HAWAII BOTTOMFISH OBSERVER PROGRAM
FIELD MANUAL

DRAFT VERSION

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Pacific Islands Area Office

Southwest Region
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
United States Department of Commerce

PREFACE

This manual is intended to provide the Hawaii Bottomfish observer in the field with a reference of data collection protocols, and definitions of each datum to be collected. The Scientific Technician serving as an observer will also find guidance in prioritizing the work, and general discussions of expectations and policies. However, this manual is not intended to be a comprehensive observer handbook, and would be of limited use to readers that have not completed the training course.

BOTTOMFISH OBSERVER AUTHORITY AND GOAL

The Northwestern Hawaiian Islands (NWHI) Bottomfish fishery targets deepwater snappers, groupers and jacks. This fishery is managed through a Fishery Management Plan (FMP) established by the Western Pacific Regional Fishery Management Council from authority of the Magnuson-Stevens Fishery Conservation and Management Act.

Because of the uncertainties of the levels of Hawaiian monk seal interaction, permit holders in this fishery are required to carry observers to document incidental take of protected species and the rate of interactions with fishing gear.

BOTTOMFISH OBSERVER OBJECTIVES

To meet NMFS field responsibilities, the following objectives are established for scientific technicians working as observers aboard bottomfish vessels:

➜ To obtain reliable information about the incidental interaction of Hawaiian monk seals and other protected species;

➜ To record fishing effort;

➜ To tally by species fishes kept and discarded; and

➜ To process selected specimens for life history information,

➜ To collect selected economic information.

GUIDELINES

With **SAFETY** and **INTEGRITY** as the watchwords of your job, it is of primary importance that you conscientiously follow the guidelines outlined below:

- ☼ **It is your responsibility to observe and accurately record biological research data as instructed.** You are not to record extemporaneous comments, editorials or personal opinions. It is not your job to evaluate or interpret data; simply record objective observations on the data forms issued.

- ☼ **It is your responsibility to maintain open communication with the vessel operator** and other vessel personnel to facilitate a clear understanding as to what data are being collected. Everything you record is available to the vessel operator or his designate and is subject to legal interpretation. Almost everything you record may be made available to the public.

- ☼ **It is your responsibility to advise the vessel operator of all data items recorded.** If he or she is in disagreement with you, allow operators to record their views on the original data forms. If they so choose, the vessel operators may record their own comments on the original data forms.

- ☼ **As an observer, you <u>are not an enforcement agent</u>. You are not empowered to write citations, make arrests, or carry out enforcement activities.** Your responsibilities require that you make observations and collect data, some of which pertain to federal regulations. There is no guarantee that your data will not be used as evidence to assess penalties. Legal interpretation is performed by government attorneys.

- ☼ **Your responsibility of observing and recording data is to be performed in such a manner as to minimize interference with fishing operations.** Likewise, the vessel operator and any other vessel personnel are not to interfere with your duties.

RESPONSIBILITIES

- ➤ Sea assignment readiness is determined by personal fitness, training preparation and staff assessments.

- ➤ Alcohol dependency and illicit drug use are incompatible with observer duties and are not tolerated. If detected, disciplinary or adverse actions may be initiated.

- Observers are not to keep personal diaries in any form during a cruise assignment. No recording devices are to be taken aboard vessels.

- Because observer objectives are mandated by federal regulations, personal research is prohibited aboard vessel assignments.

- Retaining specimens of any kind for any personal reason is prohibited.

- Intentionally entering the water from an assigned vessel is prohibited; such activity will compromise personal safety and data collection duties.

- Observers do not choose vessel assignments; however; **observers have the right to refuse deployment on a vessel they perceive as unsafe**. Management selects sea assignments through a predetermined sampling plan and confirms that the boats meet minimum U.S. Coast Guard safety requirements. Any refusal to board a vessel after an inspection must be documented and discussed with management to determine the appropriate course of action. Fishing activity dictates vessel departures and arrivals. Since vessel notification requirements limit response time, observers must be prepared for sudden sea assignments of extended and uncertain duration.

- An observer's vessel assignment continues until the vessel returns to port to unload.

- Never leave your assigned vessel prematurely without approval from the Operations Coordinator, Port Coordinator or an acting designate; **to do so is grounds for dismissal.**

- Safeguard the return of your data to the port field station. Your work is a valuable investment; treat it like your wallet. **Data loss may be grounds for dismissal**.

- Some of the information you will be collecting is sensitive, and not an appropriate topic of light conversation. Reports of mishandling of data and information will be investigated. **Incidents of gross mishandling may lead to dismissal**.

DATA COLLECTION INSTRUCTIONS

GENERAL INSTRUCTIONS

- ☼ **If the information requested on a data collection form is not available or not applicable, leave the data field or code box blank.**

- ☼ Write only with a soft (**No. 2**) pencil on all forms. An eraser may be used to correct errors made on the day of entry only. Any errors discovered after that time must be crossed out with a single line and the new entry written in **blue** pencil above the code block. Write a brief note in the margin explaining the change.

- ☼ **Print legibly.**

- ☼ Observe and accurately record descriptive, quantitative and objective data with explicit notes and explanations. Record data as events occur, trust nothing to memory.

- ☼ Record times as four digits using the 24 hour clock, for example, 5:30 P.M. is written as 1730, but 5:30 A.M. is written as 0530. Use Hawaii Standard Time.

- ☞ **PROTECTED SPECIES OBSERVATIONS ARE TOP PRIORITY.** Never allow collection of secondary data to interfere with the collection of protected species data. Refer to list of priorities on page 7 for further clarification.

- ☼ If data are not available in the proper units, write the measure and units in the margin or comments section for later conversion, for example, meters from fathoms.

- ☼ If additional space is required on a data form, continue data entries on additional forms. When notes are required use the space provided, or use the reverse side of the form, noting on the front that comments are on the reverse side.

- ☼ Economic information is highly sensitive. Treat it with respect. Loose or cavalier handling of economic data may lead to undesirable consequences.

When writing notes or narrative explanations, **include all pertinent facts.** Remember that these forms will be read by other people who were not present when the event(s) you are describing happened. Don't assume that the readers will "automatically" know what you are ("really trying to say") describing, even if you didn't write it down. Stick to the facts, no comments, editorials or personal comments.

PHOTOGRAPHS

Cameras are used to help document involvement of protected species with bottomfishing activities. Photos of unidentified fish, birds, or marine mammals will be used for possible identification by others. Photograph specimens on deck, or at close range when possible. Compose photographs so that the vessel and crew remain anonymous. When photographing fish for identification purposes, avoid oblique views. Try to get the following views; full side, close up of head or anterior portion of the body, and a ventral view of anterior portion of body.

Cameras without flash must be used in bright daylight or with as much artificial light as possible. Flash cameras can be used under any light conditions.

Identify specimen photographs on deck by printing the trip number, set number, specimen number and species, in large block letters on the back of a one-sided data form. If it is not possible to include this label with the animal being photographed, then immediately proceeding that photograph, compose a picture that contains the appropriate label only. Place the specimen, label and a meter stick against a plain background. Orient the camera perpendicular to the specimen to obtain a full side view and fill the view finder with the specimen, then take the picture. Record the camera and frame numbers on the appropriate data form and again on the Photo Log. Record the trip number on the camera.

DATA COLLECTION PRIORITIES

The observer's primary duty is to obtain reliable information about Hawaiian monk seal involvement in the fishery. Therefore, a data collection hierarchy has been established and is described below. Observers are expected to know what to accomplish first. If work is interrupted or curtailed this list will help observers to prioritize their tasks.

❶ **Document and describe protected species events.**
→Species involved, and activity.
→Photos and measurements of protected species.
→Describe how involved with fishing gear.

❷ **Collect fishing effort data.**
→Description of gear.
→Fishing locations.
→Catch rates.

❸ **Record catch & fish morphometric data.**
→Catch composition.
→Length frequencies.

❹ **Additional biological data and sampling procedures, as directed.**
→Retention/discard rates.
→Biological samples (e.g. otoliths, ciguatoxin, stomach analysis).

❺ **Background economic information.**
→Supply/operating costs.
→Economic impacts of regulations.

✪Much of this section only applies to federal government employees.

RESPONSIBILITIES

Always conduct yourself in a courteous and professional manner. When departing from any port other than Honolulu, board your assigned vessel as soon as possible. When traveling, identify yourself as a U.S. government employee and inquire about discount rates before checking in at any hotel.

Keep your collected data in close possession at all times. Do not check data as baggage, nor mail original records. Remember your data are the result of a significant investment; treat it as you would your wallet; do not entrust it with anyone except program staff.

TRAVEL ADVANCE

Prior to leaving for your assigned vessel, you may receive a cash advance to defray traveling costs. A travel advance is a loan, not a bonus; it must be repaid or accounted for as appropriate expenses. **Obtain receipts for all expenses and retain them** to document your Travel Voucher at the conclusion of your trip.

If your assignment begins in a port other than your duty station, or is interrupted by an intermittent port stop, ask the vessel operator if you may live aboard the vessel while it is in port. Under these circumstances, the vessel will be reimbursed for your room and board just as if it were at sea. If you can sleep aboard, but meals are not provided, ask the vessel operator for a signed note indicating which meals were not available. You will be reimbursed for the meals you need to purchase ashore.

PER DIEM

When traveling, your living expenses are reimbursed using a rate formula known as "per diem." The General Services Administration determines maximum allowable rates for domestic travel. The Department of State sets rates for international travel. Per diem is not pay; it is to reimburse you for the essential living expenses you incur while traveling in performance of your duties. When at sea, or living aboard an assigned vessel, per diem is $2.00 per day. You will be given additional information about allowable or reimbursable expenses applicable to each assignment.

★★★NO DATA IS BETTER THAN BAD DATA★★★

INTRODUCTION

The **T**rip **R**ecord is used to record unique vessel characteristics and the specifics of the fishing trip. It is the only record of the vessel name, permit number and the name of the operator for a particular cruise. When separated from other observer data, the data cannot easily be associated with a specific vessel or operator which helps to protect privacy. This form is completed only once for each observed fishing trip.

GENERAL INSTRUCTIONS

The information required to complete this form can be obtained by asking the vessel operator.

DATA ELEMENTS

Vessel Name: Print in block letters the name of the vessel as it appears on the bow, transom or official records.

Permit Number: The six digit limited entry permit number as provided by the Operations Coordinator.

Trip Number: The unique six digit number assigned by the Operations Coordinator. In the first two blocks enter **BF** for bottomfish, fill in the rest with the four digit number.

Departure Date: The date the vessel first departed for the fishing area. Record the last two digits of the year, the two digits representing the month and the two digits representing the day of the month. September 26th, 2001 would be entered as 01/09/26.

Time: The time that the vessel first departed for the fishing area. Use Hawaii Standard Time and the 24 hour clock.

Port of Departure: Print in block letters the name of the port city the vessel departed from, e.g., Honolulu.

Date Port Stop: The date the vessel returned to any port for any reason other than the end of the trip. Record the last two digits of the year, the two digits representing the month and the two digits representing the day of the month.

Time: The time that the vessel returned to port for any reason other than the end of the trip. Use Hawaii Standard Time and the 24 hour clock.

Date Cruise Resumed: The date that the vessel departed port after an intermittent port stop to resume fishing. Record the last two digits of the year, the two digits representing the month and the two digits representing the day of the month.

Time: The time that the vessel departed port after an intermittent port stop to resume fishing. Use Hawaii Standard Time and the 24 hour clock.

Date Port Stop: The date the vessel returned a second time to port for any reason other than the end of the trip. Record the last two digits of the year, the two digits representing the month and the two digits representing the day of the month (Record additional port stops on the reverse of this form).

Time: The time that the vessel returned to port a second time for any reason other than the end of the trip. Use Hawaii Standard Time and the 24 hour clock.

Date Cruise Resumed: The date that the vessel departed port after an intermittent port stop to resume fishing. Record the last two digits of the year, the two digits representing the month and the two digits representing the day of the month.

Time: The time that the vessel departed port after an intermittent port stop to resume fishing. Use Hawaii Standard Time and the 24 hour clock.

Arrival Date: The date the vessel returns to port after completing the fishing trip. Record the last two digits of the year, the two digits representing the month and the two digits representing the day of the month.

Time: The time that the vessel returns to port after completing the fishing trip. Use Hawaii Standard Time and the 24 hour clock.

Port of Arrival: Print in block letters the name of the port city the vessel returned to, e.g., Honolulu.

Operator Name: Print in block letters the last name followed by a comma and the first name and middle initial of the person responsible for operation of the vessel. (e.g. Public, John Q.)

VESSEL SPECIFICATIONS RECORD

TRIP RECORD

VESSEL NAME

PERMIT NUMBER

TRIP NUMBER

DEPARTURE DATE (YY MM DD)

TIME

PORT OF DEPARTURE

DATE PORT STOP

TIME

DATE CRUISE RESUMED

TIME

DATE PORT STOP

TIME

DATE CRUISE RESUMED

TIME

ARRIVAL DATE

TIME

PORT OF ARRIVAL

OPERATOR NAME

BOTTOMFISH PROTECTED SPECIES RECORD

INTRODUCTION

The **P**rotected **S**pecies **R**ecord is used to record observed occurrences of sea turtles, marine mammals, and sea birds that come within **100m** of the vessel. This form should be filled out if fishing operations were being conducted or not. Documentation of protected species involvement with bottomfishing operations is an important part of managing the fishery. Information from this form is used to determine the effects of such operations on protected species. These data are also used for analyses of distribution of the species.

Do not allow watching for distant (**>100m**) protected species to interfere with observing fishing operations or vessel activity.

GENERAL INSTRUCTIONS

This form can be used to document and describe the occurrence of as many as three species of animals. If more than one protected species or several individuals of the same protected species is seen, but not as a group, their presence should be treated as separate events. In this case, complete a separate data form with a unique event number for each cohesive group of animals. If the event involves more than three species, use additional forms as needed. In this case, record the **same** event number on each additional form.

Animals that are observed in the following activities are recorded on this form.

- ➤Swimming by vessel or gear
- ➤Stealing catch or bait
- ➤Entangled or hooked
- ➤Injured or killed

Sea turtles infrequently associate in groups. If several sea turtles are visible in the same area, classify them as a single event and describe the association in the Narrative Section.

Staff from the PIAO and Honolulu Laboratory will review the data from this form and classify the events described.

DATA ELEMENTS

Trip Number: The unique six digit number assigned by the Operations Coordinator. In the first two blocks, record **BF** for Bottomfish, then fill in the remaining blocks with the four digit sequential number.

Event Number: The consecutive two digit number corresponding to the protected species event. An event is recorded whenever a protected species is observed within 100m of the vessel. Begin with 01 on each observed trip.

Date: The date of the event. Record two digits representing the day. Record the three letter abbreviation of the month. Fill in the last two digits of the year in the blocks available. Example: September 26th, 2001 would be recorded as 26 SEP 2001.

Time Begin: Record the time the event begins. If you observe the animal contact the gear or hooked catch, record the time of contact in the Narrative section. Record times using the 24 hour clock and use Hawaii Standard Time.

Time End: Record the time when the event ends. Record times using the 24 hour clock and use Hawaii Standard Time. Must be different than **Time Begin**.

Latitude/Longitude: The position of the vessel at the time of the sighting. Record the degrees, minutes, and tenths of a minute of latitude and longitude.

Vessel Activity: Record the activity of the vessel at the time of the event:

- **1 - Fishing at anchor.** Vessel fishing while anchored to bottom.
- **2 - Drift fishing.** Vessel fishing while not anchored to bottom. If a drogue or sea anchor was deployed, select this choice, and record it in the comment section.
- **3 - Trolling.**
- **4 - Run/Searching.** The vessel is traveling and not trolling.

- **5 - Other.** Any other activity such as drifting or anchored while not engaged in fishing or fishing with a different gear type, not described above. If vessel activity is 5. other, Describe in the Narrative section.

Deterrents: Record the number that describes actions undertaken by the crew to specifically avoid interactions and to mitigate loss or damage to the catch, gear or vessel by protected species. The Deterrent block must be filled out for every event.

- **1- Move.** The vessel changes its location in order to get away from protected animals that may be damaging or stealing the catch, or protected animals in the vicinity.

- **2- Delay.** The crew cease fishing activity until they believe the protected species have gone. Gear must be out of the water for this deterrent.

- **3- Other.** Any action(s) by the crew outside of normal operations to mitigate damage or loss to the vessel, gear or catch, not described by the first two choices. Describe in the Narrative section.

- **4- None.** No actions undertaken by the crew to mitigate damage or loss to the vessel, gear or catch. Vessel operations continue as normal. If the vessel is not engaged in fishing operations (i.e. no gear in the water), select this choice.

Gear Encounter: Record the appropriate number choice that describes the type of gear encounter, if any. If an animal becomes both hooked and entangled, record which occurred first, and describe in the Narrative portion of the form. This block must be filled out for every event.

- **1-Hooked.** If the animal is hooked in any part, deeply or lightly. You must be able to clearly see that the animal is hooked. All hooked animals are considered injured.

- **2-Entangled.** If the animal has any portion of the gear wrapped or twisted around any body part, and not hooked, the animals is considered entangled. If the animal is landed or pulled near the vessel so the crew can attempt to free it; the animal should be considered injured.

- **3-Contact.** The animal was observed to only come into contact with any portion of the gear, or hooked catch, and not become entangled or hooked.

- **4-None.** The animal did was not observed making contact with the gear. Also select this choice if vessel is not engaged in fishing operations, and no fishing gear is in the water.

Distance to Vessel: Record in meters, the **closest distance** any animal species involved came to the vessel during the time of the sighting or interaction. Distance recorded cannot be greater than 100m.

Distance to Gear: Record in meters, the **closest distance** any animal species involved came to the gear during the time of the sighting or interaction. **Note:** If animal touches gear, enter 001. The number recorded cannot be greater than 100. If gear is not in the water at the time of the event, enter 999. If the distance to gear is 999, the Gear Encounter block must be 4.

Species Name: Record the common name of the first species observed. If this is not known, print "unidentified" coupled with the closest taxonomic classification you are certain pertains to the animal, e.g., unidentified cetacean.

Species Code (SP. CODE): Record the three digit code from the Species Code section.

Best Estimate: Record your best estimate of the number of individuals of each species present, use leading zeros.

High: Record the high estimate of the number of individuals of this species present, use leading zeros.

Low: Record the low estimate of the number of individuals of this species present, use leading zeros.

Injured: Record the number of individuals of this species that are injured. Do not count scars or injuries that were not received during the observed event. If animal(s) are not injured during the event, enter 000 in the spaces provided. Describe in the Narrative section the nature of the injuries. This element must be filled in for every event. Use leading zeros.

Dead: Record the number of incidentally killed animals of this species. If no animal(s) are killed during the event, enter 000 in the spaces provided. Describe in the Narrative section how the animal was killed. This element should be filled in for every event. Use leading zeros. **Note:** Record observations of protected species that have previously died (e.g. a dead whale or sea turtle) and thoroughly describe in the Narrative section.

List Identifying Characteristics: List all identifying characteristics you saw which led to your identification of this species.

Sketch Identifying Characteristics: Sketch the animal using the **identifying characteristics you observed** to make your species identification.

Narrative: Describe concisely the behavior of the animals before during and after the event. Thoroughly describe any deterrents. Indicate any photos taken, and the camera number. Include times of particular events, or observations. Use this section to explain any information that you think could not be adequately documented in the coded information in the header portion of the form.

Species 2

Species Name: Record the common name of the first species observed. If this is not known, print "unidentified" coupled with the closest taxonomic classification you are certain pertains to the animal, e.g., unidentified cetacean.

Species Code (SP. CODE): Record the three digit code from the Species Code section.

Best Estimate: Record your best estimate of the number of individuals of each species present, use leading zeros.

High: Record the high estimate of the number of individuals of this species present, use leading zeros.

Low: Record the low estimate of the number of individuals of this species present, use leading zeros.

Injured: Record the number of individuals of this species that are injured. Do not count scars or injuries that were not received during the observed event. If animal(s) are not injured during the event, enter 000 in the spaces provided. Describe in the Narrative section the nature of the injuries. This element must be filled in for every event. Use leading zeros.

Dead: Record the number of incidentally killed animals of this species. If no animal(s) are killed during the event, enter 000 in the spaces provided. Describe in the Narrative section how the animal was killed. This element should be filled in for every event. Use leading zeros. **Note:** Record observations of protected species that have previously died (e.g. a dead whale or sea turtle) and thoroughly describe in the Narrative section.

List Identifying Characteristics: List all identifying characteristics you saw which led to your identification of this species.

Sketch Identifying Characteristics: Sketch the animal using the **identifying characteristics you observed** to make your species identification.

Narrative: Describe concisely the behavior of the animals before during and after the event. Thoroughly describe any deterrents. Indicate any photos taken, and the camera number. Include times of particular events, or observations. Use this section to explain any information that you think could not be adequately documented in the coded information in the header portion of the form.

Species 3

Species Name: Record the common name of the first species observed. If this is not known, print "unidentified" coupled with the closest taxonomic classification you are certain pertains to the animal, e.g., unidentified cetacean.

Species Code (SP. CODE): Record the three digit code from the Species Code section.

Best Estimate: Record your best estimate of the number of individuals of each species present, use leading zeros.

High: Record the high estimate of the number of individuals of this species present, use leading zeros.

Low: Record the low estimate of the number of individuals of this species present, use leading zeros.

Injured: Record the number of individuals of this species that are injured. Do not count scars or injuries that were not received during the observed event. If animal(s) are not injured during the event, enter 000 in the spaces provided. Describe in the Narrative section the nature of the injuries. This element must be filled in for every event. Use leading zeros.

Dead: Record the number of incidentally killed animals of this species. If no animal(s) are killed during the event, enter 000 in the spaces provided. Describe in the Narrative section how the animal was killed. This element should be filled in for every event. Use leading zeros. **Note:** Record observations of protected species that have previously died (e.g. a dead whale or sea turtle) and thoroughly describe in the Narrative section.

List Identifying Characteristics: List all identifying characteristics you saw which led to your identification of this species.

Sketch Identifying Characteristics: Sketch the animal using the **identifying characteristics you observed** to make your species identification.

Narrative: Describe concisely the behavior of the animals before during and after the event. Thoroughly describe any deterrents. Indicate any photos taken, and the camera number. Include times of particular events, or observations. Use this section to explain any information that you think could not be adequately documented in the coded information in the header portion of the form.

BOTTOMFISH PROTECTED SPECIES RECORD

FOR OFFICE USE ONLY
EVT.RANK

TRIP NUMBER | EVENT# | DATE (DD MMM YYYY) 20

TIME BEGIN | TIME END | LATITUDE . N | LONGITUDE . W

VESSEL ACTIVITY
1. FISHING AT ANCHOR 4. RUN / SEARCH
2. DRIFT FISHING 5. OTHER
3. TROLLING

DETERRENTS
1. MOVE 3. OTHER
2. DELAY 4. NONE

GEAR ENCOUNTER
1. HOOKED 3. CONTACT
2. ENTANGLED 4. NONE

DISTANCE TO VESSEL | DISTANCE TO GEAR

SPECIES NAME | SP. CODE

BEST ESTIMATE | HIGH | LOW | INJURED | DEAD

IDENTIFYING CHARACTERISTICS:

SKETCH IDENTIFYING CHARACTERISTICS

NARRATIVE

SPECIES #2 (NAME) CODE

BEST ESTIMATE HIGH LOW INJURED DEAD

IDENTIFYING CHARACTERISTICS: SKETCH IDENTIFYING CHARACTERISTICS

NARRATIVE

SPECIES #3 (NAME) CODE

BEST ESTIMATE HIGH LOW INJURED DEAD

IDENTIFYING CHARACTERISTICS: SKETCH IDENTIFYING CHARACTERISTICS

NARRATIVE

BOTTOMFISH GEAR and CATCH RECORD

INTRODUCTION

The **C**atch **R**ecord is a two part form. The top portion is a description of the gear fished. The bottom portion is a record of the catch by individual of fish **caught** during bottomfishing operations at a station and the disposition of the catch. The data are used to determine fishing effort, success rates for target species and the extent of involvement of non-target species in the fishery. Only record fish caught with bottomfishing gear or on a sharkline on this form.

GENERAL INSTRUCTIONS

Use the common names from the Species Code list for the species of fish caught.

The sum of individuals in all the disposition categories should equal the total catch for the station. If more fish are caught than there are lines on the form, continue on the bottom portion of another Gear and Catch Data form; filling out only the trip number, date and station number blocks.

When crew members are preparing to cut off a fish (e.g. a shark) before it is brought to the surface, ask to see what species is on the line before it is cut. This request needs to be made each time a leader is going to be cut whenever the catch is not visible. If your request is denied, document each incident.

DATA ELEMENTS

Begin Search: Record the time the vessel began searching for a place to begin bottomfishing operations. Do not include time spent running to a spot, unless they are searching along the way. If the vessel operator announces their intention to look around for fish sign, then record that time Vessels may routinely examine an area in order to locate schools of fish. Record the time in the 24 hour format.

End Search: Record the time when the searching ended. This could be the same as the start time. Record the time in the 24 hour format.

Trip Number: The unique six digit number assigned by the Operations Coordinator. In the first two blocks, record **BF** for bottomfish, fill in the rest with the four digit number.

Date: Record two digits representing the day. Record the three letter abbreviation of the month. Fill in the last two digits of the year in the blocks available. Example: September 26th, 2001 would be recorded as 26 SEP 2001.

Station Number: Stations are numbered consecutively for each trip beginning with 01.

Beaufort (BFT): Enter the appropriate number from the Beaufort Scale that best indicates the sea conditions when fishing operations begin at a particular station.

Protected Species (P.S.): A **Y (Yes)** or **N (No)** to indicate if there were any protected species observed at this station. If Yes, fill out a Protected Species Sighting and Interaction Record describing the event. Leaving this block blank will default to No.

Station Type: Enter a **1, 2** , or **3** in the block to indicate the type of station. **1.** Anchor station means the vessel deployed an anchor on the bottom in order to fish on a spot. **2.** Drift station means the vessel was not connected to the bottom while fishing at a spot. **3.** Continued drift (Cont. Drift) is used for drifts that are artificially broken up by time or distance.

Target Species: Enter the three digit species code for the predominant species the vessel fishes for at the particular station.

 # Lines: Enter the number of lines (or rigs) fished at the station.

Line (Rig) Material: Enter the appropriate number code from the choices that describes the rig.

Rig Line Test: Record the breaking strength, in lbs, of the rig line. You may have to ask the vessel operator for this information.

Hook Leader Material: Enter the appropriate number code from the choices that describes the hook leader material. The leader is the line that is directly attached to the hooks.

Hook Leader Test (LDR Test): Record the breaking strength, in lbs, of the hook leader. You may have to ask the vessel operator for this information.

Hooks Maximum: Record the maximum number of hooks fished per line (or rig). If the fishing rigs have different numbers of hooks, record the highest number of hooks fished on any line (or rig).

Hooks Minimum: Record the minimum number of hooks fished per line (or rig). If the fishing rigs have different numbers of hooks, record the lowest number of hooks fished on any line (or rig).

Hook Type: Enter the appropriate number code from the choices that describes the predominant style of hook used. If hook type is 3. other; describe, draw & trace the hook type in the comment section.

Size: Record the size number of the hooks used. Disregard "ought" designations, e.g. nine-ought (9/0) is recorded as 09. You may have to ask the vessel operator or check hook packages/boxes for the size.

Weight Size (WT Size): Record the size, to the nearest whole lb, of the weights attached to the main lines. Use leading zeros, if necessary. Typically these weights range in size from 5-6 lbs. Example: a five lb weight would be recorded as 05.

Bait Type: Enter the appropriate number code from the choices that describes the predominant type of bait used. Cut bait (2) is chunks of fish used as bait. If squid are used, whole or cut, the bait type is 1. If bait type is 3. other; describe the bait in the comment section.

Chum Type: Enter the appropriate number code from the choices that describes the predominant type of chum used. If chum type is **3**. Other; describe the chum in the comment section.

Shark Line: A **Y (Yes)** answer to the question: If a line deployed during fishing operations to attract sharks away from bottomfishing gear at this station? If yes, then record the start and end times in the comment section on the back of the form. If the line in question does not have a hook on it, it is considered an "unarmed" shark line. Record and clearly label data from anything caught on the shark line on the back of the form, towards the end. These data will be entered on a separate screen on the computer.

Start Time: Record the time fishing operations began (when the first line hits the water) in the blocks provided. Record the time in the 24 hour format.

End Time: Record the time fishing operations ended (when the last line comes out of the water) in the blocks provided. Record the time in the 24 hour format.

Start Depth: Record the depth of the water in meters (m) at the beginning of fishing operations at the station. Get this information from the vessel operator or depth sounder. If the depth is given in units other than meters (e.g. feet or fathoms), write down the units given in te comments section, and then convert. Your conversion calcuations will be considered part of the data you collected. Remember these conversions: 1 fathom= 6ft, and 1m = .55 fathoms.

End Depth: Record the depth of the water in meters (fm) at the end of fishing at the station. Get this information from the vessel operator or depth sounder. If the depth is given in units other than meters (e.g. feet or fathoms), write down the units given in te comments section, and then convert. Your conversion calcuations will be considered part of the data you collected. Remember these conversions: 1 fathom= 6ft, and 1m = .55 fathoms.

Latitude: Record the latitude of the vessel's coordinates at the beginning of fishing operations at the station. Record the degrees, minutes and tenth's of a minute. Get the coordinates from the vessel operator or the GPS unit. Use leading zeros, if necessary.

Longitude: Record the longitude of the vessel's coordinates at the beginning of fishing operations at the station. Record the degrees, minutes and tenth's of a minute. Get the coordinates from the vessel operator or the GPS unit. Use leading zeros, if necessary.

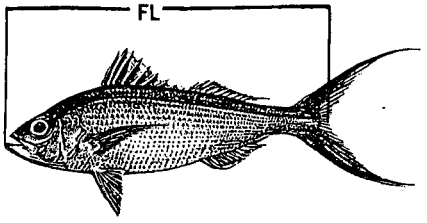
Species: Record the common name of the species caught. If more space is needed to record the catch data use an additional form. Make sure to transfer the trip, date, and station no. on the the form.

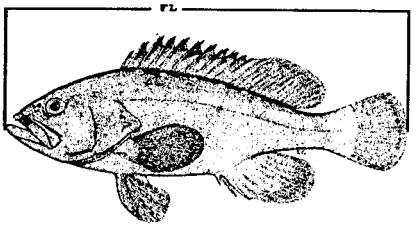
Code: Enter the three digit species code from the Species Code list for all fish. Note: There are different codes for unidentified and other identified animals. Unidentified= fish that are unidentified due to being rare, unknown or too damaged for identification. Other Identified= fish that are identified, but do not have a species code number assigned to them. Take photos of all unidentified species or other identified species.

Length: Record the fork length of the fish to the meters **0.1 cm**. For fish that do not have a forked caudal fin, (e.g. Hapu'u pu'u) measure from the tip of the lower jaw (with the mouth closed) to the middle of the edge of the caudal fin. Refer to the diagrams below for clarification.

Fork Length Diagrams

(*fork lengths should be taken with the mouth of the fish closed.)





Disposition: Indicate the condition and fate of each individual fish by checking (✔) the appropriate column

- **Kept** - If fish is kept by the fishermen for sale or personal consumption. Note: Sharks are considered kept if any body parts (jaws, gall bladder or skin for example) are retained. Fish collected by the observer as specimens should be considered kept.

- **Returned** - If individuals of any species returned to the environment.

  Alive - Alive indicates that the animal swam away when released from the gear with minimal or no visible signs of physical damage.

  Dead - Dead indicates that the animal does not swim away after release from the gear. There is no visible muscular activity and the animal may be stiff or limp (freshly dead). Sharks that are dispatched and discarded/released are recorded as dead. Fish

  Unknown - The animal was returned but the observer is unable to determine whether it was alive or dead, or the animal was returned in a condition not described above. Describe any returned unknown disposition animals in the Notes Section.

Damage: Check (✔) this field if you observe fish which you believe have been damaged by sharks, marine mammals, or other animals **before removal from the gear**, but not damage caused by efforts to land the fish. If the fish is not damaged, leave the field blank. Reference damaged fish by line number and the cause of the damage in the notes section. Damage notes will be entered into the computer.

Comment: Use this section to describe damaged animals, animals with unknown disposition, photo frame numbers, camera number, damage and other notes on the catch. If any tagged fish are caught, record additional information such as the tag number, tag type, and the capture location (Lat/Lon).

BEGIN SEARCH | END SEARCH

BOTTOM FISH GEAR AND CATCH DATA

TRIP NUMBER | DATE (DD MMM YYYY) 20 | STATION | BFT. | P.S. Y/N

STATION TYPE (1 ANCHOR, 2. DRIFT, 3. CONT.DRIFT) | TARGET SP. | # LINES | LINE MAT. (1.MULTIFILAMENT, 2. MONOFILAMENT, 3. OTHER) | LINE TEST | LEADER MAT. (1.MULTIFILAMENT, 2. MONOFILAMENT, 3. OTHER) | LDR. TEST

HKS.MAX | HKS.MIN | HOOK TYPE (1.CIRCLE, 2.J-HOOK, 3.OTHER) | SIZE | WT. SIZE | BAIT TYPE (1. SQUID, 2. CUT BAIT, 3.OTHER) | CHUM TYPE (1. SARDINES, 2. ANCHOVIES, 3. OTHER) | SHARK LINE Y/N

START TIME | START DEPTH | LATITUDE . N | LONGITUDE . W

END TIME | END DEPTH | LATITUDE . N | LONGITUDE . W

	SPECIES	CODE	LENGTH	KEPT	RETURNED ALIVE	RETURNED DEAD	RETURNED UNK	RETURNED DAMAGE
5								
10								
15								
20								

	SPECIES	CODE	LENGTH	KEPT	RETURNED			
					ALIVE	DEAD	UNK	DAMAGE
25								
30								
35								
40								

COMMENTS:

GENERAL INSTRUCTIONS

The Trolling Log form used to summarize trolling effort and catch composition. Vessels will generally troll during transit to and from the fishing grounds, and when traveling between fishing locations.

DATA ELEMENTS

Trip Number: Write in the trip number, beginning with **BF**. The rest of the blocks should be filled in with the sequential four digit number assigned by the Operations Coordinator.

Date: The date of the trolling effort. Record two digits representing the day. Record the three letter abbreviation of the month. Fill in the last two digits of the year in the blocks available. Example: September 26th, 2001 would be recorded as 26 SEP 2001.

Troll No.: A two digit number indicating a distinct period of trolling effort. Number each trolling effort consecutively for each trip, starting with 01. If the vessel stops to land a fish caught while trolling, the Troll number should not change.

Protected Species (PS) : A **Y (Yes)** or **N (No)** answer to the question: Were any protected species observed during the troll effort? If Yes, fill out a Protected Species Record describing the event. Leaving this block blank will default to No.

Beaufort (BFT): Enter the appropriate number from the Beaufort Scale (0-10) that best indicates the sea conditions when trolling effort began.

Start Time: The time the troll effort started. Record the time in the 24 hour format. Use Hawaiian Standard Time.

End Time: The time the troll effort ended. Record the time in the 24 hour format. Use Hawaiian standard Time.

Latitude: Record the latitude of the vessel's coordinates at the beginning of fishing operations at the station. Record the degrees, minutes and tenth's of a minute. Get the coordinates from the vessel operator or the GPS unit. Use leading zeros, if necessary.

Longitude: Record the longitude of the vessel's coordinates at the beginning of fishing operations at the station. Record the degrees, minutes and tenth's of a minute. Get the coordinates from the vessel operator or the GPS unit. Use leading zeros, if necessary.

No. Lines: Record the number of lines with lures trolled.

Species: Write the common name of the species caught. If more space is needed to record the data, use another Troll Log marked with the same Troll No, date and Trip No.

Code: Enter the three digit species code from the Species Code List for all fish. Note: if there is an "unknown" (i.e. something comes off the hook before you could identify it) record this in the Comments section on the back of the form.

Length: Record the fork length of the fish, the nearest **0.1**cm.

Disposition: Indicate the condition and fate of all individuals by recording the number of individuals in each of the following categories:

- **Kept** - fish kept by the vessel for sale or consumption. If any part of a fish or shark is retained, the animal is considered kept.

- **Returned** - Individuals of any species returned to the environment, retained by the observer for processing, or that come free of the gear.

  Alive - Alive indicates that the fish swam away when released from the gear with minimal or no visible signs of physical damage.

  Dead - Dead indicates that the animal does not swim away after release from the gear. There is no visible muscular activity and the animal may be stiff of limp (freshly dead).

  Unknown - The animal was returned but the observer is unable to determine whether it was alive or dead, or the animal was returned in a condition not described by the other two choices. Describe any animals returned to the sea in an unknown condition.

Comments: Use this section to describe damaged animals, animals with unknown disposition, tag information, photo frame numbers, and other information of the catch.

TROLL RECORD

TRIP NUMBER | DATE (DD MMM YYYY) 20 | TROLL NO. | PS. Y/N | BFT.

START TIME | LATITUDE . N | LONGITUDE . W

END TIME | LATITUDE . N | LONGITUDE . W

NO. LINES

	SPECIES	CODE	LENGTH	DISPOSITION: KEPT	RETURNED: ALIVE	RETURNED: DEAD	RETURNED: UNK	DAMAGE
5								
10								
15								
20								

				DISPOSITION			
				RETURNED			
	SPECIES	CODE	LENGTH	KEPT	ALIVE	DEAD	UNK	DAMAGE
25								
30								
35								
40								

COMMENTS:

INTRODUCTION

The Economic data collected is used to record vessel expenditures on a per trip basis as well as an annual summary with two different forms. They are the **V**ariable **T**rip **C**osts **D**ata **F**orm and the **A**nnual **E**xpenditures **D**ata **F**orm. The data collected on these two forms will supply information on the expenses of operating a bottomfish vessel in the Northwestern Hawaiian Islands. The expenses fall into two categories, variable trip costs and annual costs. Variable trip costs are costs that change by trip throughout the year. Annual costs are costs that are paid on an annual basis.

Economic information is considered very sensitive. It is often more difficult to collect than biological information. This is based on the fact that you need to ask the vessel operator directly about the expenses, which may be perceived as prying into the vessel's records. Alternatively, the operator may be unaware of the costs associated with running the vessel. It is important to stress that the information collected may be beneficial to the fleet as a whole. The economic information will allow fisheries managers to generate accurate estimates of economic impact to the fleet due to present and future management measures. In order to be useful, the information must be accurate and credible.

GENERAL INSTRUCTIONS

The information required to complete these forms can be obtained by asking the vessel operator. The data for the **V**ariable **T**rip **C**osts **D**ata **F**orm are collected on each observed trip. The **A**nnual **C**osts **D**ata **F**orm should only be completed on the first observed trip of each calendar year for that vessel.

DATA ELEMENTS

Trip Number: The unique six digit number assigned by the Operations Coordinator. In the first two blocks enter **BF** for bottomfish, fill in the rest with the four digit number.

Departure Date: The date the vessel first departed for the fishing area. Record the two digits representing the day, three letters representing the month, and the last two digits of the year. For example September 26th, 2001 would be recorded as 26 SEP 2001.

Return Date: The date the vessel returns to port after completing the fishing trip. Record the two digits representing the day, three letters representing the month, and the last two digits of the year. For example September 26th, 2001 would be recorded as 26 SEP 2001.

Days Fished: The total number of days fished. This should not include any travel days when the vessel only trolled.

VARIABLE TRIP COSTS DATA FORM

Fuel:

Type of Fuel: Check the box to indicate the type of fuel purchased for the trip.

Price per Gallon: Record the price per gallon of the fuel the vessel purchased for the observed trip.

Gallons Purchased: Record the number of gallons of fuel purchased for the observed trip.

Gallons Consumed: Record the number of gallons of fuel burned during the observed trip. This amount may not equal the number of gallons purchased.

Total Cost of the Fuel: The price multiplied by the number of gallons of fuel purchased for the observed trip.

Oil:

Price per Gallon: Record the price per gallon of the oil the vessel purchased for the observed trip.

Gallons Purchased: Record the number of gallons of oil purchased for the observed trip. Includes oil purchased to replace oil burnt on the trip as well as oil used when changing the oil in the engines.

Gallons Consumed: Record the number of gallons of oil used during the observed trip.

Total Cost of the Oil: The price multiplied by the number of gallons of oil purchased for the observed trip.

Bait:

Bait Type 1: Record the appropriate code indicating the primary type of bait used on the observed trip. **1-** Squid, **2-** Cut Bait, **3-** Other.

Bait:(cont.)
Price per Box: The price per box of bait type 1 purchased for the observed trip.

Boxes Purchased: Record the total number of boxes of Bait Type 1 purchased for the observed trip.

Total Cost of Bait Type 1: The price per box of Bait Type 1 multiplied by the number of boxes purchased.

Bait Type 2: Record the appropriate code indicating the secondary type of bait, if any, used on the observed trip. **1**- Squid, **2**- Cut Bait, **3**- Other, and **0**-None.

Ice:
Unit: Record the appropriate code indicating the units the ice was purchased in. **1**-Blocks(300lb), **2**-Tons, **3**-Pounds. If ice is purchased in other units, record the unit in the note section.

Price per Unit: The price per unit of ice the purchased for the observed trip.

Units Purchased: Record the number of units of ice purchased for the observed trip.

Total Cost of Ice: The price per unit of ice multiplied by the number of units purchased.

Communications Cost: The amount spent of communications for the observed trip. Includes satellite phone calls, downloads, e-mail, faxes, etc.

Provisions: The amount spent on groceries (food & water) for the observed trip.

Handling/Processing/Shipping Fee: The amount spent to handle, process and/or ship fish (the most common expense here is the auction fee). If cost is determined by price per pound of catch landed, record in dollars and cents. If cost is determined by a percentage of the revenue, record the percentage used and indicate which percentage was used, net or gross. Gross revenue is the amount before trip expenses have been taken out, and net is the amount left over.

Miscellaneous Cost: The amount spent on costs not covered by above. List any specific costs given in the space provided.

Total Estimated Trip Cost: The total estimated amount of variable trip costs for the observed trip. Ask the operator for this amount. Do not add the above costs.

ANNUAL COSTS DATA FORM

Fishing Gear Expenses: The amount spent in the previous calendar year on replacing and/or purchasing new fishing gear. Includes rods, reels, line, electronics, etc.

Major Repairs & Maintenance: The amount spent in the previous calendar year repairing & replacing major items. Includes hydraulics, engine, engine overhauls, generators, etc.

Monthly Minor Vessel Maintenance: Costs to perform routine daily vessel maintenance on a monthly basis. (Incl. replacing hoses, belts, spot painting etc.)

Drydock/Haulout Costs: The amount spent on the previous calendar year in drydock. If vessel did not go to drydock or was not hauled out, leave blank.*clarify for database development

Relocation: The amount spent due to moving to the mainland or other fisheries in the previous calendar year. Includes transit costs of fuel, labor, gear switch over, etc.

Insurance: The annual amount spent on insurance in the previous year. Record what type of insurance purchased.(leave blank if none purchased)*clarify for database development

Permit: Annual costs to maintain a Hawaii bottomfish permit, if permit is leased.

Mooring: Cost for vessel to moor. Indicate if annual or daily fee.

Other Major Expenses: The amount spent on other major expenses in the previous calendar year. List the costs in the space provided.

Total Estimated Annual Expenditures: The total estimated annual vessel expenditures. Please ask rather than adding up the above costs.

Labor Costs:

For each member of the vessel (owner, captain and all crew members) record the method and amount of payment.

Number of Shares: Record the number of shares paid to each crewman. If crew is paid by a percentage of revenue, record the percentage.

Flat Rate: If crew is paid a flat rate, record the amount.

Flat Rate Determinate: If crew is paid a flat rate, record the choice that indicates how often. 1-per trip basis, 2-monthly basis.

Bonus: The amount earned by the crew due to bonuses. Describe bonus and how it is allocated.

Net Value: If crew is paid by shares, check the boxes containing the expenses that are subtracted from the gross revenue to determine the net value (of which crew shares are calculated from). List any others not on the form.

BOTTOMFISH TRIP EXPENDITURES

TRIP NUMBER | DATE OF DEPARTURE | DATE OF RETURN | DAYS FISHED

FUEL

FUEL TYPE (1. DIESEL, 2. GASOLINE) | PRICE /GALLON $ | GALLONS PURCHASED | GALLONS CONSUMED | TOTAL COST OF FUEL $

OIL

PRICE /GALLON $ | GALLONS PURCHASED | GALLONS CONSUMED | TOTAL COST OF OIL $

BAIT TYPE (1. SQUID, 2. CUT BAIT, 3. OTHER) | PRICE PER BOX $ | BOXES PURCHASED | TOTAL COST $

CHUM TYPE (1. SARDINES, 2. ANCHOVIES, 3. OTHER) | PRICE PER BOX $ | BOXES PURCHASED | TOTAL COST $

EXPENSES ASSOCIATED WITH CATCHING BAIT OR CHUM $

ICE

UNIT (1. BLOCK, 2. TON, 3. POUNDS) | PRICE PER UNIT $ | UNITS PURCHASED | TOTAL COST $

COMMUNICATIONS COST (Cost of satellite phone calls, downloads, emails, etc.) $

PROVISIONS COST (Cost of groceries, including bottled water, for trip)) $

HANDLING/PROCESSING/SHIPPING FEE % of revenue Type of revenue

$ [ ][ ][ ].[ ][ ] per pound or [ ][ ] [ ] 1. GROSS 2 . NET

MISCELLANEOUS COSTS

$ [ ][ ][ ][ ].[ ][ ]

Please list these costs:

_____

_____

_____

TOTAL ESTIMATED TRIP COSTS (Ask, don't add!)

$ [ ][ ][ ][ ][ ].[ ][ ]

BOTTOMFISH ANNUAL EXPENDITURES (Costs paid in previous calendar year)

FISHING GEAR EXPENSES (E.g. new rods/reels, replace hooks and line, etc.)

$ | | | | | | . | | |

MAJOR REPAIRS/ MAINTENANCE (Fixing and replacing major items; e.g. engine overhaul)

$ | | | | | | . | | |

Please list some of these repairs:

_____

_____

_____

MONTHLY MINOR VESSEL MAINTENANCE (Fixing and replacing smaller items; e.g. hoses, belts)

$ | | | | | . | | |

DRY DOCK/HAULOUT

$ | | | | | | . | | |

RELOCATION EXPENSES (Transit cost of fuel, labor, etc.)

$ | | | | | | . | | |

ANNUAL INSURANCE COSTS

$ | | | | | | . | | | This includes: vessel_____ liability_____ health_____ pollution_____

PERMIT (if leased)

$ | | | | | | . | | |

MOORING

$ | | | | | | | . | | | Annual or daily

OTHER MAJOR EXPENSES

$ | | | | | | . | | | Please list_____

_____

TOTAL ESTIMATED ANNUAL VESSEL EXPENDITURES (Ask, don't add)

$ ☐☐☐☐☐.☐☐

LABOR COSTS

OWNER

Number of shares ☐☐ or Flat Rate $ ☐☐☐☐☐.☐☐

CAPTAIN

Number of shares ☐☐ or Flat Rate $ ☐☐☐☐☐.☐☐

CREW MEMBER 1

Number of shares ☐☐ or Flat Rate $ ☐☐☐☐☐.☐☐

CREW MEMBER 2

Number of shares ☐☐ or Flat Rate $ ☐☐☐☐☐.☐☐

CREW MEMBER 3

Number of shares ☐☐ or Flat Rate $ ☐☐☐☐☐.☐☐

CREW MEMBER 4

Number of shares ☐☐ or Flat Rate $ ☐☐☐☐☐.☐☐

If paid by flat rate what is pay determined by?

☐ 1. trip
2. month

BONUS

$ ☐☐☐☐☐.☐☐

Please describe _____

_____

NET VALUE

Net value = Gross - Expenses check below

☐ Fuel and Oil ☐ Fishing gear

☐ Ice ☐ Processing/Auction Fee

☐ Bait ☐ Insurance

☐ Provisions ☐ Other (please list below)

_____

_____