Supplement FL2001 - 2001 Fishing Location add-on (latte)

Introduction

The Fishing Location study being conducted on the Pacific Coast in 2001 is required to gather precise information about the location of catch or fishing. Location of fishing is a necessary component of determining "essential fish habitat" as defined in the Sustainable Fisheries Act of 1996; SFA (amended Magnuson-Stevens Fishery Conservation and Management Act). The information is also being used by researchers to study areas where species of interest are being caught or not caught.

Essential Fish Habitat

Essential fish habitat (EFH) means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Congress addressed fish habitat needs via the EFH provisions of the amended Magnuson-Stevens Act. The EFH requirements were included in the Magnuson-Stevens Act because scientific evidence indicates that habitat loss or degradation has compounded, and in some cases magnified, the effects of increased fishing pressures.

The regional councils are required to amend their Fishery Management Plans (FMPs). The councils will work with the states and NMFS in order to identify and manage essential fish habitat for the support of all life stages of nearshore migratory, and other fish species. Species presence/absence distribution data and relative abundance will be used to identify the habitats valued most highly within the geographic range of the species. The general distribution and geographic limits of EFH for each life history stage will be presented in the form of maps. Ultimately, these data will be incorporated into a geographic information system (GIS) to facilitate analysis and presentation.

The addition of EFH to FMP's may include options for managing adverse effects from fishing. These options may include fishing equipment restrictions, time/area closures and harvest limits. These actions may include, but are not limited to, limits on the take of species that provide structural habitat for other species assemblages or communities, and limits on the take of prey species.

The most likely short term consequence to the fishing participants, both commercial and recreational, would be the relocation of fishing effort, if scientific evidence suggests that particular fishing methods or gear types are adversely affecting the quantity or quality of habitat necessary to one or more life stage of a managed species. Restrictions to minimize these adverse effects could be either seasonal, annual, or permanent. For the duration of the restriction, fishers who have traditionally used that method or area may need to increase their search or travel distance to find other suitable fishing grounds, or they may need to invest in gears more appropriate for use in the

identified EFH. There may be individual fishing participants for whom the net effect of reducing adverse impacts on EFH is negative, either because no relocation of effort is possible or because the cost of acquiring new gear is prohibitive, which could cause the participant to withdraw from the industry. Overall, short-term economic losses should be compensated by future increases in catch levels and increased stability in the fishery.

Harvest Refugia

Marine harvest refugia are being promoted worldwide as a viable option for resource managers to mitigate overfishing, but their effectiveness in fisheries management is poorly understood and refugia concepts, especially as they relate to temperate marine systems, largely are untested. Harvest refugia can be most beneficial to species that have been overfished, reach great sizes or ages, and have limited movements or sedentary behavior, all of which apply to coastwide groundfish stocks.

There is a need to critically evaluate the function and effectiveness of harvest refugia in managing groundfish stocks and maintaining species and habitat diversity along the west coast. Marine reserves provide one of the few management tools for implementation of multiple provisions of the SFA that traditional management tools cannot address, including protection of essential fish habitats, incorporating ecosystem principles in fisheries management, and taking a precautionary approach to management.

Collection of baseline data is required for harvest refugia proposals to be seriously considered. Basic information needs include regional-scale habitat maps identifying essential fish habitats, detailed fish habitat maps with descriptions of fish-habitat associations, depth distributions, movements of key species and levels of exploitation in and around selected areas of potential protection. This basic information may be utilized in modeling the feasibility and effectiveness of hypothetical refugia designs.

Establishment of Open Water Fishing Sites

One of the goals of this study will be an attempt to produce a database of common fishing grounds shared by anglers which are either commonly referred to by name or are frequently visited. The definition of an open water fishing site will attempt to include the extent of the area covered, a locus or central point, site name and other yet to be determined site characteristics. The area and point data will be used by geographic information systems (GIS) to map and analyze angler catch and species creel data. This effort will evolve during the course of the study and may require the use of an additional form and map work to accomplish.

There is a possibility of being caught in the trap of pre-defining open water fishing areas by asking anglers decide between areas shown on a map or given by name. This can be reworded as; “here are the ‘hot spots’ which one did you

fish in?" This can be a big problem. The intent of this study is not to confirm preconceived fishing holes, but to statistically formulate fishing areas from individually acquired locations fished. Many previously 'known" fishing locations become "fished out" and shift in location and extent with fish availability. We want to be able to study this when it happens.

Agency Site Code

The "agency site code" is our secondary format for use which describes a pre-defined on-the-water site. The supervisor will work to develop these fishing sites based on commonly known locations with constant extent and position. The site should be occasionally validated by anglers using unmarked charts to point out the site location and area while the interviewer checks the currently defined site boundaries. Site code tables will be maintained by each supervisor with location information. The site code tables are important databases, which will be used in GIS applications along with the catch data. It is very important that only valid site codes be used. PSMFC will receive updated site code tables periodically, which will be read by the data entry system for validation of site codes coded on the interview forms. Invalid site codes will generate a "coding error" which will be reported to the supervisor for correction.

Use of Maps

Perhaps the most difficult aspect of this study, from the standpoint of field conduct, is allowing the angler to use maps in order to identify open water locations. Angler's may not be able to provide their location for many reasons. Anglers may be...

- unaware of their location while fishing,
- unwilling to spend any time determining a location,
- unable to read maps or charts or
- unwilling to divulge a favorite fishing spot

It will be up to the interviewer to attempt to overcome these problems by providing the angler the best information needed for a solution. The interviewer must be geographically oriented by becoming familiar with on-the-water and on-the-map landmarks so the angler can become oriented as well. The interviewer must be convincing and credible while explaining the importance of gathering this data. The interviewer must be a patient teacher of map reading skills. Any or all of these skills may be called into action by the interviewer while sampling anglers on a boat.

Location Gathering Guidelines

Fishing Mode

Gathering location information differs primarily by type of boat sampling and fishing mode;

- private boats,
- party/charter dockside and
- party/charter on-board sampling.

The best person on the boat to contact dockside about fishing locations will be the "pilot" of the vessel. Although everyone on a particular boat typically fishes at each location, this is not necessarily so. In addition, the pilot may not be aware of where the majority of the catch was taken or where individual anglers got their majority catches. This presents a major problem on more populated boats fishing a variety of locations.

Definitions of Location

A location can be described as a single "point" or as an area "polygon" in this study. A "line" is third type of location that can describe an on-board fishing "drift" between two point locations. Since we use a coordinate system or two-dimensional "grid" to define a location, what could be casually described as a point is in reality a square or circle of varying size. Location points always described to the nearest minute of latitude and longitude are seen as one minute circles or squares on a map with a point in the center where the east and west "minute" lines cross. A minute square is a very large area of approximately a square mile. To get one minute accuracy you look for the nearest intersection of one minute lines on a map to where the activity occurred.

Another way to think of a location is to draw a circle around an area where the diameter of the circle has meaning. For example, a circle one-mile in diameter may best describe a location where 50% or more of an anglers catch was caught. You can think of "best describe" as being the diameter at which the angler estimates with 95% confidence will include the majority of the catch. Where the circle falls on the "grid" will determine the location coordinate and the size of the circle will determine the accuracy, i.e. number of minutes.

Accuracy of Location Grid

Recording of a location can be seen as a trade off between getting an exact location for a fishing spot and including the majority of the catch. A less precise location covering a larger area may be used to encompass the majority of fished locations to form a "location cluster" that may exclude "unproductive" (non-majority of catch) fishing sites from a particular trip. However, on an individual basis you may discover that one or more anglers on the boat recalls a specific location for the majority of their catch, so, given adequate time, individual anglers should be given the opportunity to provide catch locations. Coding all the anglers on a boat to a broad area does not provide much for our analysis.

The grid size can be used as a way to indicate the extent or size in minutes of a locations "diameter". In order to allow for intermediate size areas the allowance of a "grid size" factor has been utilized in this study. If a location size is one minute or larger in diamater then grid size should be used instead of seconds. This allows the recording of a central location to the nearest minute and the recording of a grid size with it. The grid size is analogous to a circle's diameter and is recorded in minutes. A grid size of "3" represents a 3-minute by 3-minute area or 9-square minutes around the central location. The location is recorded to the nearest 1-minute east and west. The grid size in minutes is recorded in the leftmost two boldly outlined boxes of 32b. The coordinates and the grid size together provide a location to the nearest grid size in minutes. The seconds of north latitude must be blank when using the grid size option.

Location of Group Catch

When boat anglers have inseparable catch then we have the perceived problem of having individual angler locations for the same group of fish. This is not really a problem since the aggregate of the locations will better describe the extent of the area of catch than a single location. If only one location is used for the group, then it should be a large enough area to include the catch locations for each member of the catch group. In this case, group consensus for the catch location would be an efficient goal.

Harvest Location Questionnaire

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32a. FISHING LOCATION: Criteria for not obtaining location: On assignments with high effort "pulse" activity the interviewer may skip this series of questions during the "pulse"; i.e. most anglers are completing their trips at the same time, reducing the chance of completing the assignment with enough good interviews.

Yes**:** ———— 1 and proceed
No**:** ———— 2 and skip this section (meets above criteria)

32b. **What was the location of the majority of your <catch** or **fishing>?** We want location for the kept (type 3) fish. If no type 3 catch then get the location of type 2 catch. If no type 2 or type 3 catch then get location of majority of fishing time. If the angler wants to know why we are asking: *We are getting locations so fishery managers can analyze fishing areas. The data will contribute to the biological knowledge of the fishes. Individual trip locations will not be reported.*

Location provided**:** —— _ _ _ _ _ _,N1_ _ _ _ _ _W (code boxes with a format specified in #32c)
Location unknown**:** — Code #32c with '8', exit box
Refused**:** ———— Code #32c with '9', exit box

Record location to best available precision (minutes) using either maps with references or reported latitude and longitude coordinates. Left justify coordinates in both sets of boxes or left justify site code in first set of boxes. Use appropriate punctuation (degrees=°, minutes=', seconds=", site=#, decimal=.) to indicate the location in the latitude and longitude boxes and code the "GIS Format" used.

32c. Interviewer: GIS Format used.

Degrees, minutes (optional grid #) (DD° MM'_ _, DD° MM'GG#)**:** —— 1
Agency site code (SSSS#)**:** ———— 2
Degrees, minutes & seconds (DD° MM'SS" DD° MM'SS")**:** ———— 3
Decimal degrees (DD.DD°, DD.DD°)**:** ———— 4
Don't know location (angler can't read map)**:** ———— 8
Refused (to reveal location of catch)**:** ———— 9

33. Interviewer: How was location determined?

CHECK BOXES (check all that apply) The angler...

pointed at a chart	Yes**:** —— Check box	No**:** —— Box blank
read a GPS/Loran	Yes**:** —— Check box	No**:** —— Box blank
gave a location name	Yes**:** —— Check box and record name in space provided.	No**:** —— Box blank

34a. **What was the bottom depth in feet at that location?**

Depth in feet**:** ——— FFFF Don't Know**:** ——— 9998 Skip #34b.
Refused**:** ———— 9999 Skip #34b.

34b. **Did you use a depth finder at that location?**

Yes**:** ——— 1
No**:** ——— 2

35. **Were all of your fish caught at that location?**

Yes**:** ——— 1 and leave catch location check boxes on back blank.
No**:** ———— 2 and ASK
Can you tell me which fish were caught at that location?
Yes: ***Type 2 records***: Check location box for species where majority of fish were caught at that location.
Yes: ***Type 3 records***: Check location box for each fish caught at that location. (if more fish than records, leave boxes blank)
No**:** - leave all the location check boxes blank.
Don't know**:** —— 8 and location boxes on back all blank
Not applicable**:** — 8 (No catch) and location boxes on back all blank
Refused**:** ——— 9 and location boxes on back all blank

Item by Item Instructions – *2001 Fishing Location Add-On (yellow)*

THIS "BOX" OF ITEMS ARE FOR BOATS TRIPS ONLY

Item 32a. Fishing location requested Code this box with a "1" if the location of the is obtained or you attempt to get the location of catch or fishing. Criteria for not attempting to obtain the location: On assignments with high effort "pulse" activity the interviewer may skip this series of questions during the "pulse"; i.e. most anglers are completing their trips at the same time, reducing the chance of completing the assignment with enough good interviews. If this box is coded "2" then leave all boxes in this outlined boat location section blank.

Item 32b. What was the location of the majority of your <catch or **fishing>?** Unlabeled row of 12-boxes in two 6-box sections, one set of six for north latitude and one set of six for west longitude. NOTE: The "1" before the west longitude boxes takes care of the hundreds place of all our longitude coordinates (1XX°W). Ask this question when attempting to get a location from the angler. Do not confuse this with Item 11, "Fishing Effort Area". We are not asking where the majority of the time was spent fishing if they have catch since this may be different than where the catch was located.

If the angler asks if returned fish are included, tell them we want the location for the fish they have here (type 3 fish). If the angler has no fish here then ask the angler for the location of any fish they can report under type 2. If the angler did not catch any fish then get the location of fishing.

If the angler wants to know why we are asking for the location of catch, then explain by using this information:

> *"We are getting harvest locations so fishery managers can analyze fishing areas. The data will contribute to the biological knowledge of the fishes. Individual trip locations will not be reported."*

Do not use explanations that include words and phrases like "reef protection", "harvest restrictions" or "area closures" which can cause a non-response bias. The wording has been carefully crafted to reduce the chances of a refusal.

Location Provided - Code the location boxes using one of the predefined formats specified in #32c. Record location to best available precision using either maps with references or reported latitude and longitude coordinates. Left-justify coordinates in both sets of boxes or left justify site code in first set of boxes. Use appropriate punctuation to indicate the location in the latitude and longitude boxes and code the "GIS Format" used.

Units	Character
degrees	°
minutes	‘
seconds	“
site	#
decimal	.

Don’t Know - If you attempt to get the location, but discover after one minute of working at it that due to communication problems it will take too much time and cause you to miss other anglers you intended to interview, then you may code the #32a box 1=’Yes” and code #32c (GIS format) with an “8” (Don’t know) and exit the box leaving the remaining questions blank.

Refusal - If you attempt to get the location and after explaining the importance and confidentiality of the location information the angler refuses to comply with your request, then code the #32a box 1=”Yes” and code #32c (GIS format) with a “9” (Refused) and exit the box leaving the remaining questions blank.

Item 32c. GIS Format used. This is based on the best available information for the location as communicated to the interviewer by the angler. The provisions for multiple formats are intended as a study of possible methods for capturing the location of catch in this survey.

There are four basic formats, of which three are latitude-longitude coordinates and one is an on-the-water site code.

1. Degrees minutes (optional “grid”)
2. Agency site code
3. Degrees, minutes & seconds (GPS)
4. Decimal degrees (GPS)

Of the three latitude-longitude formats, two will be infrequently used; the degrees-minutes-seconds format and decimal-degrees format. These will most likely be used when the angler provides coordinates from a GPS (global positional satellite) receiver or when the interviewer or supervisor converts from Loran coordinates using a computer program. The Loran conversion computer program is available to supervisors on the RecFIN web-site operations-tools area.

Degrees, minutes (with optional “grid size”)
Format #1 (degrees and minutes) is our primary format for use in this study.

- **grid size** – 1’ to 9’ (minute) diameter of catch area around the point in minutes.

Agency site code
Format #2 is our secondary format that describes pre-defined on-the-water sites. Use only codes on site code lists provided by your supervisor. This is a numeric code left justified in item #32b (goes in the first set of 6-boxes).

Item 33 How was location determined? Record any of the following methods that were used to determine the location of catch by checking the check box.

☑ pointed at a chart
☑ read a GPS/Loran
☑ gave a location name

Item 34a. What was the bottom depth in feet at that location? Record the bottom depth in feet reported by the angler. This is not the fishing depth of the gear. The bottom depth can be checked with maps if depth contours or soundings are printed on the map. This item is mainly for characterizing bottomfish habitat. 100 meters = 328 feet. 1 fathom = 6 feet.

Item 34b. Did you use a depth finder at that location? Code a "1" if the angler had used a depth finder to monitor bottom depth while fishing at the location of catch. Code "2" if a depthfinder was not used at this location.

Item 35. Were all of your fish caught at that location? Code a "1" if all of the catch were harvested at the location specified. If only some of the harvest was caught at the location then you must ask about the location of catch for each species in the type 2 and each fish in the type 3 records.

Not all, Ask; "***Can you tell me which fish were caught at that location?***" The angler must be able to select which of all the fish; both the reported (type 2 by species) and the examined (type 3 by individual fish) in order to use the location check boxes on the back of the form.

Cannot tell which fish - If the angler cannot determine which fish were caught at the location or refuses to say, then leave all the location check boxes blank for both the type 2 and type 3 records for all species. Code Item 35 with a "2".

Can tell which fish – ☑ Check the check boxes for the fish that were caught at the harvest location. Note: It may be helpful to ask which fish were not caught at the harvest location. *Exception:* When more type 3 fish of a species were counted than measured (not enough fish records for all of the fish), then leave all the location boxes blank (both type 2 and type 3).

- For *Type 2 records*, check the location check boxes for species where the majority of fish were caught at that location. Do not attempt to split records by number of harvested fish at location.

- For *Type 3 records,* check the location check boxes for each fish caught at that location. When more type 3 fish of a species were counted than measured, then leave all the location boxes blank (both type 2 and type 3).

FAQ - Frequently Asked Questions - *2001 Fishing Location Add-On*