



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
Portland, OR 97232

February 12, 2014

Michele DeHart
Fish Passage Center
847 NE 19th Ave, Suite 250
Portland, OR 97232

RE: Determination of Take for Research Purposes (8-14-FPC47)

Dear Ms. Dehart:

National Marine Fisheries Service (NMFS) Hydropower Division's Federal Columbia River Power System (FCRPS) Branch has determined that take associated with the study "Smolt Monitoring Program and Comparative Survival Study" permitted in 2014 under the 2014 FCRPS Supplemental Biological Opinion (2014 Opinion). If this research continues beyond 2014, the take allowed under the determination process must be updated annually. The estimated numbers of listed salmonids needed to complete this study in 2014 are given in Table 1 below.

Project Justification, Description, and Methods

Justification

The Smolt Monitoring Program (SMP) is part of the Research Monitoring and Evaluation (RME) described in the Biological Opinion. The SMP activities are described in the updated proposed action under Research Monitoring and Evaluation sub strategy 1.3. The Comparative Survival Study objectives and products are described in the Research Monitoring and Evaluation section of the Biological Opinion in strategy 3, critical uncertainties research.

Description

The SMP provides daily data on movement of smolts out of major river drainage and past the dams on the Snake and Columbia Rivers. Indices of migration strength and migration timing result for the run-at-large at key monitoring sites. In addition, marked smolts from hatcheries, traps, and dams provide measures of smolt speed and in-river survival through key index reaches. Fish quality, descaling and gas bubble trauma (GBT) measures are taken on samples of fish collected at each monitoring site supplying indicators of the health of the run. The SMP affords real-time fish passage data to fishery management entities and the hydroelectric power system managers, which they utilize in day-to-day river operations decisions. The SMP provides a continuous long-term fish passage database, which is utilized in year-to-year comparisons of smolt travel time, passage timing, passage duration, dissolved GBT symptoms, juvenile survival estimates, relative to annual fish passage conditions and hydrosystem operations.



The Fish Passage Center (FPC) also annually designs and oversees the implementation of the Comparative Survival Study (CSS). The state and tribal fishery agencies and US Fish and Wildlife Service (USFWS) have developed the CSS as a multi-year program for the purpose of monitoring and evaluating the impacts of the mitigation measures and actions (e.g., flow augmentation, spill, and transportation) under the FCRPS Biological Opinion to recover listed stocks. The CSS allows comparisons of survival over different life stages among fish with different experiences in the hydrosystem (e.g., transportation vs. in-river migrants and migration through various numbers of dams).

Methodology

The Smolt Monitoring Program (SMP) samples fish at 14 sites in the Columbia Basin including six traps and eight dams. Field work is carried out by various agencies, including the USFWS, Washington Department of Fish and Wildlife (WDFW), Nez Perce Tribe, Oregon Department of Fish and Wildlife (ODFW), and Pacific States Marine Fisheries Commission (PSMFC). Data are gathered on juvenile migrant salmon, incidental species and marking is carried out at all trap sites as well as Rock Island Dam. Traps and dams operate monitoring programs targeted to collect active migrant juvenile salmonids. A wide range of activities occur in association with monitoring including species-specific passage timing, mark information in migrants, external injury and disease information, mortality and descaling information, and finally Passive Integrated Transponder (PIT)-tag marking is carried out at some SMP sites to aid in gathering longer-term data such as travel time, passage timing and survival for specific mark groups.

Smolts are initially introduced to anesthetic in pre-anesthetic chambers. These chambers are part of the sample holding tanks. Tricaine methanesulfonate (MS-222) is used as an anesthetic at all SMP sites. After estimating how many fish are in the chamber, anesthetic solution is mixed with river water and added to the chamber. The average concentration of MS-222 varies between 40 and 85 mg/l and depends upon number of fish, water temperature and water chemistry. Sites in the Snake River often have natural buffers in the water that make it necessary to use higher concentrations to be effective. It should take two to three minutes to tranquilize the fish. They are adequately anesthetized when most of the fish have rolled. At this point, the smolts are transferred to the examination trough by opening the valve on the chamber exit. Flushing water is turned on to insure complete evacuation and wet transfer to the sorting trough. No more than 80 fish per group are sorted at a time to minimize the amount of time fish are held in anesthetic. Tricaine is also added to the re-circulation system, which is used to maintain fish in anesthetic during sorting. The anesthetic concentration in the re-circulation system should be between 35 and 45 mg/l. This maintains the anesthetic effect but allows fish to slowly recover while being handled. Fish are moved to a recovery tank in no more than 15 minutes from initial anesthetic. Daily sample rates for the SMP are based on the previous days' sample, and are designed to sample the least number of fish, while providing a statistically significant sample.

Locations where sampling will be conducted

Location and abbreviation	Hydrologic Unit Code
Salmon River Trap at Whitebird, WhT,	17060209
Clearwater Trap, CLW,	17060306
Lewiston Trap, Snake River, LeT,	17060103
Grande Ronde Trap, GrT,	17060106
Lower Granite Dam, LGR,	17060107
Little Goose Dam, LGS,	17060107
Lower Monumental Dam, LMN	17060110
McNary Dam, MCN,	17070101
John Day Dam, JDA,	17070105
Bonneville Dam, BON,	17070105

Terms, Conditions, and Requirements

Fish listed under the Endangered Species Act (ESA) must be handled with extreme care and kept in water to the maximum extent possible during sampling and processing. Adequate circulation and replenishment of water in holding units is required. When using gear that captures a mix of species, ESA-listed fish must be processed first, to the extent possible, to minimize the duration of handling stress. Endangered Species Act listed fish must be transferred using a sanctuary net (which holds water during transfer) whenever practical to prevent the added stress of being out of water. Should NMFS determine that a researcher's procedure is no longer acceptable; the researcher must immediately cease such activity until an acceptable alternative procedure can be developed with NMFS. To implement the Hydro research, monitoring & evaluation (RM&E) reasonable and prudent alternatives (RPAs), the Applicant shall ensure that all of the following conditions are met:

1. Researchers must not intentionally kill or cause to be killed any listed species unless a specific monitoring or evaluation proposal, approved by NMFS, specifically allows intentional lethal take.
2. Each ESA-listed fish handled out of water must be anesthetized to prevent injury or mortality.
3. Anesthetized fish must be allowed to recover (e.g., in a recovery tank) before being released. Fish that are simply counted but not handled must remain in water, but do not have to be anesthetized. Whenever possible, unintentional or indirect mortalities of ESA-listed fish that occur during scientific research and monitoring activities shall be used in place of intentional lethal take, if applicable.
4. Each researcher must ensure that the ESA-listed species are taken only by the means, in the areas, and for the purposes set forth in the research proposal, as limited by the terms and conditions.
5. Each researcher, in effecting the take authorized by the incidental take statement (ITS) (Chapter 14, 2008 Opinion – incorporated into the 2014 Opinion) and through NMFS' Take Determination Letters, is considered to have accepted the terms and conditions of the ITS and any additional terms or conditions required by NMFS' Take Determination

Letters, and must be prepared to comply with the provisions of these two documents, and the applicable NMFS' regulations and the ESA.

6. Each researcher is responsible for the actions of any individual operating under the authority of the researcher's designated take authorization within the ITS of the 2014 Opinion and NMFS' Take Determination Letters.
7. Each researcher, staff member, or designated agent acting on the researcher's behalf must possess a copy of the ITS in the 2014 Opinion and the NMFS authorizing Take Determination letter when conducting the activities for which a take of ESA-listed species or other exception to ESA prohibitions is authorized herein.
8. Researchers may not transfer or assign a take authorization included within this determination to any other person(s), as person is defined in Section 3(12) of the ESA. The take authorization ceases to be in force or effective if transferred or assigned to any other person without prior authorization from NMFS.
9. Each researcher must obtain any other Federal, State, and local permits or authorizations necessary to conduct the activities provided for in this ITS.
10. Each researcher must coordinate with other applicable co-managers and researchers to ensure that no unnecessary duplication or adverse cumulative effects occur as a result of the researcher's activities.
11. National Marine Fisheries Service reserves the right to inspect research activities as they occur. This may include observation or review of research activities, facilities, records, etc., pertaining to ESA-listed species covered by this determination.
12. Under the terms of NMFS' regulations, a violation of any of the terms and conditions of this ITS will subject the offending researcher and/or any individual who is operating under the authority of this ITS to penalties as provided for in the ESA for authorized take.
13. Each researcher is responsible for biological samples collected from ESA-listed species as long as they are useful for research purposes. The terms and conditions concerning any samples collected remain in effect as long as the researcher maintains authority over and responsibility for the material taken. A researcher may not transfer biological samples to anyone not listed in the research proposal without obtaining prior written approval from NMFS. Any such transfer will be subject to such conditions, as NMFS deems appropriate.
14. NMFS may amend a take authorization identified in this determination, or adjust specific take levels after reasonable notice to the applicable researcher.
15. NMFS may revoke a take authorization identified in this ITS if the activities for which it provides are not carried out. If the activities are not carried out in accordance with the conditions of this ITS and the purposes and requirements of the ESA, or if NMFS otherwise determines that the continuation of activities would operate to the disadvantage of ESA-listed species.

Annual Reporting and Authorization Requirements

The conduct of scientific research and monitoring activities each year is contingent on submission and approval of a report on each proceeding year's research and monitoring activities. Researchers are

providing annual reports summarizing the take of ESA-listed salmon and steelhead associated with their activity. These annual reports are to be provided to NMFS' designated Take Determination Coordinator by December 1 of each year unless this date is otherwise modified by NMFS' authorizing Take Determination letter. The report must include the following:

1. A detailed description of scientific research and monitoring activities, including the total number of fish taken at each location, an estimate of the number of ESA-listed fish taken at each location, the manner of take, and the dates and locations of the take.
2. Measures taken to minimize disturbances to ESA-listed fish and the effectiveness of these measures, the condition of ESA-listed fish taken and used for research and monitoring, a description of the effects of research and monitoring activities on the subject species, the disposition of ESA-listed fish in the event of mortality, and a brief narrative of the circumstances surrounding fish injuries or mortalities to ESA-listed fish.
3. Any problems that arose during research and monitoring activities, and a statement as to whether the activities had any unforeseen effects.
4. Descriptions of how all take estimates were derived.
5. Steps that have been and will be taken to coordinate research and monitoring activities with those of other researchers.
6. Projects which employ blocking weirs must include a log of delay monitoring in their annual report. This log must include daily trap catches and numbers of fish observed below the weir (as per the methodology described in the projects weir operation plan). Any changes in weir operation or configuration will also be noted with the dates that they are in effect. Any periods when the weir was not in operation will also be noted.

Operational Reporting & Notification Requirements

1. Researchers must obtain NMFS' approval prior to implementing research protocols (e.g., changes in sampling locations or fish handling protocols) that differ from those considered in the Take Determination Letters, unless immediate deviation from these same protocols are necessary to reduce impacts to fish in hand. In this case, researchers must contact NMFS' designated Take Determination Coordinator or other designated staff as soon as possible to report on the situation (including reporting any resultant unexpected take), the actions taken by the research to minimize impacts to research fish, and coordination of additional actions that are necessary before the research can continue.
2. Each researcher must alert NMFS whenever the authorized level of take is exceeded, or if circumstances indicate that such an event is imminent. Notification should be made as soon as possible, but no later than 2 days after the authorized level of take is exceeded. The researcher must then submit a detailed written report to NMFS. Pending a review of the circumstances, NMFS may suspend the research and monitoring activities or implement reasonable measures and/or alternatives to allow research and monitoring activities to continue.
3. Each researcher must alert NMFS when a take of any ESA-listed species not included in the research proposal is killed, injured, or collected during the course of research and monitoring activities. Notification should be made as soon as possible, but no later than

2 days after the unauthorized take. The researcher must then submit a detailed written report to NMFS. Pending a review of the circumstances, NMFS may suspend research and monitoring activities or implement reasonable measures and/or alternatives to allow research and monitoring activities to continue.

4. In the case of ongoing studies, a report of actual take will be submitted to NMFS no less than 30 days before the request for take for the next year is submitted. For studies which only last 1 year, or upon termination of a multi-year study, a report of actual take will be submitted no less than 30 days after the activities described in the take determination letter cease. Take reports will include the numbers, life stage, species, and evolutionarily significant unit (ESU) of fish taken; the type of take (harass, handle, kill); and levels of incidental mortality. The reports will also include the location of the take (geographical names and Hydrologic Unit Code (HUC), and summarize take into blocks no larger than one month (i.e., take for April, May, etc.). Any of the incidents described in items 2 and 3 above (exceeded take limits, or incidental mortality not covered by the take determination) will also be described in this report. The report will also include an evaluation if methodology can be improved to reduce take (especially incidental mortality).

Take Estimates

The following tables list the total authorized take of listed salmon species.