MARINE SCIENCE INSTITUTE

40TH DISCOVERING OUR BAY

CELEBRATING 40 YEARS OF EDUCATION

Fish Data Information Manual

2010

Basic Information

Welcome to the Marine Science Institute! First of all, we want to thank you for volunteering your time to become part of our team. As a research volunteer, you will be involved with monitoring fish populations in the San Francisco Bay. This data is available to the public and can be used to discover how populations of fish fluctuate over time, through the seasons, and in different areas of the Bay. Although most of the training will be hands-on, please take some time to read through this manual as there is valuable information included.

- There will be mandatory training days for the internship. It is also expected that by accepting this internship you will fulfill a minimum of 10 voyages on the boat – not including the training days (other arrangements can be made by talking to the Volunteer Coordinator).

- The boat leaves daily at 8:00 AM and 1:00 PM weekdays during the school year – each voyage lasts approximately 4 hours. Summer boat schedule is not as regular and must be checked carefully when requesting voyage times. Please arrive at least fifteen minutes before the boat is due to leave. This gives you adequate time to check in and get started before the boat departs.

- Remember to wear layered clothes and closed toed shoes (required). The weather on the Bay can change quickly, so dress accordingly and appropriately. Be sure to wear something that you don't mind getting wet and muddy. Remember sunscreen, sunglasses and a hat!

- Always keep in mind that you are a vital part to the San Francisco Bay Fish Database. You must conduct yourself in a professional manner and abide to scientific codes of conduct. **DO NOT** falsify or leave out information (such as the number, type or size of fish caught in the net). If you feel **ANY** of the information you collect is incorrect from a trawl, simply scratch that data and wait for the next trawl. It is always better to have no information than false information.

Data Collection

Remember that we are here to help you! If you have any questions about procedures, species of fish, or anything else, please ask. Instructors, Captains and other volunteers are happy to help. There are white plastic boards for your use in a crate at the fish station. You can use a pencil on the boards, and a bit of mud on a towel makes it easy to erase when you are done. Use the time in between trawls to transfer data from the board to the computer.

Measuring Fish

- Fish are **always** measured in **millimeters** (mm).

- We measure up to 50 individuals of each species so that we have an estimate of the size range. You can then simply count the number of the remaining fish after the 50 count. Keep fish that have been measured separate from the fish that have not been measured (use a lot of buckets if needed).

- Bony fish are measured from the snout to the caudal peduncle (where the tail and the body meet). Sharks are measured from the snout to the end of the tail fin. Rays are measured across from fin tip to fin tip.

- **Let instructors handle bat rays.** Bat rays have a spine at the base of the tail (where it connects with the body). If stung, this is very painful and may require a trip to the doctor. If you are stung, run very hot water over the sting immediately, and tell the crew.

- **Let instructors handle sharks**. This is primarily for the sharks well being.

- Also be careful when measuring halibut. Halibut have sharp teeth. Try to keep your fingers away from their mouths.

- Keep fish out of the water for as little time as possible. Top fish, such as anchovies, are fragile and die very quickly when out of the water. Also, make sure you don't have too many fish in one bucket together. They use up the oxygen quickly and will die. We want to return the fish to the Bay as healthy as we can.

Identifying Fish

- The sex of all cartilaginous fish (rays and sharks) is recorded. Male sharks and rays have two finger-shaped organs called claspers, which are located between the pelvic fins.

- Do not guess the species of a fish. It takes a while to become comfortable identifying all the common fish in the San Francisco Bay. **If in doubt, ask an instructor or the Captain.**

- There is a fish key with pictures of common fish as well as a dichotomous key onboard the ship – take advantage of them.

Counting Fish

- Unlike measuring, **ALL** fish must be counted from each trawl, even if there are more than 50 of one species.

- In rare cases, the next trawl may be hauled up before you are finished tabulating data from the first trawl. In these cases, please finish the trawl you are working on and skip taking data for the next trawl. If you don't have time to catch up afterwards, that is okay. It is better to have one complete set of data for a trawl rather than two incomplete data sets. Please do not estimate numbers of fish.

- Please count and measure dead fish. We must assume that they were alive when caught.

Hydrology

Students take hydrology data on most Discovery Voyages. If we can correlate the hydrology data with the fish data, our research will be much more meaningful. The instructors will take the hydrology data during their program, and record it on a clipboard next to the white board. It is your responsibility to post a data sheet on the chalkboard for them to fill out – blank forms are in the files on top of the bookshelf in the classroom. You must then transfer this data to the laptop or paper sheet for each appropriate trawl. If the instructors did not fill out this form, fill in as much as you can from the Captain's information and leave the rest blank.

Filling out the Fish Data Forms: Using the Fish Data Laptop

- Please, make sure your hands are DRY before using the laptop.
- Open the Access file called "Volunteer Fish Database" located on the desktop.
- Click to open the 'Fish Data Form' to allow you to start entering data. If there is data on the form showing, click "Add New Trawl" – this should give you a blank form for your trawl.
- Trawl information portion of the e-data form must have at least one field entered in before any catch data may be entered. Attempting to enter in catch data first will result in an error message. In the event you encounter that error message, press Ctrl+Z (the "undo" command) to remove the entry. Then, go back to the trawl portion and enter in at least one field.
- If no fish were caught, complete the trawl information and in the catch portion, enter "no fish caught" under species name.
- If the net encountered problems during the trawl, enter as "net problems" under species name.
- If the net was too heavy to bring on board, enter "overloaded net" under species name.
- An e-data form with all fields filled out is ideal. The data is most meaningful when information is complete.
- Please make sure to put away completely the fish data computer at the end of the day.

Filling out the Electronic Fish Data Form

Most of the trawl information can be filled out by the Captain – but please encourage him to do so. Entering in the trawl ID Number and date are required. **Please use ALL CAPS when entering in data**.

Trawl Info:

ID Number:	Identification number unique to this trawl.
Instructor Name:	MSI Instructor's name.
Data Collector:	Your name.
Date:	Date of trawl.
Trawl Time: Begin/End:	Use the 24-hour clock. "Begin" is the time the net was put in the water and "End" is when the net is pulled out of the water. This information can also be found in the logbook.
Trawl Depth:	Maximum depth of trawl in meters.
Sample Station:	Location of the trawl. This information can be obtained from the captain but can also be found in the logbook.
Bathymetry:	Underwater topography: was the trawl in the channel or up on the shoal? Select option from drop-down menu.
Tidal Current:	Was the current ebbing (heading toward the Golden Gate), flooding (heading toward the South Bay) or slacking (no current). Select option from drop-down menu.
Substrate:	Presence of mud or shells in trawl. Select option from drop-down menu.

Most recent tide (high or low):	Tidal information can be found on the Tides and Currents program on the computer in the pilot house. The Captain can also help you with this.
Tidal Height:	Height of the tide in meters.
Time of Tide:	Time of most recent tide, entered according to military time.
Surface/Bottom Salinity:	To be entered in parts per thousand (ppt).
Surface/Bottom Temperature:	To be entered in degrees Celsius.
Start and End Latitude and Longitude:	The latitude and longitude at which the trawl began and ended. This information can be obtained from the Captain. Latitude coordinate contains 6 digits beginning with 37# # # #. Longitude coordinate contains 7 digits beginning with 122 # # # #.
Catch Info:	
Species Name:	The species common name of the fish being counted and measured.
Size (in mm):	Size recorded in millimeters.
Total Number:	Total number of a species in a particular size class.
Sex:	Male or female specimen. To be entered as "M" or "F."

Using paper Data Sheets

- MSI Fish Data program has switched to a paperless recording system. However, in case the computer isn't working or available for any reason, data sheets are found in the bookcase in the classroom.

- One fish data sheet is used for each trawl. If no fish were caught, complete the form and write "no fish caught" across common name column.

- Everything on the sheets must be filled-in in order to be useful. If we have perfect information on numbers and sizes of fish, but we don't know where or when they were caught, we can't use any of the information and your time will have been wasted.

- Please place data sheets by the Volunteer Coordinator's office door in the tray labeled "fish data".

- If the net opens up or is too heavy to bring on board, you must still fill out a data sheet. Please document anything you can about the catch in the comments section at the bottom, i.e., if you saw rays or sharks, please document this.

Other Duties

- Have fun! This is a wonderful program and we hope you enjoy it.

- Ask the instructor you are assisting which fish to keep onboard and which fish to return to the Bay. We generally throw all babies overboard but keep some large flatfish, sculpins, gobies, topsmelt, and surfperch. Please check the aquarium white board before boarding the boat – where it is posted which fish to keep.

- Act as a teaching assistant at the Ichthyology station. Remember the mission of MSI is to excite children about science through hands-on learning. Help the kids to learn about the fish, and help the instructors as needed. Communicate with the instructor about the best time to start measuring fish. Sometimes the instructor may want to integrate data collection into their lesson. Often students enjoy collecting data but they need to be closely supervised by the intern to secure accuracy.

- If you catch very few fish and feel like there is nothing to do, help teach! Help participants identify fish, or observe other stations. If it is an afternoon trip, you can always help with clean up…especially the benthic station. Use your time wisely.

- Be aware of what the students are doing! Sometimes they will see you throwing fish overboard and decide to throw their specimen overboard as well- even though it may have come from the tank on land, or may not have been measured yet.

- Please read your e-mails from MSI thoroughly. There will most likely be very important information that you will need to know, including your schedule.

- College credit and independent research projects may be available. Please talk with your biology teachers and with the Volunteer Coordinator (Aaron) to see whether this is an option for you.

Thanks again for becoming a Fish Data Collector with MSI. We look forward to working with you and hope that you both enjoy and take a lot away from this great internship! If you have any questions, please contact:

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