February 5, 2009

MEMORANDUM FOR: Barry Thom, Acting Regional Administrator, Northwest Region

FROM: Usha Varanasi, Science and Research Director
Northwest Fisheries Science Center

and

Norm Bartoo, Acting Science and Research Director
Southwest Fisheries Science Center

SUBJECT: 2009 Sampling Plan for West Coast Salmon Genetic Stock Identification Collaboration

This Memorandum provides our request for a Scientific Research Permit to conduct sampling of Chinook salmon in closed times and areas off the West Coast in 2009. The permit holders would be Dr. Churchill Grimes, SWFSC, and Dr. Peter Lawson, NWFSC, principal investigators for the project.

The West Coast Salmon Genetic Stock Identification (GSI) Collaboration (WCGSI) is a partnership of fisherman organizations, universities, states, tribes, and the National Marine Fisheries Service, formed in 2006 to explore potential uses of GSI for West Coast salmon fisheries management. It is built around sampling techniques developed by the Collaborative Research on Oregon Ocean Salmon project (Project CROOS) that enable fishermen to sample their catch at sea. The resulting data allow analysis of stock-specific spatial catch distributions at a scale that may provide new opportunities to manage fisheries, in-season, to target strong stocks while limiting weak-stock impacts. To date, the WCGSI has sampled only during times and areas open to commercial trolling for Chinook salmon. There are situations, however, where sampling in closed times and areas would provide useful scientific information. Sampling in these areas would be catch and release, with no retention of fish unless otherwise specified in the Scientific Research Plan. The exact nature of the permit will be determined by the seasons set and impacts allowed through the Pacific Fishery Management Council’s preseason planning process.

Objectives. Objectives of sampling will vary depending on the configuration of open seasons. The most ambitious objective is to map the distribution of Chinook salmon stocks caught in U.S. area ocean fisheries weekly from May through October. This will only be possible in years when there are substantial ocean fisheries, and sufficient impacts available to allow us to take limited samples from closed times and areas. More limited objectives include concentrated sampling in areas of high economic or scientific interest, sampling to develop and test protocols and statistical designs, and non-catch sampling activities to gather oceanographic data and test new data collection hardware and software.

Sampling protocol: Sampling will be conducted by commercial salmon trollers under charter to sample specific areas or collect specific data. All fishing in closed times and areas will be catch and release. Boats will be directed
by NMFS staff to fish in accordance with the Scientific Research Plan. Boats are equipped with geographic information system (GIS) recorders to monitor the vessel track and to record the exact time and location of each fish caught. The fishermen collect tissue and scale samples for GSI and age analysis, and record fish length and depth of capture. Fish may be tagged for future identification. To reduce handling time and stress to the fish, each boat will have two fishermen (captain and crew) specially trained and equipped in catch and release sampling. Handling methods were developed by one of the investigators (Lawson) and participating fishermen while conducting hooking mortality studies in the 1990s.

Research Vessels: Commercial fishing vessels will be chartered to participate in this study by the Oregon Salmon Commission and the California Salmon Council. These are both state agencies, eligible to charter Scientific Research Vessels as described below:

Scientific research vessel means a vessel owned or chartered by, and controlled by, a foreign government agency, U.S. Government agency (including NOAA or institutions designated as federally funded research and development centers), U.S. state or territorial agency, university (or other educational institution accredited by a recognized national or international accreditation body), international treaty organization, or scientific institution.

The research vessels will be chosen from a pool of pre-registered applicants, based on suitability for specific sampling and availability at the time. Pre-registration will include the following process. Names of applicant vessels will be submitted to the Oregon Salmon Commission and California Salmon Council to NMFS for approval. Vessels will be screened for proper licenses, certifications, inspections, insurance (if required), and other requirements as determined by NMFS and the permit holders (Drs. Lawson and Grimes). Permit holders will issue letters for each boat to carry while engaged in research activities. Final boat selection and operation instructions will be the responsibility of the Permit holders. Enforcement entities will be informed of the identities and dates and areas of activity of research vessels.

Vessels will be operating under a Scientific Research Plan prepared by and directed by NMFS scientists in consultation with other members of the WCGSI collaboration. The exact Research Plan to be used depends on decisions made by the PFMC during their March and April meetings.

Scientific Research Plan

Three conceptual plans are presented here for consideration, but the details will depend on seasons and allocations that will be determined through the Council's preseason planning process. These plans include a synoptic sampling design, a limited sampling design, and zero-impact testing of oceanographic equipment and data recording techniques without using terminal fishing gear. The final plan may combine various elements of the options described here. Approximate impacts presented here are preliminary estimates. The PFMC Salmon Technical Team (STT) will prepare impact estimates for all stocks during the PFMC's season-setting process. Compliance of the proposed research activities with ESA and NEPA requirements will be assessed during the Council's annual planning process.

Plan 1 -- Synoptic sampling: The object of this sampling plan is to collect 240 samples from each fishery management area (or subdivision) for each week that fish are available to be caught from May through October. The sample size of 240 per area-week derives from considerations of sampling statistical uncertainties and GSI stock assignment uncertainties. This plan can be implemented when large areas of the coast are open for commercial fishing and permit sampling can be used to "complete the picture" by sampling the closed areas. We do not anticipate that this will be an option in 2009.

Approximate impacts: There are eight primary management areas south of Cape Falcon, Oregon and, for May through October, 26 weekly periods. Thus, there are a total of 208 area-week periods. If the entire fishery were closed and all of the area-weeks were sampled under the permit, this would result in 208 x 240 = 49,920 fish encountered and released. The total mortality expected for this type of sampling would be 31% of the encounters.
49,920 x 0.31 = 15,475 mortalities. The fraction of encounters expected to be Sacramento River fall Chinook (SRFC), varies considerably by area-week and by year, but overall might be on the order of 50%. 15,475 x 0.50 = 7,738 SRFC mortalities. In contrast, under the 2007 season structure, in which there were 105 closed area-weeks from May through October, sampling under the permit would be expected to result in 105 x 240 x 0.31 = 7,812 mortalities, of which perhaps 7,812 x 0.50 = 3,906 would be SRFC mortalities. Actual mortality estimates for all stocks, including SRFC, will be provided by the STT during the PFMC 2009 salmon preseason management process.

Plan 2 -- Limited sampling: Separate studies are proposed for Oregon and California.

Oregon proposes to test the feasibility of fishery-independent surveys and compare results with boats engaged in normal commercial fishing operations (except that all the fish caught would be released). In the central Oregon (Newport) management area, over a four week period, three to five boats would be chartered to fish normally (catch and release), while another three to five boats would run fishing transects through the management area (also catch and release). Results of fish encountered would be compared between the two modes of fishing to determine the relationship between fish distributions derived under uniform versus opportunistic sampling. With three years of sampling in this area (samples were collected in 2006 and 2007) data could be analyzed for year to year consistency; important information for management applications. This experiment would also provide an initial indication of the usefulness of test fisheries for determining stock composition and distribution.

Approximate impacts: The number of fish encountered would be 2 survey methods x 4 weeks x 240 fish/method-week = 1920, resulting in 1920 x 0.31 = 595 total mortalities. At historical contribution rates for Sacramento River fall Chinook in this area of 60%, this would amount to 595 x 0.60 = 357 SRFC mortalities. At more recent SRFC contribution rates of 30%, this would amount to 595 x 0.30 = 178 SRFC mortalities. Actual mortality estimates for all stocks, including SRFC, will be provided by the STT during the PFMC 2009 salmon preseason management process.

California proposes to repeat an experiment first conducted in May and July of 2007 in the San Francisco northern and southern management sub-areas. The objective of this limited study is to test for differences in Klamath River fall Chinook (KRFC) encounters per unit of effort between these two sub-areas, which are currently managed as a single unit. If there is a clear difference in the KRFC encounter rate, and this difference is maintained over several years, this would suggest managing the two sub-areas separately which could lead to a reduction in KRFC encounters and an increase in commercial fishing opportunity in the San Francisco area. The proposal is to conduct sampling in these two areas over a four week period to test for differences in the KRFC encounter rate between the two areas.

Approximate impacts: The number of fish encountered would be 2 areas x 4 weeks x 240 fish/area-week = 1920, resulting in 1920 x 0.31 = 595 total mortalities. At historical contribution rates for Sacramento River fall Chinook in this area of 90%, this would amount to 595 x 0.90 = 535 SRFC mortalities. At more recent SRFC contribution rates of 50%, this would amount to 595 x 0.50 = 297 SRFC mortalities. Actual mortality estimates for all stocks, including SRFC, will be provided by the STT during the PFMC 2009 salmon preseason management process.

Preliminary estimates of combined impacts for the California and Oregon Plan 2 studies would be 1190 total mortalities and from 475 to 902 SRFC mortalities. Actual estimates will be provided by the STT during the PFMC 2009 salmon preseason management process.

Plan 3 -- Zero impact activities: Oregon is developing an electronic data entry system to allow fishermen to enter data directly into an on-board computer using a terminal in the cockpit during their regular fishing operations. The on-board systems will transmit data to a shore-side data base to increase efficiency of data entry and for use by project personnel to track and direct the sampling operations. In the absence of a GSI study impact allocation, Oregon proposes to test these systems at sea under simulated sampling conditions. Oregon is also developing techniques to deploy oceanographic sensors from fishermen's lines. One challenge will be to relate the sensor data.
to the on-board sampling data, so sensors and on-board data entry testing would be done simultaneously. Boats in
this experiment will have lines in the water, but no fishing gear on the lines. A permit is requested for this activity
to ensure that enforcement personnel understand the nature of the activities the boats are engaged in. These
experiments would be conducted in the central Oregon (Newport) management area.

Approximate impacts : 0

Reports

A summary of the final Scientific Research Plan, based on the PFMC's decision, will be included in Preseason
Report III. Data, as appropriate, will be made available in a timely manner on www.pacificfishtrax.org and a written
reported submitted to the PFMC for consideration at its November meeting. It is anticipated that results will be
reviewed by the PFMC Scientific and Statistical Committee and STT as part of the salmon methodology review
process. A summary of activities and results will also be included in the annual Review of Ocean Salmon Fisheries.

Address communication concerning this memorandum to Peter Lawson (peter.w.lawson@noaa.gov) or Churchill
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