Citizen Marine Science Network:

Understanding Change in Coastal Marine Environments

Retrieval and Redeployment Protocols for PlateWatch, May 2021

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A checklist of items needed for retrieval and a short version of this protocol to take with you to the field can be found at the end of this document.

Part 1. Timing

Retrieval and deployment of plates is intended to occur quarterly. Plates in the water should be pulled up and new plates deployed as local conditions permit, on March 15, June 15, September 15 and December 15 each year. If you can only deploy once/year, please deploy on or around June 15 and retrieve on or around Sept 15 each year.

Part 2. Field protocol

Step 1. Pull plates out of the water slowly and with caution. If there is a lot of sediment lying on top of the brick side, gently swish in water to shake off. Place them on the dock, preferably in a container of seawater, with the **plate side up.** Use a scissors or knife to cut the plates free of the brick. Deploy clean plates and bricks (see Plate Deployment Protocol). You can re-use the line you already have if it is not too heavily fouled or worn. Retrieve the temperature loggers and deploy a new one at least once/year.

Step 2. Fill out the data sheets. Once each retrieval date, fill out a Retrieval/Redeployment Data Sheet with information about the site (https://platewatch.nisbase.org/pages/documents under "deployment physical data sheet"): specifically, the date, your name and the names of assistants, and if possible, water temperature, salinity and murkiness of water (turbidity) and any additional notes or observations you think are important. Please make sure to be clear about the deployment date and the retrieval date for each plate. In addition, if you are categorizing the animals on the plates, please also fill out a Plate Data Sheet for each plate (https://platewatch.nisbase.org/pages/documents under "plate data sheet"). On these sheets you should note the presence of Botryllid tunicates (see the "target taxa" and "field guide" tabs on the website for details about the species https://platewatch.nisbase.org/pages/targettaxa) and what percent of the surface area of the plate they cover. There is a full description of how to do a detailed percent cover

analysis or “point count” on the website under the protocols tab/Plate Analysis Instructions. To supplement the photos, write a description of each morphospecies (each apparently unique type, based on differences in appearance), including color, texture and shape. Example: “flat yellow and orange colonial tunicate, firm to touch.” You may write a description for organisms on the plate that are not Botryllid tunicates (i.e., solitary tunicates, mussels, barnacles) but this is not necessary.

Step 3. Photograph the plates. We recommend a camera with at least a 5 mega pixel resolution and a macro setting, but most cell phone cameras are now good enough to use as well. For each plate, fill out a Photo Label with the relevant information. Use a pencil to fill this out in large, clear lettering. Place the plate into small clear plastic tub along with its Photo Label. Sink the Photo Card and size bar and place along one edge of the plate. **Do not place it over the plate**. Stand over the plate, zooming in or bringing the camera close to the plate so that the plate and label takes up nearly **the entire frame** of the view finder. Reduce the glare on the water by setting up in some shade, or creating your own shade with an umbrella or your body. Avoid having the water surface disturbed by wind. Glare and reflections on the water’s surface make it hard to see the organisms and can confuse a camera’s automatic focus. For this reason, we recommend turning off your flash. You may need to adjust brightness levels on your camera and to shoot several photos to ensure a good shot.

After you have shot the entire plate, if there are suspected target species, take a **close-up** photo of the target (including: Cionas, Styelas, Botryllids and Didemnids, etc) on the plate. Use the small printed photo labels for these, one number per tunicate. Sink these and a scale bar next to the specimen or otherwise ensure that they are visible in your close-up shots. Then record this number on the plate data sheet or in the photo name. This allows us to keep track of which close-up shots go with each plate and to be able to calculate the size of the organism. A super macro setting may work best for these shots. If you have this feature on your camera, play back the photo and zoom in to check for sharp edges on the organism you have photographed. Below is a photo of a fouling plate, showing a photo label. If the camera has trouble focusing on the colonial tunicate, or you cannot tell if it is in focus, instead focus on the scale and number.

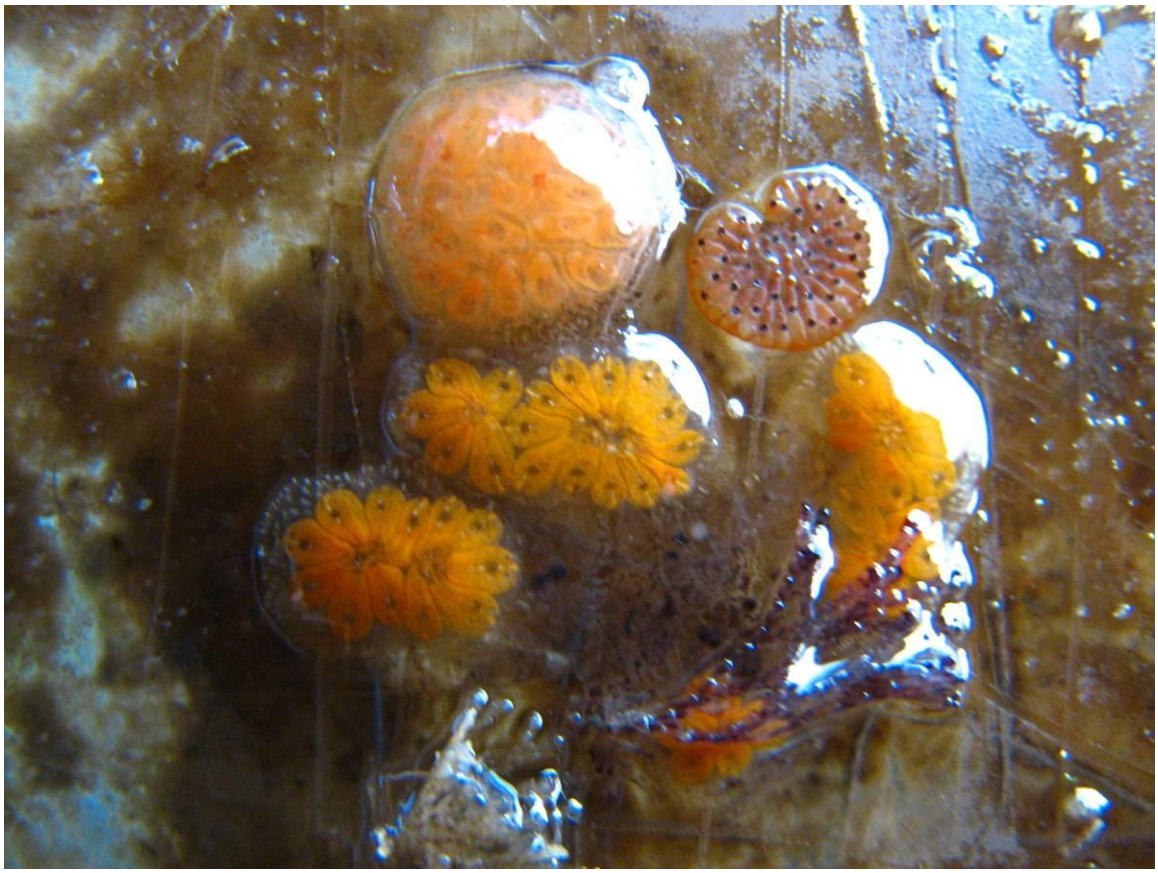
Photo of a whole plate with *Ciona* – collect me too if you see me!


Be on the look out for *Didemnum vexillum* recently found in Sitka, Alaska.

Picture of a plate out of water showing light growth and many small to medium-sized botryllid colonies.

Below, an example of a close up of an individual species on the plate (Botryllid).

Below, a plate photographed (out of water and without a tag—please remember to include an identifying photo tag!) to show appearance of smaller colonies. In this photo, you can see the following target species: *Botryllus* (bottom 3 colonies) and *Botrylloides* (top). Note the other non-tunicate target organisms, including *Watersipora* sp. on the top right and *Bugula neritina* bottom middle.



NOTE: If you are unable to complete steps 2-3 in the field, you can transport the plates in buckets/tubs of seawater, but make sure the plates do not jostle one another, which can knock off or damage the attached organisms. Make sure you are able to finish processing plates within 3 hours. Heat will stress and kill organisms on the plates, so don't leave these in bright sunlight or in a locked car for long.

Part 3 Managing/Sending Data

Download the photos to your computer, a memory stick or burn them to a CD. Any of these methods will serve as backup for the data you will post on the website. If you use a writeable CD, you can have folders for each retrieval on the same CD. Next you will enter the data and upload the photos to the Plate Watch website. Log onto http://platewatch.nisbase.org/ and if you haven't already registered, you will need to follow the instructions on the site to do so. For new users there are detailed instructions for uploading data under the Protocols tab/How to Enter Data on the website, but here is a brief outline of the procedure. Under 'My Data' click on 'Sites' in the pull down menu

to get started (for those who have already set up their sites, you can go directly to the 'all data' tab and select 'events' in the drop down menu to add your data). Next, click on 'new' at the bottom of the page. This will give you a map where you can enter your location. You must enter Latitude as a positive number (example: 59.441) and Longitude as a negative number (example: -151.721). Enter the specific location under name, state under state etc. (for example: 'Name': Homer, 'Bay': Kachemak, 'State': Alaska). Add any important observations or notes in the 'Notes' field. Once you have a site entered, go back to the main menu and select 'event. Click on 'Create New' and upload your photos along with any notes, and voucher information. Please make sure you let us know if you deployed plates when you retrieved and make sure you record both a deployment and a retrieval date for each plate. Also note that the macro shots are the large, full plate shots, not the close ups. Make sure to include the voucher numbers if you are fairly certain you have a new invasive and have taken vouchers. Send me the temperature logger at least once/year! If you have suspect target organisms, email Linda McCann at mccannl@si.edu the close up pictures. I will look at them to determine whether this needs further investigation. For now, tunicates will be sent out for identification only if: 1. We can't ID them from the pictures, 2. They are found at a new site or location. If you want to see all of the entries from every site, click on the header 'all events'.

Part 4. Finishing up.

Clean the plates and bricks. Remove remaining organisms with a paint scraper, rinse them down with freshwater and scrub with wire brush and/or sandpaper. Either leave them outside for several months to completely dry out or soak them in fresh water, or in a 30 percent solution of household bleach solution (quick method, but air drying works just as well if you have the time). Now the plates are ready for reuse.

Items to take to the field for retrieval/redeployment

10 plate and brick combos, ready to be redeployed

- Plate Label (to be placed in the photo with each plate)
- Small, photo Label (to be used for close-up or macro shots)
- Size bar (a ruler will work for scale in pictures)
- temperature logger
- Cable ties
- Handheld thermometer or YSI meter (if available)
- Scissors, clippers or knife for cutting cable ties
- Large bucket or tub(s) for holding plates
- Small clear plastic tub for photographing plates
- Bucket on a rope or other means for getting seawater for holding plates
- Digital camera
- Umbrella (depending on your site, for providing shade for photos)
- Clipboard, pencils, plain white paper
- Secchi disk or other device for measuring turbidity (optional)

- GPS (optional)

Printed versions of the following items are on the website

- Retrieval/Redeployment Data Sheet (1 per site)
- Plate Data Sheets (1 for each plate if recording animals)
- Laminated Field Guide (optional)

Summary of Retrieval Procedures

1. Fill out the RETRIEVAL/REDEPLOYMENT DATA SHEET for each dock where you have plates. Measure water temperature and salinity and turbidity if you have the equipment to do so.

2. Pull plates out of the water slowly and gently. Cut the plate off the brick and place the plate, facing up, into a tub of water.

3. Fill out a PLATE DATA SHEET for each plate. If you see Botryllid tunicates, describe how they look and how much of the plate (what percent) each colony covers. You may also describe other animals and algae on your plate if you want to and record how much of the plate they cover.

4. Fill out a PLATE PHOTO LABEL. Photograph the entire plate along with the plate label. It may take a few shots to make sure the plate photo and the plate are in focus. Hold the plate photo card down with paper clips or other weights if it floats.

5. If you find target tunicates or other species, take a few close-up or macro shots of each colony with a ruler or scale bar and contact the coordinator (mccannl@si.edu).

6. Retrieve the temperature logger and deploy the new ones we have sent you.

7. If doing multiple deployments, deploy the next set of plates.