

Fisheries Research

Overview

Research Contact: Hector Morales (Bahía de los Ángeles)

Research Location(s):

- Herradura is best for setting traps

Supplies:

- Field Research:
 - o All Supplies on **General Field Research Supplies Check List** (see above)
 - o Fisheries Datasheet – Control Traps copied on Write in the Rain paper (4)
 - o Fisheries Datasheet – Experimental Traps copied on Write in the Rain paper (4)
 - o Fisheries Field Research Protocol for Mentors (1/mentor)
 - o Gloves (for pulling in traps) (2/pairs)
 - o Clipboard + pencil (8)
- Field Research Supplies to be given to Hector a minimum of two days before research:
 - o Glow sticks (36)
 - 18 to be attached and lit
 - 18 to be attached and not lit
 - o Zip ties
 - o Flagging tape (1 roll)
 - o Fishing traps + bait (6)* – (Supplied by Hector)
 - *Each “boat” of students should pull up a control and an experimental trap so the number of traps may change (i.e. = total of 5 boats means 10 traps (2/boat)).

Logistics:

- Hector and Community Relations person will go out before students to set traps.
 - o Each round of students will pull and record data for two total traps (1 control and 1 experimental)
- ***When creating rotations: Hector’s boat can only accommodate 8 passengers MAX.***
 - o Hector + Community Relations person (must be a Spanish speaker) + 6 boat passengers.
- Field Research Manager will join this day to lead Boats 5 & 6.

Objective:

Students will be building on prior research done by Ocean Discovery Institute, looking at how visual deterrents (shark shapes, lights) can be used to reduce bycatch, but not target species catch rate, in Bahia’s coastal gill net fishery. All prior research was conducted on gill nets, however, much of summer fishing in Bahía de los Ángeles is done with traps and students will expand on previous research by looking at how visual deterrents work on traps. **The goal is for students to determine if the use of a visual deterrent (lights) on traps would reduce the amount of bycatch (puffer fish and small manta rays) while not impacting the fisherman’s target catch in traps (octopus, trigger fish, and sea bass).**

Timing:

| Time | Activity |
|-----------------|---|
| 7:00AM | <p>Shara and Hector to Set Traps (no students or staff to join)</p> <ul style="list-style-type: none"> <input type="checkbox"/> A total of 6 traps will be set. <input type="checkbox"/> All traps should have three lights ziptied on with 2-3 zipties each. <input type="checkbox"/> Experimental traps should be labeled with flagging tape at surface buoys. |
| 7:25 – 7:35AM | <p>Gear Check</p> |
| 7:35 – 7:50AM | <p>Drive to Boat Ramp</p> |
| 7:50 – 8:00AM | <p>Park, Unload Vans, Final Gear Check & Load Boats</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students should introduce themselves to boat guides. |
| 8:00 – 11:40AM | <p>Fisheries Research & Field Trip</p> <ul style="list-style-type: none"> <input type="checkbox"/> Field Research <ul style="list-style-type: none"> <u>Round 1</u> <ul style="list-style-type: none"> <input type="checkbox"/> Boats 1 & 2: Collect data w/ Hector <input type="checkbox"/> Boats 3-6: Wildlife Watching <u>Round 2</u> <ul style="list-style-type: none"> <input type="checkbox"/> Boats 3 & 4: Collect data w/ Hector <input type="checkbox"/> Boats 1, 2, 5, 6: Wildlife Watching <u>Round 3</u> <ul style="list-style-type: none"> <input type="checkbox"/> Boats 5 & 6: Collect data w/ Hector <input type="checkbox"/> Boats 1-4: Wildlife Watching <input type="checkbox"/> Field Trip <ul style="list-style-type: none"> o When all boats have collected data head to San Juan Cove for fun and exploration. |
| 11:40 – 11:50PM | <p>Load Boats & Depart</p> <ul style="list-style-type: none"> <input type="checkbox"/> All students are wearing life jackets. |
| 11:50 – 12:05PM | <p>Transport to Dock</p> <ul style="list-style-type: none"> <input type="checkbox"/> Everyone store gear in bags and clean up boat before landing at the dock. |
| 12:05 – 12:15PM | <p>Thank You & Unload Boats</p> <ul style="list-style-type: none"> <input type="checkbox"/> Unload all gear from boats. <input type="checkbox"/> Thank boat guides as you depart. |
| 12:15 – 12:30PM | <p>Load Vans & Return to Field Station</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students return home in the vehicles they came in. |
| 12:30 – 12:50PM | <p>Research Reset</p> <ul style="list-style-type: none"> <input type="checkbox"/> Boat safety person: <ul style="list-style-type: none"> o Return all safety gear to storage (radio, EPIRB, keys, Boat Bag, etc.) o Check out with trip lead – TURN IN DATASHEETS <input type="checkbox"/> Everyone: <ul style="list-style-type: none"> o Help to return research gear to kitchen or storage. o Clean all wetsuits and snorkel gear in dunk tanks. o Hang wet suits to dry. o Put life vests and snorkel gear away. o Rinse off and change into dry clothes for lunch |

Field Research

Data Collection

- Before leaving the dock:
 - Confirm that all boat captains know where Hector is located.
 - Confirm times to meet at Hector's boat for data collection.
- Field trip groups depart the dock for:
 - Wildlife watching
 - San Juan Cove
- Data Collection group will go and meet Hector's boat.
 - **Review safety with students:**
 - Take caution with fingers and ropes 😊
 - There will be ropes on the boat. Ropes should never be wrapped around your arms or legs.
 - We will be bringing the boats next to each other and when we do, be aware not to place your hands on the edge of the boat as your fingers can get smashed.
 - If there are six students or less on both boats- transfer all students to Hector's boat to collect data for 1 Control AND 1 Experimental together.
 - If there are more than six students on both boats:
 - Transfer the students from one boat onto Hector's boat to collect data for 1 Control trap, the students on the other boat can use their science notebook and record observations/questions.
 - After the first group has pulled an experimental trap, return those students to their boat and load 2nd boat of students onto Hector's boat to pull 1 Experimental trap while other students record observations/questions in their science notebook.

Data Collection (on Hector's Boat)

- Community Relations Manager/Hector describe how traps were set.
 - Include: Flagging tape to distinguish between experimental and control.
 - Experimental has flagging tape.
- Assign roles to students:
 - Trap puller: Wears gloves and helps Hector pull the trap in.
 - Data recorder: Listens to the species name and makes a tick mark on the datasheet for each one collected. Has clipboard with datasheet and pencil.
 - Fish handlers: Unload the trap and says the species name of each fish (helped by Hector) to be recorded by data recorder.
- Review Echo Data Recording:
 - The fish handler says the species of fish and the data recorder repeats the species back and records it on the datasheet.
 - Any species that haven't been added to the sheet can be added to the blank spots.
- Pull Trap

- Trap Notes:

- Once trap is on boat have students make observations about the trap:
 - Confirm it is control or experimental.
 - Experimental glow sticks are lit, Control glow sticks are not lit.
 - How many glow sticks are still attached?
 - Is it damaged in any way? Etc.

- Fish Data:

- Collect data using “Echo Data Recording.”
 - **One data sheet will be used by all groups!**
- Fish handlers should place target species in buckets and release bycatch species.