

Revised Application for an Exempted Fishery Permit:

Extension of the Southwest Fisheries Science Center (SWFSC)-Industry Collaborative “Proof of Concept Project” started in 2017 for Nearshore Surveillance in NW Coastal waters in conjunction with the SWFSC Acoustic Trawl Methodology Survey (ATM)

This revised proposal addresses suggestions made at the November 2017 Council meeting, as well as NWFSC and SWFSC input received in early 2018.

1. Applicants must submit a completed application in writing that includes, but is not limited to, the following information:

a. Date of application.

October 19, 2017, revised February 22, 2018

b. Applicant’s names, mailing addresses, and telephone numbers.

- West Coast Pelagic Conservation Group.
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c. A statement of the purpose and goals of the experiment for which an EFP is needed, including a general description of the arrangements for the disposition of all species harvested under the EFP.

This is an industry / research CPS PNW-EFP for continuation of a Proof of Concept project started in 2017 to use the seine vessel *Lisa Marie* (LM) in conjunction with the NOAA survey vessel *Rueben Lasker* (RL). The LM will again use a calibrated NOAA EK 60 echosounder to surveil nearshore waters (<50 meters) in the Pacific NW from the Washington-Canada border to the Oregon-California border as instructed by the SWFSC survey team. In addition the LM will use its own fishing sonar, and record when possible, encounters with schools to measure behavior patterns and take informal estimates of school sizes.

Our goal is to provide supplementary data collection and additional sampling techniques for areas nearshore of the proposed 2018 NOAA/SWFSC acoustic-trawl survey. The plan is simple and straightforward:

1. To accurately survey the inshore waters to gather data on the inshore component of CPS in the NW that can be used as a valuable extension of the present ATM survey to inform the stock assessment.
2. To develop alternate species composition methods that can be used day or night to produce data that can be used for comparative analysis with the trawl sampling methodology and to inform the stock assessment.
3. To develop collaborative construct approaches between industry and NOAA Fisheries that can be utilized for other collaborative research work in the U.S. theater and worldwide.

Sampling will be done at the same general time and nearshore areas as the NOAA survey EFP is needed because directed sardine fishing is closed. The coastal pelagic species (CPS) that will be retained in small amounts (e.g. 5kg to 25kg) for sampling will be dip-netted sardines, anchovies, and mackerel(s). The sampled fish will be frozen and retained for identification and biological measurements to be performed by NOAA. Wrapped schools will then be released alive, and no fish will be harvested for commercial purposes.

d. Valid justification explaining why issuance of an EFP is warranted.

The EFP is warranted to provide information in addition to the NOAA ATM survey, by providing species composition and indications of distributions and abundance of CPS species in adjacent areas where the NOAA survey cannot sample. The industry vessel has been equipped with a Simrad EK-60 sonar that will acoustically sample the area nearshore of the NOAA ATM survey area in order to make relative comparisons with the areas surveyed by the NOAA vessel. This is an enhanced extension of the 2017 collaborative “proof of concept” endeavor that the SWFSC and the NW fishing industry did off the coast of Washington and Oregon (see attachment 1: 2017 Project Instructions from the SWFSC). This effort was a cooperative work utilizing the survey vessel *Reuben Lasker* and the seine fishing vessel *Lisa Marie*. No sampling was undertaken in 2017 as the LM only had a sardine net which is unsuitable for harvesting the anchovy that is expected to be in the CPS composition the LM encounters.

Directed sardine fishing is presently closed. We have been advised by Council and NOAA staff that an EFP is appropriate to continue this project.

e. A statement of whether the proposed experimental fishing has broader significance than the applicant’s individual goals.

The experimental fishing could be applied to other species of fish that have nearshore components in other areas in U.S. or Canadian waters. The techniques could be applied anywhere that additional species composition sampling would benefit fisheries survey work.

f. A statement whether the applicant intends to continue the EFP activities for more than one year. NMFS issues EFPs for only one year at a time. However, if an EFP proposal has a multi-year focus, this information should be included in the proposal.

Yes, the applicants intend to continue more than one year.

g. Number of vessels and processors covered under the EFP, as well as vessel names, skipper names, and vessel ID and permit numbers.

One vessel: F/V Lisa Marie, Coast Guard #: 1038717. Skipper: Ricky Blair. Owner: Andy Blair. No processors will be involved in the handling of the samples unless it is to transfer samples to a location designated, and as directed, by the survey team. There will be no commercial purchase of fish in this project.

h. A description of the species to be harvested under the EFP and the amount(s) of such harvest necessary to conduct the experiment; this description should include estimates of harvest impacts to non-target species.

Species may include Pacific sardine, northern anchovy, jack mackerel, and Pacific mackerel. Estimated need is a maximum of 10 metric tons for all species.

i. A reasonable justification for the amount of EFP fish to be harvested. For statistical purposes, this could include a power analysis or other means to estimate a reasonable

amount or number of fish. Any other justification that supports the amount of fish proposed for EFP activities should also be included.

Small amounts of EFP fish are to be retained for species composition and frozen for additional biological sampling (length frequency distributions, etc.). Total amounts will be determined by the number of schools that can be sampled during the survey period.

The SSC expressed concerns as to whether the proposed catch and sample size are appropriate to accurately characterize the biomass, age-structure, and size-structure as well as the variance associated with each. This EFP to collect PNW samples inshore or offshore will not be able to accurately inform the survey team as to biomass nor is it intended to at this stage of development. The use of the EK 60 on the seine vessel in waters <50 meters is intended to supply information that we believe will lead to vetted survey methodology and data sources that will better inform the stock assessment. As a “proof of concept” however this is in the “exploratory” mode and in the developmental phase process. As the author recalls it took 6 years, and 3 survey cruises, plus a methodology review before the ATM survey was fully vetted for the stock assessments. As the methodology and equipment is very similar to the present ATM survey our belief is that we could provide data for the stock assessment in a shorter interval of development time. As we are not capturing schools for commercial harvest or point sets, and are subject to CPS school availability, point sets or school capture for biomass estimation is not a viable option.

As to “*characterizing age-structure, and size-structure as well as the variance associated with each.*” Subject to finding schools or aggregations of CPS that warrant seine sampling sets we believe that seining will be able to provide random sampling inshore and offshore day or night. We believe that if the aggregations are found inshore in proximity to the prescribed LM transects we will be able to provide more samples from more schools using the process described herein than if we were taking fish for commercial purpose and / or point sets. In part this is because as we do not need take time to depose the harvested fish to a processing facility. This means we will be able to make a higher number of sets overall than when there is a need to capture the entire school. With the time savings of not having to pump the school on board, waste time with partial school capture, and steam many hours to shore (and back) to unload we estimate we can do 2 to 4 times as many sets than if we were “point setting”.

Offshore sampling, if done, would attempt to shadow the RL and take samples in proximity to where they are trawl sampling or doing acoustic transects. Again subject to finding CPS schools, seining should prove a productive tool to gather a large number of random samples. Age-structure and size-structure should be as representative of the population inhabiting NW waters as those taken by trawl sampling with two possible exceptions: Inshore waters may have a different mixture of species, ages, and sizes from offshore waters; and fish that are less than 6 months of age may not be captured in a seine net. At the least sampling with the use of seine gear, inshore or offshore, will give us a composition comparison with what is caught offshore in a surface trawl net. The rationale used for sample sizes is the same as the SWFSC survey team for trawl sampling. We want to replicate the sample size the survey vessel uses as it is part of their survey methodology, and to make composition comparative analysis to the trawl sampling as straightforward as possible.

- j. A description of a mechanism, such as at-sea or dockside fishery monitoring, to ensure that the harvest or impact limits for targeted and incidental species are not exceeded, and are accurately accounted for and reported.**

Monitoring of sampling efforts will be in conjunction with the NOAA ATM survey team that will be sampling adjacent areas offshore of the proposed survey area. There may be a NOAA observer on board the seine vessel when sampling occurs or at other appropriate times as there was in 2017. In addition the participants do not intend to harvest any fish in commercial quantities when working in conjunction with the survey vessel.

- k. A description of the proposed data collection methods, including procedures to ensure and evaluate data quality during the experiment, and data analysis methodology and timeline of stages through completion.**

Protocols will be as outlined by the SWFSC instructions (in italics below) and /or as outlined herein.

“The principle components of the nearshore sampling include: AST’s Simrad EK60 General Purpose Transceiver (GPT) connected to Lisa Marie’s Simrad 38 kHz transducer (ES38-B); AST’s video logging electronics connected to Lisa Marie’s Furuno 250 sonar display; and industry’s processing of Lisa Marie’s purse seine catches. During June, an AST member will work with J&G Marine Supply to install and test the EK60 and video recording systems and calibrate the EK60 system so the data may be used to estimate CPS biomass in a nearshore sampling stratum. The sonar imagery will be used to qualitatively evaluate the numbers, sizes, and behaviors of CPS aggregations.

When the Reuben Lasker is surveying off Washington and Oregon, the Lisa Marie will conduct complementary echosounder (Simrad EK60), sonar (Furuno 250), and purse-seine sampling along nearshore extensions of Lasker’s survey transects. During this period, an AST member will be aboard Lisa Marie to log data, advise on the sampling protocol, and maintain a log of sampling activities, and species catches in a series of seine sets to identify species composition and collect biological samples. The CPS species that will be collected include Pacific sardine, northern anchovy and mackerel(s). The sampled fish (e.g., 5kg-25kg) will be frozen and retained for identification and biological measurements to be performed by SWFSC. Wrapped schools will then be released alive, and no fish will be harvested for commercial purposes.”

Sampling will be executed by the LM as it performs the inshore transects given to them by the SWFSC. As schools are “spotted” by the EK60 and /or the vessel “fishing” sonar the LM will set an anchovy seine net (smallest seine mesh available for commercial harvest) around these CPS schools or portions of these CPS schools. The SWFSC will establish “bins” for school sizes they want sampled over the course of the LM inshore transects: Example: 15 schools each 5-15MT: 15 schools each 15-35MT: 15 schools each 35-60MT: 15 schools each >60MT. The LM will attempt to find these school sizes as it does their nearshore acoustic transects. The LM will prioritize efforts to find school sizes to best match the request for each and all bins. Similar to using a spotter plane, the LM will use a sonar and / or the EK60 to estimate the school size before setting. However if the requested school sizes we are seeking to fill requested bins are not available for any one day, the LM will set on schools that are available for that day. Estimates of school sizes the LM sets on will be recorded. Except for the grouping by “size” bins we will set randomly without regard to species composition. At all times we will follow the advice from the NOAA observer and or other survey staff.

To obtain a random sample by dip netting, the first step will be to randomly select schools that meet size bin requirements without regard to harvest selectivity. To this end we will take advice from the NOAA observer. Once a school is selected the LM will set on the school using a loose set purse that is tight enough to allow sampling at the top and bottom (<20' to the bunt end of the seine net) of the purse. The net will be pursed to bring schools toward the surface but to prevent mortality-(loose purse). When loose pursed the "Bunt" (bottom) of the seine net will be at a depth of 15'-20'. Samples will be dip netted with a long handled pole 20' that can reach the fish at the bunt of the net and samples taken from the top and bottom of the school. Jiggling the school before setting, an industry practice to identify the composition prior to setting, may be done to see if there are marked differences with samples taken prior to setting and what is taken in the seine net. The fish in each dip netted haul will be separated by species, counted, weighed and recorded to establish species composition of each dip net of fish brought aboard. We will attempt where practicable to collect and retain 50 biological samples per species per set, which will be frozen for further biological analyses by the SWFSC. In the event the species are, or are nearly, homogenous we will collect a minimum of 50 fish of the predominant species for biological samples and as many other CPS species samples as are available that came aboard with those samples of the predominant species. Weight of biological samples for any one set will not exceed 25kg or be less than 5kg. Biological samples will be batched by set and species and coded for environmental and catch information including date and location. (Note: if individual state enforcement agencies have sampling protocols to determine species composition it is possible we will use those protocols to determine species composition but only if they fulfill the needs expressed herein). Dip net on board hauls will be catalogued by top of net or bottom of the net location and there will be a minimum of two dip net hauls brought aboard per set, at least one from the top of the net and one from the bunt. These samples will then be combined and a random subsample of fish of each species (n = 50) will be taken from the pooled sample and saved for biological measurements. Long-lat., time of day, weather, SST, etc., data will be recorded at the time of the set.

Based on time, weather and availability of RL the LM will attempt to do some day and night sets in proximity to the RL and in waters >50M (offshore) to determine if species compositions are similar to those the RL captures in their trawl sampling net and similar to what is sampled inshore. Samples for the LM will be gathered using the same protocols as nearshore.

l. A description of how vessels will be chosen to participate in the EFP.

The Lisa Marie was chosen based on dialogue with the NOAA survey team about the type and size of vessel, availability, and a history of conducting research. The vessel selection was supported by members of West Coast Pelagic Conservation Group.

m. For each vessel covered by the EFP, the approximate time(s) and place(s) fishing will occur, and the type, size, and amount of gear to be used.

The time and place will be scheduled to be in conjunction with the NOAA survey activities, most likely in a 25 day to 30 day window in a timeframe between June 25th and August 31. Exact time and dates will be dependent on the survey vessel schedule. Again any "fishing" will be under the direction of the survey team and for the collection of samples-not for commercial enterprise.

The SSC suggested that the EFP proposal from 2010 (Agenda item F.1.a., Attachment 1, April 2010 could provide guidance on addressing many of those recommendations. The author has reviewed this document and was involved with the NW Sardine Aerial survey. The specific document relates to point sets and entire school capture which this “proof of concept” exercise will not be doing. Relative to selecting which schools to sample, school sizes will be a component as outlined above. Specific size or number of school bins is yet to be determined but will be as the survey team determines to be scientifically defensible. The SSC or other appropriate scientific guidance shall also be utilized to determine the best sampling protocols. In this it is important to note that when the 2010 protocols were used there was an abundance of sardines in the NW which is not the case now. Consequently school sizes may be much smaller or sparser for some CPS species than in 2010. In part, the work from 2017 and going forward is to establish what this equates to so we can align the protocols with recent population spatial and temporal dynamics. With very little inshore work and no fishing effort on which to base assumptions we do not know exactly what school sizes, or numbers of schools we can expect to find. The random sampling protocol and sample size for saving fish for biological metrics follows those established for the 2010 EFP proposal.

Applicant’s signature

Michael M. Okoniewski

Board Member

West Coast Pelagic Conservation Group