



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

March 24 2014

Dr. Christopher C. Caudill
Department of Fish and Wildlife Sciences
University of Idaho
Corner of 6th & Line St.
Moscow, Idaho 83844-1141

RE: Determination of Take for Research Purposes (19-14-UI93)

Dear Dr. Caudill:

National Marine Fisheries Service (NMFS) Hydropower Division's Federal Columbia River Power System (FCRPS) Branch has determined that take associated with the study, "Passage behavior and fate of adult salmon and steelhead in the Columbia and Snake rivers," is 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 study address priority research areas related to improving passage and survival of adult salmonids identified by the U.S. Army Corps of Engineers (Corps), fish agencies, and NMFS in the Columbia River Federal Power System Biological Opinion released in 2000 related to recovery of threatened and endangered Columbia and Snake River salmon and steelhead. Specific Reasonable and Prudent Alternatives (RPAs) identified in the 2008 NMFS Biological Opinion include RPA's 28, 52, and 54 which deal with monitoring to assure safe passage and maintaining passage metrics as passage structures are modified in the future.

The proposed work is in response to requests for proposals issued by the Corps (Portland and Walla Walla Districts) as part of their Anadromous Fish Evaluation Program (AFEP). The study topics and proposals were reviewed regionally by Study Review Working Group (SRWG) members during summer and fall 2012.

Description

In 2010, a prototype lamprey flume system (LFS) to aid adult lamprey passage was designed for the Washington-shore fishway North Downstream Entrance (NDE) at Bonneville Dam. Design elements for this structure were drawn from experience with the Bonneville Dam Lamprey Passage Structure (LPS) collectors and from behavioral observations in the experimental



lamprey fishway. The flume system includes two alternative entrances with lower entrance velocities meant to improve lamprey passage and a duct system leading to a LPS collector that will terminate on the tailrace deck. The Washington-shore NDE structure will be installed during winter 2012-2013 and a primary objective of work in 2013 will be assessment of adult salmonids at the NDE entrance.

Methodology

Lower Columbia Studies:

Adult spring-summer Chinook salmon, sockeye salmon and steelhead will be collected at the Adult Fish Facility, located adjacent to the Washington-shore ladder.

Tagging will be in approximate proportion to the run and the tagging schedule will be adjusted depending on arrival timing of each run (with the addition of increased effort directed at the supplemental late steelhead sample). Typically, fish will be selected at random in the order they enter the trap each morning and adults will be selected randomly and Genetic Stock Identification (GSI) analyses will be used to back-assign origin to genetic reporting group for a subsample of adults with unknown final fates. Scales will be collected from each adult to determine age and (in steelhead) spawning history.

Protocols for collection and outfitting salmon and steelhead with transmitters at Bonneville Dam, mobile tracking (if needed), downloading of data from receivers, recovery of information for recaptured fish, coding of the data, and data analysis will be similar to those developed in prior years. All tagged fish will be released 8 km downstream from Bonneville Dam and monitored as they migrate upstream using a series of fixed-site receivers at each project, taking special care to closely monitor fishway entrances. We will coordinate with all research groups using radiotelemetry for other studies to insure efficient use of the equipment and resources available. Radiotelemetry receivers will be maintained and returned to the manufacturer for repairs and updates, prior to the 2014 field season, as required. All required receivers and antennas will be installed prior to the start of tagging of spring Chinook salmon in April 2014. All adults will have a full duplex Passive Integrated Transponder (PIT)-tag inserted to the abdominal cavity as a secondary tag that will allow estimation of tag loss rates, detection efficiencies and conversion rates using both radio- and PIT-detections using permanent PIT detectors at Bonneville, McNary, Ice Harbor, and Lower Granite dams and using temporary PIT detectors installed at The Dalles Dam during winter 2012-2013. Detection efficiency will be estimated as $N_{\text{downstream}} / N_{\text{upstream}} * 100$ where N_{upstream} is the number of all individuals detected at the upstream site. Radio tag loss rates will be determined by enumerating the individuals with upstream PIT records that lack corresponding radio tag detections, indicating tag loss or failure.

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) 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.

Table 1. Total number of all potentially listed salmon species taken by the study. These numbers do not include numbers of fish carcass (no limit) which may be handled or sampled in the course of this project. Take levels: 1-harass or disturb, 2-capture and handle, 3-collect sample or tag, 4-lethal sampling.

Species	Clip or mark	Age	Activity	Take Level	Take	Incidental mortality	Location	Dates
Chinook	unk	adult	Tag	3	600	1	Bonneville Dam	Mar- Jul.
Chinook	unk	adult	capture, measure, release	3	30	1	Bonneville Dam	Mar- Jul.
Chinook	unk	adult	Tag	3	300	1	Bonneville Dam	Mar- Jul.
Chinook	unk	adult	capture, measure, release	2	15	1	Bonneville Dam	Mar- Jul.
Sockeye	unk	adult	Tag	3	400	1	Bonneville Dam	May- Jul.
Sockeye	unk	adult	capture, measure, release	2	20	1	Bonneville Dam	May- Jul.
Steelhead	unk	adult	Tag	3	800	2	Bonneville Dam	Jun.- Oct.
Steelhead	unk	adult	capture, measure, release	2	40	1	Bonneville Dam	Jun.- Oct.

Species Summary		
Species	Age	Incidental Mortality
Chinook	Adult	4
Sockeye	Adult	2
Steelhead	Adult	3

Table 2. Estimated 2014 take activities for potentially ESA-listed salmonids authorized to be taken during the study. These numbers do not include numbers of fish carcass (no limit) which may be handled or sampled in the course of this project. Take levels: 1-harass or disturb, 2-capture and handle, 3-collect sample or tag, 4-lethal sampling.

ESU	Hatchery or Wild	Age	Age detail	Activity	Take Level	Take	Incidental mortality	Location	Dates
Lower Columbia Chinook	unknown	adult		Tag	3	3	0	Bonneville Dam	Mar-Jul.
Upper Columbia Spring Chinook	unknown	adult		Tag	3	53	0	Bonneville Dam	Mar-Jul.
Snake River Spring Chinook	unknown	adult		Tag	3	178	1	Bonneville Dam	Mar-Jul.
Lower Columbia Chinook	unknown	adult		Tag	3	2	0	Bonneville Dam	Mar-Jul.

ESU	Hatchery or Wild	Age	Age detail	Activity	Take Level	Take	Incidental mortality	Location	Dates
Upper Columbia Spring Chinook	unknown	adult		Tag	3	58	0	Bonneville Dam	Mar-Jul.
Snake River Spring Chinook	unknown	adult		Tag	3	89	1	Bonneville Dam	Mar-Jul.
Lower Columbia	unknown	adult		Tag	3	3	0	Bonneville	Jun. - Oct
Middle Columbia	unknown	adult		Tag	3	50	0	Bonneville	Jun. - Oct
Upper Columbia	unknown	adult		Tag	3	52	1	Bonneville	Jun. - Oct
Snake River	unknown	adult		Tag	3	398	1	Bonneville	Jun. - Oct
Snake River sockeye	unknown	adult		Tag	3	2	1	Bonneville	May - Jul.

Determinations by the FCRPS Branch for this research during the 2014 fish passage season and beyond will be made on an annual basis. The annual determination will depend upon information submitted in the research study's annual report, other new information, the annual anticipated status of fisheries stocks, and any subsequent review through regional review processes.

Please notify Blane Bellerud as soon as possible of any deviation from the terms and conditions in this determination. Please include the study's official title and the number (from the subject line) of the current Take Determination Letter in all communications regarding this study. Please provide the FCRPS Branch's Take Determination Coordinator, Blane Bellerud (503-231-2238, Blane.Bellerud@noaa.gov), with the annual report for this research study.

Sincerely,

A handwritten signature in blue ink that reads "Ritchie J. Graves". The signature is fluid and cursive.

Ritchie J. Graves, Chief
Columbia Hydropower Branch
Interior Columbia Basin Office
NOAA Fisheries, West Coast Region

cc: Christopher J. Noyes
Department of Fish and Wildlife Sciences, University of Idaho
Corner of 6th & Line St.
Moscow, Idaho 83844-3141
Noye4730@vandals.uidaho.edu