-20	4
>20	6

Conducting a Baited Trap Shrimp Survey

Within each pool a maximum of six baited traps are distributed around the pool. See Figure SOP 13.1 for an example of a trap. The haphazard dispersion of traps should be stratified among substrate types to the degree possible, no less than 0.5m from the edge. A “moist”, or semi-solid, i.e. not canned and not dry, cat food is used as bait with five pieces placed in a bait holder. The location of initial trap deployments is indicated on the pool map diagram. Traps will be deployed at the same location each year. All traps should be deployed and retrieved at the same time to ensure trap deployment time is the same for all traps. Traps are deployed, allowed to sit in place overnight, and enumerated the morning of the next day.

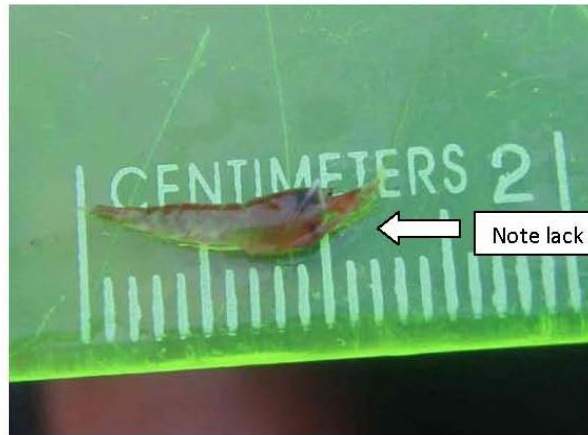
Shrimp are then put into a sorting tray to be identified. The observer identifies, counts, and records all shrimp in each trap. The observer also records any fish caught in the shrimp traps, noting the species and sex, if possible. See Figures SOP 13.2 and 13.3 for an identification guide. Native species are returned to the pool unharmed, as quickly as possible. After the shrimp and fish are identified and counted from one trap, proceed to the next trap and repeat the counting/identification processes. Both native and introduced species caught in a shrimp trap should be recorded. Additionally, if an introduced species is seen in the pool, but is not in a trap, it should be identified and noted on the data sheet in a separate location.

In general, introduced shrimp and fish should be collected and removed from the pool. If the species is not previously known from that area it should be collected as a voucher specimen, preserved in alcohol, and stored at the park. If an introduced species cannot be identified, observers should remove the specimen for expert identification.

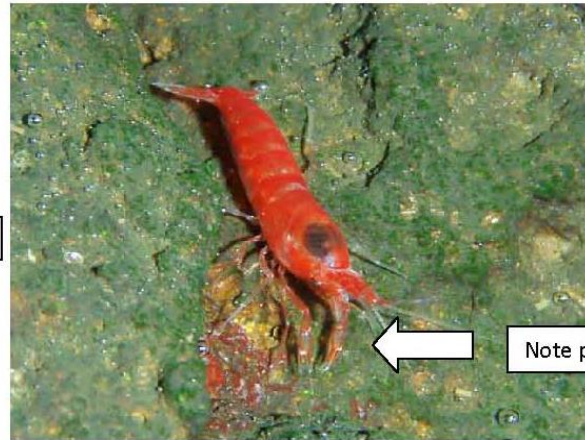


Figure SOP 13.1. Close-up of a shrimp trap.

Anchialine Pool Crustaceans Identification Guide



Halocaridina rubra (These shrimp rarely exceed 1.25 cm)



Metabetaeus lohena (These shrimp rarely exceed 2.5 cm)



Numerous *Halocaridina rubra* and one *Metabetaeus lohena* illustrates size difference. *Metabetaeus lohena* is 2-3 times larger than *Halocaridina rubra*.

Figure SOP 13.2. Anchialine pool crustaceans identification guide.

Anchialine Pool Crustaceans Identification Guide

One pincer is significantly larger than the other. Even in small specimens about 2 cm this is true though it may be harder to distinguish in smaller specimens.



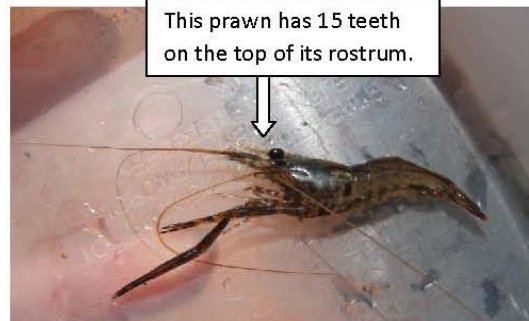
Macrobrachium grandimanus

(opae oehaa)

At left dorsal view

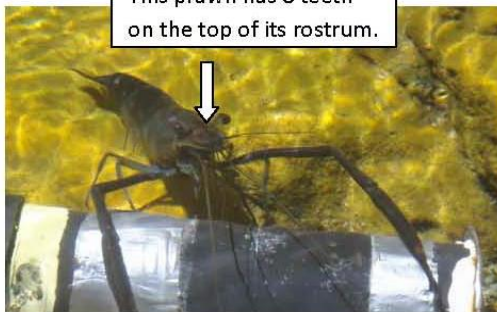
At right lateral view

This prawn has 15 teeth on the top of its rostrum.



These shrimp are light to dark brown, sometimes appearing transparent, with striped pincers. Up to 8 cm in length.

This prawn has 8 teeth on the top of its rostrum.



Macrobrachium lar

(Tahitian prawn)

(at left)

Palaemon debilis

(opae huna or glass shrimp)

(at right)

These prawns are usually solid brown, blue-black, or reddish-brown in color (though smaller specimens can be relatively clear). They have extremely long pincers of similar length. Can reach lengths of up to 15 cm.



These shrimp are nearly transparent with rows of white spots and various black lines across their bodies. They have a long, upward curving rostrum and large bulbous eyes.

Figure SOP 13.3. Anchialine pool crustaceans identification guide.