West Coast Drift Gillnet and Harpoon Fishery Cost and Earnings Survey
Responses to Supplemental Questions for PRA Clearance
OMB Review of Individual Instruments

National Oceanic and Atmospheric Administration (NOAA) will submit each individual instrument for Office of Management and Budget (OMB) review. Office of Information and Regulatory Affairs (OIRA) will inform the agency when each instrument is cleared, after which the agency may use OMB Control No. 0648-0369. The information provided along with each instrument must address the following items:

1. The potential respondent universe and any sampling or other respondent selection method to be used and the expected response rate.

Potential Respondent Universe

The objective of the West Coast Drift Gillnet (DGN) and Harpoon Fishery (HPN) Cost-and-Earnings Survey (hereafter the "Survey") is to obtain representative cost and earnings data for commercial fishing vessels which participate in the federally managed West Coast DGN and HPN fisheries for Highly Migratory fish Species (HMS). The survey population is all commercial fishing vessels which earned landed revenue in the West Coast based commercial DGN or HPN fisheries in the 2008-2009 or the 2009-2010 fishing seasons.

Landings data obtained through the PacFIN (Pacific Coast Fisheries Information Network) system indicate 81 active permits in the survey population, including 49 DGN permittees and 37 HPN permittees[1]. The survey population includes 5 permittees who participated in both fisheries, 44 DGN-only permittees and 32 HPN-only permittees.

Sampling and Other Respondent Selection Methods

A survey instrument will be sent by mail to all 81 permittees who landed HMS during the 2008-2009 and 2009-2010 fishing seasons. The survey instrument will be preceded by a postcard informing the permittees that the survey instrument will be mailed to them within a week. Follow-up telephone calls and reminder postcards will be utilized to encourage participation among non-respondents and to attempt collection of missing or incomplete information.

Telephone numbers are currently available for the 81 permittees in the survey population. Initial contact and recruitment protocols will follow established techniques used successfully in previous surveys. Each survey recipient will be sent an initial mailing package with a cover letter, a copy of the survey instrument and an addressed and stamped envelope in which they may return the survey instrument. Within two weeks of the mailing, the principal investigator will make follow-up telephone calls to encourage participation and to answer questions which the recipients may have about the nature and purpose of the survey.

[1] The exact number of participants will not be known until data from the end of the 2009-2010 fishing season becomes available. These counts are based on preliminary PacFIN data for the 2007-2008 DGN and harpoon fishing seasons that may be revised. However, past experience indicates that these revisions will be very minor.

In addition to the survey package: follow-up mailers and telephone interviews will be made when warranted due to nonresponse or incomplete surveys. We will also encourage response to the survey when we meet with permittees at the annual NMFS sponsored marine mammal avoidance workshop for drift gillnet participants. Nonrespondents will receive follow-up reminder mailings which utilize the techniques developed by Dillman et al.[2] to increase survey response rates. While all survey recipients will be given the name and telephone number of the agency coordinator and the principal investigator to contact with any questions, follow-up telephone interviews will offer more immediate means of responding to questions from survey recipients and should increase the response rate.

The survey instrument will be very similar to previous survey instruments used in the OMB approved surveys of the West Coast HMS DGN, Coastal Pelagic Species purse seine, and groundfish trawl fleets. The first two pages of the survey instrument ask questions about costs and crew compensation methods and will be the same for all vessels receiving the survey. The next two sections ask questions which are specific to DGN and to HPN, respectively. The fourth section pertains to participation in the albacore troll fishery and to any other fisheries in which the respondent may have participated. To reduce paperwork requirements, only those vessel operators who participated in both fisheries will receive both the DGN- and harpoon-specific portions of the survey.

Expected Response Rate

The most recent effort to collect economic data survey from the population of interest by mail survey was the Cost-and-Earnings Survey of the California-Oregon Drift Gillnet Fleet conducted by the Federation of Independent Seafood Harvesters (FISH) and the National Marine Fisheries Service (NMFS), in conjunction with the Pacific States Marine Fisheries Commission, in 1998-1999. This survey collected cost and earnings information from DGN license holders via a mail survey instrument similar to the one we propose to administer. The survey was sent to 42 of the 84 license holders in the survey population, and obtained a 43% (18 of 42) response rate. The survey population, the sample size and the response rate establish the *a priori* information upon which we base our desired response, expected response, and accuracy calculations for this survey. With increased communication and personal interaction, a response rate of 60% is expected among license holders targeted in the current survey effort (see Table 1).

2. Data collection procedures, including the statistical methodology for stratification and sample selection, the estimation procedure, the degree of accuracy needed for the intended purpose, expected dates of survey implementation, and any unusual problems requiring specialized sampling procedures.

Stratification and Sample Selection

All 81 active permit holders in the survey population will be sent an introductory postcard followed by the survey instrument, making issues of sample selection and stratification moot from the standpoint of choosing a sample stratification method or whom to sample.

[2] Don A. Dillman, Jolene Smyth and Leah Melani Christian, *Internet, Mail and Mixed-Mode Surveys; The Tailored Design Method, 3rd ed.*, Hoboken, NJ: John Wiley Co.

Active permit holders will all receive a follow-up telephone call to encourage completion of the survey and to attempt to collect any missing information from responses received to date. We will send nonrespondents a series of follow-up mailings which utilize the techniques developed by Dillman to increase survey response rates.

Desired Degree of Accuracy and Response Rate

The desired degree of accuracy and corresponding desired response rate depends upon the application for which the data are being used. A basic application of the survey data will be the inference of population mean values from the 1998-1999 reported sample mean values. Table 1 provides the number of responses (and corresponding response rate) needed to obtain a response sample mean within 5%, 10%, and 15% of the population mean at the 99%, 95%, and 90% confidence levels. These statistics (mean and standard deviation) are based on reported pounds landed by DGN from the previous survey.

Response Rates Needed for 5%, 10%, and 15% Accuracy Levels

Relative precision: the sample size determination formula that we used specifies that our sample mean will be within 5-15% of the true population mean 99-90% of the time (corrected for finite population size).

where $n = N/(1+N(\varepsilon\mu / zS)^2)$ (1)

and
n = sample size
N = population size
μ = mean DGN pounds (from apriori data set)
S = population standard deviation (from apriori data set)
z = student t value for 99%, 95%, 90% confidence levels (2.64, 1.99, 1.66)
ε = desired coefficient of variation for the sample mean (.05, .10, .15)

From the 1998-1999 database we calculated values for the population parameters:

N = 81
μ = 22241.8 lbs. ; S = 11569.9

Given these parameters and solving (1) for the overall sample size gives n permits for each confidence level and each level of precision.

Based on the number of active permits, the target population size is 49 permittees for DGN and 32 permittees for HPN. Our sampling plan is to survey all participants in the west coast DGN and HPN fisheries with landings during the 2008-2009 or the 2009-2010 fishing seasons; precision and bias in survey results due to nonresponse or biased responses from those who do respond is always possible. However, the expected, combined response rate of 60% (49 responses) for the combined DGN and HPN permittees would exceed the response rates required to assure a sample mean within 10% of the population mean at the 95% confidence interval (46 responses, see Table 1).

Table 1. Response Rates Needed as a Percentage of Total Permittees

Accuracy Level	N Population	n 99%	n 95%	n 90%
5%	81	73	68	64
10%	81	57	46	39
15%	81	41	30	23

Data from this survey will be used to develop a variety of economic models covering applications such as fleet efficiency and economic viability analysis. In these applications, error will arise not only from the accuracy of data used for model development, but also from model specification and estimation. Since it is not possible to completely avoid specification and estimation error in model development, there is good reason to desire the highest possible response rate and degree of accuracy in the data collection process.

It may be impossible to perfectly control for potential bias due to differential response rates across heterogeneous subsets of the survey population. For example, such bias could arise if active permit holders with larger vessels responded at a higher rate than those with smaller vessels, and vessel size was correlated with fuel costs. In this case, a simple average of fuel costs based on completed responses could result in an upwardly biased estimate of average fuel costs. *A larger sample size than what is necessary to achieve the minimum acceptable response rate would provide a cushion to protect against an uncertain level of nonresponse bias.*

As a further precaution against nonresponse bias, a follow-up analysis will be conducted to quantify the correlation between characteristics of the fleet, such as vessel size and fishing mode, and costs which are quantified in the survey. These known correlations will be used together with stratification data for the entire population to impute average cost estimates from the sample of completed responses to the population.

Survey Fielding

Dr. Doyle Hanan has contracted with NMFS to field the survey. He will send cover letters to DGN and HPN permit holders describing the purpose of the survey and instructions for how to complete it. For purposes of survey fielding, information on the permittees and mailing address will be taken from state and federal permit and registration files.

Enclosed with the letter and instructions will be a copy of the survey instrument. This will provide survey recipients an opportunity to complete and return the survey in the stamped and addressed envelope, complete the form via the telephone call from Dr. Hanan, or request an in-person interview to complete the form.

Expected Dates of Survey Implementation

The target period for survey fielding is May 2010 through July 2010. We are attempting to time the survey to the period when fishermen are likely to have recently prepared their tax returns and thus have their economic data readily available.

3. The methods used to maximize response rates and address non-response. The accuracy and reliability of the information collected must be shown to be adequate for the intended uses.

Methods Used To Maximize Response Rates

A number of methods have been used to maximize survey response rate. First, the survey is short. The written version of the survey instrument is five pages for DGN (sections: 1, 2, & 4) and five pages for HPN (sections: 1, 3, & 4). For those who fish both DGN and HPN, there is seven pages total (sections: 1, 2, 3, & 4). It should take less than one and one half hours to complete any of these combinations. Second, respondents are asked to provide information only about major cost and earnings categories, thus avoiding what may seem to survey respondents as unnecessary detail. Third, personal means of data collection such as telephone interviews, and to a lesser extent in-person interviews, are used to the extent that funds and available contact information allow. Fourth, there will be extensive follow-up telephone calls and mailings after the initial letter/questionnaire mailing in order to obtain responses. These follow-up telephone calls will be distributed among weekend/weekday and day/evening time periods to maximize the likelihood of reaching the contact person. Up to eight attempts will be made by telephone to reach non-responding vessel owners/permittees.

Addressing Non-Response

A considerable amount of information is currently available about vessel characteristics and landings for the survey population. This information will be used to compare the survey population with survey respondents, and to make any adjustments for systematic bias in survey response.

Information on the physical characteristics of each vessel is available from state and/or Coast Guard vessel registrations. State vessel registrations provide information on the vessel's length and net weight. Coast Guard vessel registration provides information on the owner and address, vessel length, gross tons, net tons, hull material, and year built.

PacFIN provides vessel level information on West Coast (Washington, Oregon, and California) landings by date, species, and port for all vessels in the survey population. As a result, it is possible to compare respondents and non-respondents with regard to seasonal patterns, species landed, quantity landed, and location of landings.

Because of the large amount of physical characteristics and landings data available on all vessels in the survey population, it will be possible to track survey response patterns as the survey is

fielded. In particular, it will be possible to examine (1) if there are any differences in response rates by fishery (DGN and/or HPN) and primary state of landings and (2) if there is any systematic difference with respect to landings and vessel physical characteristics between respondents and non-respondents. Landings data will be examined to determine if any non-respondent bias exists regarding species landed, quantity landed, seasonal pattern of landings, or location of landings. Vessel physical characteristics will be examined to determine if any non-respondent bias exists regarding vessel length, net tons, engine horsepower, hull material, or age.

Adequacy of Accuracy and Reliability of Information for Intended Uses

NMFS needs to measure the economic performance of west coast commercial fisheries in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. Currently available cost earnings data is very limited and does not meet these needs. The data gathered and performance measures constructed will be used to address a wide range of issues.

While the data will be used to comply with legal and regulatory requirements, these requirements do not specify a level of data accuracy. The minimum target combined survey response size for the survey is based on the objective of having a sample mean within 10% of the population mean at the 95% confidence level (See Table 1). It is believed that this provides a sufficient level of precision for inference of population means from sample means. *As explained in the response to question 2, even greater precision is highly desirable for other anticipated applications of the data.*

4. How the survey instrument was developed, including the steps taken to validate the questionnaire design.

For comparability and consistency with the previous survey effort, the Survey was designed using the 1998-1999 Cost-and-Earnings Survey of the California-Oregon Drift Gillnet Fleet as a baseline. Questions were added to capture harpoon-specific costs such as those related to specialized gear and to the use of spotter planes to help locate swordfish swimming near the surface, and to ask DGN fishermen about the effect of the 2001 leatherback seasonal closure on their operations. The survey was also developed to allow splitting DGN-specific questions from the HPN-specific questions for reduced mailing requirements and reduced confusion for respondents. The survey format is similar enough to the earlier DGN survey and other similar surveys that we have conducted, and because we obtained comments and suggestions about the proposed survey instrument from industry representatives, we concluded that pretesting did not seem warranted.

Objectives for the 1998-1999 Cost-and-Earnings Survey of the California-Oregon Drift Gillnet Fleet and its content were developed as a collaborative effort between NMFS, FISH, and PSMFC. The updated version of the survey instrument for the current effort was developed through a series of meetings between NMFS personnel and Dr. Hanan.

These meetings identified key objectives as collecting data, which could be used to measure fisheries profitability, economic impacts, efficiency, and economic benefits of regulatory measures. The academic literature, both within and outside of fisheries, was reviewed in order to

determine the data requirements of models which would likely be used to measure fisheries profitability, economic impacts, efficiency, and economic benefits of regulatory measures.

Because different applications of cost earnings data require analysis of different vessel populations, it is highly desirable to maintain a consistent questionnaire across fleets. The draft questionnaire for the DGN fleet is very similar to that used for the harpoon fleet. Items which are specific to harpoon will be omitted from the version of the survey sent to DGN permittees, and vice versa, to reduce the length of the survey and to encourage a higher response rate.

5. The reporting and use of the results of the survey.

Use of Survey Results

NMFS needs to measure the economic performance of west coast commercial fisheries in order to meet legal and regulatory requirements, support fisheries management decision making, and undertake economic research. Currently available cost earnings data is out of date for the DGN fishery and nonexistent for the harpoon fishery; hence it does not currently meet these needs.

Reporting of Survey Results

A descriptive summary of results from the survey will be prepared and compiled into an administrative report. This summary will include descriptive statistics (such as mean and standard deviation) of the various cost and earnings categories being collected. This descriptive summary will also be promised as a future distribution to survey respondents via paper mail as an added incentive for participation. Survey results will be reported over time through a series of studies prepared for fisheries management. It is anticipated that results will also be reported through academic publications, presentations at conferences, and technical guides. All reporting of survey results will adhere to data confidentiality requirements.

Information Quality Guidelines and Confidentiality

It is anticipated that the information collected will be disseminated to the public or used to support publicly disseminated information. As explained in the previous paragraphs, the information gathered has utility. NMFS will retain control over the information and safeguard it from improper access, modification, and destruction, consistent with NOAA standards for confidentiality, privacy, and electronic information. In particular, although the data are voluntary, it will be kept confidential as with section 402(b) of the Magnuson-Stevens and NOAA Administrative Order 216-100, Confidentiality of Fisheries Statistics, and will not be released for public use except in aggregate statistical form without identification as to its source.

6. Contact information for agency coordinator and principle investigator.

Agency Coordinator:
Dr. Stephen Stohs
NMFS SWFSC
8604 La Jolla Shores Drive
La Jolla, CA 92037-1508
Stephen.Stohs@noaa.gov
(858) 546-7084

Principal Investigator:
Dr. Doyle Hanan
Hanan & Associates, Inc.
PO Box 8914
Rancho Santa Fe, CA 92067
drhanan@cox.net
(858) 832-1159

7. Estimated burden and number of respondents.

Reviewing the survey, collecting requested data, and any in-person interviews are expected to take one and one half hours per respondent. With the expected 49 responses, the survey is expected to impose a total burden of 73.5 hours on the West Coast Drift Gillnet and Harpoon fleet. Non-respondents may incur a slight additional