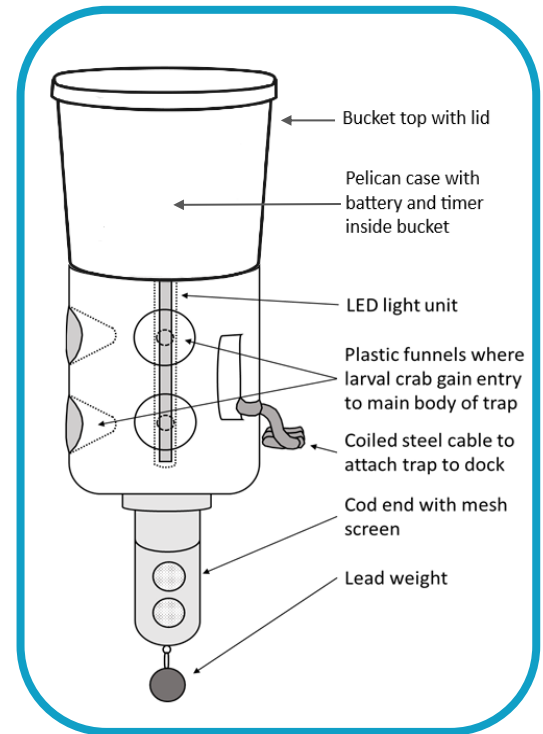# Light Trap Sampling – Step-by-Step Instructions

Retrieving the Sample

1. In Device Magic, open the 'Light Trap Data Collection' form and fill in the information under 'Site Details'.

2. Pull the trap from the water **slowly**, allowing the water to drain out.

3. Unclip the weight, unscrew the cod end, and empty the sample into the white tub with a few gentle rinses of seawater.

4. Check the trap and cod end to see if there are still organisms in the trap. If there are, rinse them out with seawater. You can also reattach the cod end and lower the trap back into the water without the weight to flush them into the cod end.

Bucket top with lid

Pelican case with battery and timer inside bucket

LED light unit

Plastic funnels where larval crab gain entry to main body of trap

Coiled steel cable to attach trap to dock

Cod end with mesh screen

Lead weight

Processing the Sample

Counting

1. Open the 'Sample' section in Device Magic. Take an overhead photo of the sample using the camera button right in Device Magic.

2. Remove non-target species from the sample, noting species/numbers if desired (enter in 'Other Species' section)

3. Count the Dungeness megalopae and juvenile instars in the tub and record the quantity in the Device Magic 'Dungeness' section.

4. If there appears to be more than 500 Dungeness megalopae, indicate this in Device Magic and it will enable the Subsampling section. See pictures below to help you gauge whether there are 500 megalopae or more. Follow the subsampling instructions on page 3 and fill out that section in Device Magic.

Measuring

1. Place 30 megalopae (or as many as you have if less than 30) into the white tray.
2. Take two photos of the tray in Device Magic in the "Dungeness" section.
3. **Important**: Ensure the whole tray is captured within the photo & that the **camera is <u>parallel</u> with the tray.**
4. Check the photos to make sure they aren't too blurry. You can try to shade the camera to prevent glare.

Preventing and Recording Mortality

1. Return fragile organisms, such as small larval fish, to the ocean before counting/measuring Dungeness.
2. Try to process the sample quickly to minimize stress to all organisms.
3. Add fresh seawater periodically to the sample (every 5 minutes or so).
4. If it's a hot day, try to check the trap earlier in the day and keep the sample in the shade if possible.

5. Record the number of dead Dungeness megalopae, Dungeness instars and other species in Device Magic in the 'Mortality' section under Sample.

Redeploying the Trap

1. Select the 'Redeployment' section in Device Magic.

2. Record the level of battery charge by noting the number of green dots illuminated on the side of the battery.

3. Remove the battery and replace it with a fully charged battery and **turn it on**. Green lights should light up.

4. Check the sunset/sunrise schedule and adjust the timer if necessary (see timer instructions below).

5. Close the Pelican case and put it back in the bucket. Fasten the bucket lid securely. Reattach the cod end to the main body of the trap and clip the weight back onto the cod end.

6. Lower the trap back into the water and reattach the trap securely to the dock.

7. Make sure you have filled out the required fields in Device Magic and then submit your data form once the button turns green on the main page of the form. The form will send once you reconnect to the internet.

Programming the Timer

1.   **Important:** Make sure the timer is set to the **right time and day of the week**. To adjust, hold down the clock button, and press the D+ (days), H+ (hours), and M+ (minutes) buttons.

2. To set a program, press P which takes you to Program 1 ON (start time for program 1). Tell the timer when to turn on at night by pressing the H+ and M+ buttons, being mindful of AM and PM. **Make sure that it set to turn on for the right days (use the D+ button).**

3. Press P again to go to Program 1 OFF (end time for the first program) and change the time the light will turn off.

4. You can set additional programs if you need, by pressing P.

5. **Important:** Once you have set your program, press the clock button to tell the timer to start (**this step is crucial**, the program will not run otherwise).

6.   Finally, check that the text beneath the time reads AUTO. If it does not, hit the "manual" button until "AUTO" appears. See the red circles in the diagram to the right that illustrate this. **This step is also crucial for the light to turn on**.
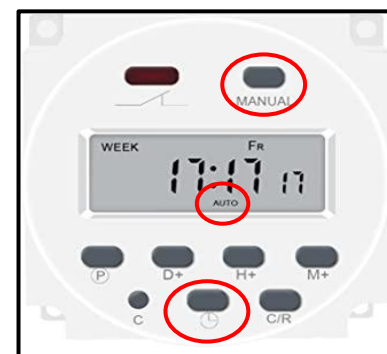
Cleaning the Trap

Organisms like mussels and barnacles love to settle on the traps and in doing so, they change the amount of light that gets through. To keep our traps clean and ensure that they are all emitting comparable levels of light:

- Give the trap a quick scrub every time you check it, especially if you see things settling on it. A quick clean on a regular basis will prevent a lot of settlement!
- If you have a freshwater source, you can rinse it with that.

- If the trap is getting quite dirty on the inside, you can remove a funnel by clipping the zip ties. This will allow you to reach inside with the scrub brush. You don't need to do this every time.
- You can also leave your trap out of the water during the day every now and then to prevent things from settling on it.
- If using a modified trap, use the bottlebrush to clean the valves to ensure they are not clogged and prevent fouling

Subsampling

Subsampling to estimate megalopae abundance is necessary **only if the Dungeness megalopae appear to be too numerous to count** (greater than 500 megalopae). Follow the steps below to subsample by volume.

1. If there appear to be more than 500 megalopae in your sample, indicate this in the Dungeness section under Sample on the Device Magic Form. This will enable the subsample section.
2. Dilute the sample to a known volume (to the 4,000 mL mark in your white tub) and record this volume in the subsample section of the form.
3. Gently swirl the sample to make sure megalopae are evenly distributed.
4. Remove a subsample of known volume (example 250 mL) and count the megalopae within it.
5. Repeat steps 3 and 4 two more times (3 subsamples total).
6. Record the subsample volume and counts in the Device Magic form. This will automatically generate an estimate of the number of megalopae in your sample.

Examples of samples containing ~500 megalopae