General instructions on deploying robomussels
(These instructions are on waterproof paper and can be taken out to the site with you)

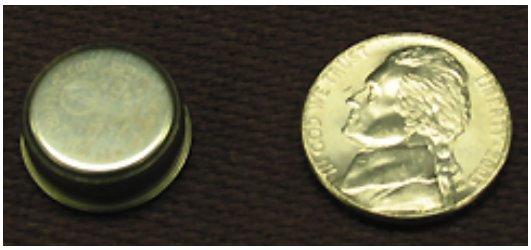
Thanks for helping with this project. Enclosed you will find:
1. mussel loggers
2. day-glo neon cable ties
3. some maps
4. a data sheet
5. some zspar (and gloves)

If you are swapping at more than one site, you should find a separate bag containing a complete set of items 1-4 for each site you are working. You will also need to scrounge up the following items yourself:
6. clipboard and pencil for marking the datasheet
7. hammer
8. very large flat head screwdriver or a chisel

For each robomussel logger you are swapping:
1. Verify which logger location you are at, with the map and datasheet. At most sites each logger also has a uniquely numbered metal tag.
2. Each logger is numbered on the outside (usually with a 3-digit number). Note on the datasheet, the logger's number, as well as the date and time of the swapping.
3. Remove the old logger using your hammer and screwdriver or chisel. Try not to damage the two LEDs that stick out of the mussel loggers. If these are broken the logger can't be used again.
4. Attach the new mussel logger into the same hole, if possible. Use about a golf-ball sized amount of z-spar per logger, more if it is very deep hole. In deep mussel beds, make sure the zspar reaches down to bare rock, and not to sand or bits of shell. Zspar is toxic, so wear gloves (Nitrile if you have 'em). Try to keep zspar off the LEDs. **Try to use a minimal amount of z-spar, and place the mussel logger in "growth position."**

5. When you attach the mussel, jam one of the day-glo cable ties into the zspar as well. This works as a sort of flag to help relocate the logger in six months.
6. Try to get the new logger more or less in "growth position" in a bed (posterior end up, see photo). It is important that loggers not be exposed to direct solar radiation any more than a "typical" mussel in a bed. For the uppermost loggers, you may have to lay them on their narrow side.

Ibutton loggers



At a few of our sites we also have ibutton temperature loggers, which we use a barnacle mimics. These are usually set out at the upper, middle, and lower limits of the barnacle zone. The exact locations are marked on the map with the robomussel loggers.

- Note that there can 1-3 loggers for each location. Each logger "set" should be in its own labeled bag.
- Ibuttons are attached directly to the rock surface, with a blob of zspar. If we included small cable-ties, you should zspar down one of those as well. Try not to smother the things in zspar, a gumball-sized amount should do the trick.
- On the robomussel datasheet, note the set name or id# placed at each ibutton location.

Wrapping up

When you're done, mail us back the old loggers, and the data sheets and maps. Any extra zspar, gloves, or cable ties are yours to keep.

Please double check the datasheets to make sure you have noted the dates and times of each swap. If you don't have the exact times of the swaps, a conservative estimate is the start and end time of your fieldwork.

Send loggers and datasheets back to us FedEx 3-day, with a declared value of $120 for each robomussel logger enclosed and $20 for each ibutton logger (in other words if you send us back 5 robomussels, make sure the declared value is $600).

If we're organized, we may have enclosed a return label for you to use. If not, send everything back to us at the address below. You can charge it to our FedEx account 1133-0952-0 or to our UPS account R24004

Ship to:

Brian Helmuth
University of South Carolina
Dept. Biological Sciences
Arts and Sciences Stockroom
631 Sumter St.
Columbia, SC 29208
(803) 777-2100

Thanks again!

- The Helmuth Lab