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December 4, 2002

MEMORANDUM

TO: Council Members

FROM: Mark Fritsch

SUBJECT: Funding Request - Project 2001-007-00, Evaluate live capture selective harvest methods for commercial fisheries on the Columbia River 2001-007-00

On December 4, 2002 the Washington Department of Fish and Wildlife, University of Idaho and Oregon Department of Fish and Wildlife requested early funding for all objectives (#5) associated with project 2001-007-00, *Evaluate live capture selective harvest methods for commercial fisheries on the Columbia River 2001-007*-00 (see attachment 1) [1].

Council staff, to date, has been unable to work with Bonneville Power Administration (BPA), Columbia Basin Fish and Wildlife Authority (CBFWA) and the sponsors to gather enough information to offer the Committee a staff recommendation for the request. If more information is secured in advance of the meeting, staff may be able to provide a recommendation at the meeting in Portland on December 10 -13, 2002. It should be noted that there is the real possibility staff will not be able to provide a recommendation in advance, and that the Committee discussion will be the vehicle to shape a recommendation.

Background

The purpose of this project[2] is to evaluate the use of live capture commercial fishing gears and methods to capture hatchery-produced spring chinook and minimize catch of, and impact to, bycatch including ESA listed species including post-release spawning success of spring chinook and steelhead, and measure hooking mortality in recreational salmon fisheries.

[1] Initial letter was received on December 2, 2002 requesting early action for objectives 1 - 3 at $831,510 and stating that the additional needs associated with objectives 4 and 5 (totaling $466,410) would be addressed at the January meeting.

[2] Project 2001-007-00 as currently being reviewed is a combination of project 2001-007-00 and 35018.

The project is currently part of the Mainstem/Systemwide project review with #103 other projects. The request is further complicated by the exercise ongoing at Bonneville in determining available funding for FY 2003.

The ISRP Final Review of Fiscal Year 2003 Mainstem and Systemwide Proposals (ISRP 2002-14) stated the following.

"Fundable in part, Objectives 1-3 moderate to high priority. During the response cycle, Project #200100700 and #35018 were combined under #200100700. The objectives combined from the WDFW 35018 are fundable (objectives 1 to 3 in the current). However, for the two objectives originally under 200100700, the research components of objective 4 are fundable, but objective 5 is not fundable. Disagree with CBFWA's Urgent recommendation and disagree with the funding reduction proposed by the sponsor."

As you will note (see attachment 1) the sponsors are requesting funding for all 5 objectives associated with this project at a cost of $1,297,920. Funding associated with the ISRP recommendation outlined above for objectives I, 2,3 and 4 would total $1,007,098. CBFWA recommended funding only the ongoing objectives 1,4 and 5 totaling $923,551.

Attachment 1: Letter received by Council staff on December 4, 2002 requesting early funding for Project 2001-007-00, *Evaluate live capture selective harvest methods for commercial fisheries on the Columbia River 2001-007-00*.

Washington Department of FISH and WILDLIFE

December 4, 2002

Frank L. Cassidy, Jr., Chair
Northwest Power Planning Council
851 SW Sixth Avenue, Suite 1100
Portland, OR 97204

Dear Chairman Cassidy:

We and our two project co-operators (University of Idaho and Oregon Department of Fish and Wildlife) are writing to request early funding for project #200100700, 'Evaluate Live Capture, Selective Harvest Methods'. We address the Independent Scientific Review Panel (ISRP) concerns in the attached briefing paper.

Project #200100700 has enabled commercial fishing opportunity on healthy hatchery stocks while evaluating how different mesh sizes affect salmon survival, educating commercial fishers, and developing our understanding of how capture and release affects endangered species. This project is currently part of the solicitation associated with the Mainstem/Systemwide project review and is scheduled for review by the Fish and Wildlife Committee in February with the funding decision made in March 2003. However, we need to receive funding by January 15, 2003, so that equipment can be ordered and set up in time to begin fishing, tagging, and monitoring by February 15, 2003. This project received funding from BPA in 2001 as an "innovative project" and again in 2002 as a "high priority project." For 2003 through 2005, our goal is to continue this project's ongoing objectives and move ahead with new objectives that have evolved from the previous two years' study results.

For clarification, we attach two tables. Table A lists ongoing project #200100700 by objective and cost, and provides the Columbia Basin Fish and Wildlife Authority and the ISRP reviews. The 'Total/Summary' column summarizes the cost for all objectives and each review body's recommendations. Table B lists the cost for 2003 to 2005 by funding category.

If you should require further information to assist you in making this decision, please contact Charmane Ashbrook, Project Manager, at (360) 902-2672.

Sincerely,

Charmane Ashbrook
WDFW
(360) 902-2672
ashbrcea@dfw.wa.gov

cc: Jim Scott
Craig Burley
Bill Tweit
David Johnson
Chris Peery
Lew Atkins
Doug Marker
Karl Weist
John Skidmore
Patrick Frazier
Jeff Koenings
Ron Boyce
Mark Fritsch
Tom Karier

Enclosures (2)

Table A. Ongoing project 220100700, 'Evaluate Live Capture, Selective Harvest Methods' listed by objective and cost for 2003, with Columbia Basin Fish and Wildlife Authority (CBFWA) and Independent Scientific Review Panel (ISRP) reviews. The 'Total/Summary' column summarizes the cost for all objectives and each review body's recommendations.

Objective	Total	CBFWA Review	ISRP Review
1. Evaluate long term survival of steelhead following capture in tangle nets. Ongoing objective.	457,141	Urgent priority	Fundable
2. Evaluate spawning success of spring chinook and steelhead following capture in tangle nets. New objective.	198,373	Not prioritized for funding	Fundable
3. Evaluate long-term survival of sport captured spring chinook, fall chinook, and coho. New objective.	175,996	Not prioritized for funding	Fundable
4. Determine effects of varying net mesh size on species-specific catch rates. Ongoing objective.	175,588	Urgent priority	Fundable in part (research components only)
5. Determine the feasibility of using refined live capture selective fishing methods and gear in a full fleet demonstration commercial fishery. Ongoing objective.	290,822	Urgent priority	Not fundable until ESA requirements, mesh sizes and associated mortality, and agreement on the fishery are determined
Total/Summary	1,297,920	Fund 1,4 and 5	Fund 1,2,3 and parts of 4

Table B. The cost for the next three years by category is shown in the table below.

	FY 2003	FY 2004	FY 2005
Planning & Design Phase			
Construction & Implementation Phase	1,297,920	1,252,920	1,252,920
O&M Phase			
M&E Phase			
Total Budget	1,297,920	1,252,920	1,252,920

Project #200100700 Evaluate Live Capture, Selective Harvest Methods

Overview:
The Commissions for Washington and Oregon State Departments of Fish and Wildlife have agreed that a commercial fishery will occur in the Columbia River for 2003. Objective 5 of project #200100700 provides necessary monitoring for holding a tangle net fishery on the Columbia River. Monitoring is necessary because of potential impacts to endangered spring chinook and steelhead stocks. We are striving to make the monitoring as scientifically meaningful as possible so that we can accurately measure impacts.

Hatchery production was chosen to make up for lost natural production as a result of the dams in the Columbia River. We now have a situation where there are healthy hatchery spring chinook stocks in the midst of weak natural stocks. Mass marking provides the means to differentiate from hatchery and natural stocks. The combination of mass marking and gear that allows fish to be captured and released unharmed (selective fishing) allows the hatchery fish to be harvested through providing recreational and commercial fishing opportunity. Fishing opportunity is part of the reason for hatchery stocks. Without these fisheries, surplus fish return to the hatcheries. Surplus fish at the hatcheries raises the question of why hatcheries release so many fish when they cannot be harvested. The selective fishing philosophy holds that mitigation agreements made with Bonneville Power Administration to release hatchery fish for harvest opportunity and stock propagation can continue in the midst of protecting weak natural stocks. Part of the testing required to see if tangle nets will serve as a selective fishing method for gillnet fishers is to hold full fleet demonstration fisheries. These fisheries, like recreational fisheries, need to be monitored to assess catch rate, mortality, and by-catch issues. During the next few years, these fisheries will also provide time for fishermen to become accustomed to a new style of fishing. In 2002, many steelhead were captured during the commercial fishery and as a result the net size has been reduced from 5 ½" to 4 ¼" for the spring chinook tangle net fishery in 2003.

Sponsors' reply to the Independent Scientific Review Panel (ISRP) concerns
Below we list the five objectives in project #200100700, the ISRP concerns and our response. The ISRP comments are italicized for clarity.

The objectives for project #200100700 are:

1. Using a series of mark-recapture experiments, and using fish trapped in the adult collection facility in Bonneville Dam as controls, estimate the survival of adult winter steelhead captured and released from two sizes of tangle nets suitable for targeting spring chinook salmon. Estimate the catch efficiency of steelhead in each net type. Estimate the net depth range in which 90% of the steelhead are captured. (Ongoing objective)
2. At Cowlitz and Kalama hatcheries, compare the egg-to-fry survival of females captured and released from tangle nets fertilized with males captured and released from tangle nets to the egg-to-fry survival of fish not captured in the gears for spring chinook salmon and winter steelhead. On the Kalama River, compare the number of offspring produced per adult. (New objective)
3. Estimate the long-term survival of spring chinook, fall chinook and coho salmon captured and released during recreational fisheries. (New objective)

4. Determine effects of varying net mesh size on species-specific catch rates, condition at capture profiles, and immediate- and short-term survival rates of adult spring chinook and steelhead. (Ongoing objective)
5. Determine the feasibility of using refined live capture selective fishing methods and gear in a full fleet demonstration commercial fishery. (Ongoing objective)

Objectives 1-3: *"While the ISRP had a number of small comments on the WDFW proposals, the sponsors adequately replied to our questions."*

Objective 4: *"…the ISRP is strongly inclined to recommend proceeding with the research components of objective 4…"*

Objective 5: *"…the ISRP is strongly inclined to …defer any support for a commercial fishery trial until the requirements under the ESA are established, appropriate mesh sizes and associated mortality rates are determined, and all users agree on the fishery."*
Sponsors: ESA impact rates have been established for all listed species within the Columbia River basin and all fisheries within the Columbia River basin are managed to remain within these impact levels. For all non-Indian freshwater fisheries combined the impact rates are 15% for listed Willamette spring chinook, 2% for listed upriver spring chinook, and 2% for listed steelhead. The requirements under the ESA are established and the mesh size chosen for 2003 (4.25" mesh) should greatly reduce lethal take and impacts by the fishery on listed stocks. Although 5.5" mesh appears to function as a tangle net for chinook salmon, it does not for steelhead. Using data collected in 2002, we calculated length-girth relationships that have identified 4.25" mesh as having the potential to greatly (>80%) reduce the number of steelhead that are captured by gilling. The managing states have adopted several rules encouraging fishers to experiment with net designs in 2003 that should reduce steelhead bycatch (large-mesh excluders and drop lines). These changes should greatly reduce the impact of the fishery and facilitate recognition of this as a selective live-capture fishery for all species. Impacts are calculated by determining the number of mortalities associated with non-Indian fisheries as compared to the total return. Non-Indian fisheries are prosecuted under Section 7 of the federal ESA. As part of this process the states are required to prepare a Biological Assessment describing all proposed fisheries and the associated impacts to listed species. This Biological Assessment is provided to National Oceanic Atmospheric Administration Fisheries, which evaluates the information included in the Biological Assessment and issues a Biological Opinion. The Biological Opinion describes fisheries and associated impacts that are acceptable under the federal ESA. Once a Biological Opinion is issued the states are the allowed to prosecute fisheries within the restrictions set forth by the Biological Opinion.
A maximum mesh size has been adopted for 2003 and that mesh size is 4-1/4". The mesh size of 4-1/4" was adopted based on data collected from previous studies and fisheries, especially results of the 2002 commercial demonstration fishery. In 2002 the maximum mesh size was 5-1/2" and this mesh size was effective for spring chinook but captured steelhead in a non-benign manner. Based on data collected from returning steelhead in 2002 it was determined that reducing the maximum mesh size from 5-1/2" to 4-1/4" would greatly reduce the negative impacts of steelhead capture during the fishery. In essence the change in mesh size is expected to result in the net acting like a tangle net for steelhead in 2003 as compared to 2002 when the net acted as a gill net for steelhead. Data concerning mortality rates will be collected by this project. The mortality rate for spring chinook is based on the 2001 study which estimated a 9.5% mortality rate for spring chinook captured using a 4-1/2" tangle net. Studies proposed to begin in mid-January of 2003 will provide data to help estimate steelhead mortality rates. Based on gear modifications planned for 2003 the steelhead mortality rate should be less than 10%, which would be similar to that for spring chinook

captured with tangle net gear. Steelhead mortality rates will be verified based on data collected from this proposed study.

The 2002 demonstration fishery has been adopted though a full and open public process that includes the Oregon and Washington Fish and Wildlife Commissions and the Columbia River Compact and for 2003 the same process will occur. Allocations of spring chinook between sport and commercial fisheries and the commercial live capture demonstration fishery were addressed several times in front of both commissions prior to adoption of the 2002 fishery. Additionally, the 2002 commercial demonstration fishery was formally adopted and managed through the Columbia River Compact. All joint state regulations i.e. g. gear, seasons) adopted decisions regarding the demonstration fishery were done so at an open public hearing. Since completion of the 2002 fishery both commissions have again addressed allocation issues and a possible demonstration fishery. Both commissions have shown strong support for continuing to conduct this demonstration fishery with proposed gear changes in place. Additionally, the commissions have shown strong support for continuing to work with the commercial fishing industry to make live capture commercial fisheries successful and live capture fisheries have strong support amongst commercial fisherman participating in non-Indian commercial fisheries occurring in the lower Columbia River.

ISRP: Numerous analytical questions remained concerning the [objective 4 and 5]…response. That response did provide some preliminary analysis of the 2002, but not the data from 2000 and 2001 that were used in decisions to continue and expand the commercial trials. For 2002 data, marked and unmarked chinook and steelhead are aggregated. Were there differences between marked and unmarked fish in condition at capture or in levels of delayed mortality?

Sponsors: We found no differences between marked and unmarked spring chinook or steelhead salmon in the immeditate, short, and long-term survival studies for 2001 and 2002. There were no differences between marked and unmarked fish in condition at capture or in levels of delayed mortality.

ISRP: How was the sample size –number and proportion to examine—determined? (0.7% chinook total catch sampled for condition at capture; 3.7% steelhead)

Sponsors: The required sample size of the total fishery harvest for the 2002 observation program was targeted at >30% based on pre-season assumptions of the number of boats that could be observed using random techniques. The actual sample size was determined by dividing the total number of spring chinook observed by the total landed catch. The sample size of steelhead was determined as the number of fish observed divided by the estimated handle. Estimated handle was determined as the ratio of observed steelhead to observed chinook multiplied by the ratio of chinook landed:chinook observed. Sampling occurred for the duration of the commercial fishery. The sampling design focused on obtaining a random sample of the fishery as opposed to maximizing sample sizes.

ISRP: What were the proportions of marked and unmarked fish in the samples?

Sponsors: The proportion of marked and unmarked spring chinook in the commercial fishery and the long-term mortality study was 1:1. The proportion of marked and unmarked steelhead in the commercial fishery was 1:0.6. These proportions were similar to the mark rates observed in sport fisheries and escapement areas; therefore it appears the sample was random. The proportion of marked and unmarked steelhead in the long-term mortality study was 1:1.

ISRP: How informative are the pooled data collected under different protocols?

Sponsors: The pooled data collected under different protocols were not different. Daily estimates were developed using consistent methods. The final estimates were pooled using blocks of fishing days when the chinook and steelhead ratios were similar; there were 4 blocks for the entire season.

We looked at a variety of ways to pool the data (e.g. 24 hour day, statistical week, fishing zone) and came up with similar results for each.

ISRP: The focus in 2003 would be on 3.5"to 4.5" mesh. If mesh size and gear configuration are changed from the past fishery, how useful are the regressions estimated only on mesh size?
Sponsors: The net size for 2003 will be 4.25" mesh based on limited length-girth-mesh size data collected in 2002. The regressions we used to look at the reduced impacts to fish by mesh size will still be valid. Mesh-specific test fishing in 2003 and beyond is necessary to help validate and refine the regressions developed in 2002 and field data collected in 2000-2001.

ISRP: How will the multivariate data for mesh size, hanging ratio, etc. be analyzed?
Sponsors: We will use paired tests of log-transformed mean catch rate data and will look at one variable in each test using standardized gear and random sampling methods. Differences in immediate and short-term survival will be conducted with ANOVA (general linear models) using Tukey's test of independence to identify statistical differences. All fish will be held in identical holding facilities. Differences in species-specific capture condition between gear parameters will be evaluated with chi-square analyses. In addition, analysis of covariance will be used to determine if various components of net configuration act in combination to effect catch rate.

ISRP: What sample design does the project have to support the analysis?
Sponsors: Data will be collected concurrently during the same time and area. Contracted fishers will be randomly assigned study nets each day. Nets for mesh evaluation are comprised of multiple 50-m panels differing only in mesh size. Fishers conduct several drifts each day for several weeks. Additional testing will be conducted to evaluate the feasibility of incorporating a large-mesh panel along the upper margin of the net to exclude steelhead. Nets for this evaluation will be the same length, depth, and hanging ratio and use 4.25" mesh, except one net will have 12" mesh along the upper 6" of net. Nets will be fished simultaneously for multiple days in the same fishing area. All catch-rate data will be standardized and log-transformed. Trained staff will be onboard each vessel using appropriate handling techniques. All gear, capture methods, and recovery boxes are representative of actual fishing conditions.
For objective 4 we will test each variable separately. We will also rotate which fishers use each gear and will rotate the net from one end to the other to reduce bias. For objective 5 we will slightly modify the sampling plan we used in 2002. We will deploy observers in boats by fishing area. The samplers will randomly sample boats and for each boat sampled, will observe for an entire drift. The observers will sample as many fishers as possible within the area for that day. The next day, the observers will go to another area and again sample an entire drift on as many boats as possible within that area. This will give us a representative sample from the fishery by time and area.

ISRP: Mention is made of ANOVA techniques, but the question about sample design to support the ANOVA is not answered.
Sponsors: We will use a general linear model with Tukey's test to determine statistical differences ($P<0.05$) of log-transformed catch-per-set data.

ISRP: Sample size for the monitoring program is also not addressed.
Sponsors: The target sample size for the 2003 monitoring program will be 20% of the participating fishers which should allow us to observe 20% of the harvested catch and associated bycatch. Sampling wil be distributed throughout the lowere river in proportion to fishing effort. In 2002 we expected the sampling rate would be about 30% but it was actually about 6% of the total season harvest. The difference between expected and actual sampling rates was the result of unanticipated down-time for agency vessels and reduced sampling efficiency due to nighttime fishing seasons. .

We have acquired a new vessel for use in 2003 which should be more dependable. In addition, beginning in 2003 we will do less night fishing and this will increase our sampling rate.

ISRP: Are wild and hatchery steelhead analyzed separately?
Sponsors: We analyzed the wild and hatchery length frequencies separately and observed no difference during the fifteen-day period of the commercial fishery. Mortality rates for steelhead are highly correlated with length and girth that essentially determines the capture method (tangling, gilling, or wedging). Since we found no difference in fish size, we did not develop separate mortality rates for wild and hatchery steelhead.

ISRP: Is the sampling rate of wild steelhead sufficient to calculate impacts? Impact isn't defined, but presumably assumptions about post-release survival will influence their determination.
Sponsors: Impact is defined as a percentage of the total run where the number of mortalities estimated to occur in the fishery is divided by the estimated return for that year. We believe the sampling percent of unmarked spring chinook and wild steelhead salmon is sufficient to calculate impacts. (The sampling percent is defined as the number of fish sampled divided by the catch). All impact estimates were reviewed for technical merit by the U.S. v. Oregon Technical Advisory Committee, which includes representatives from NOAA fisheries. For 2002, we sampled 3.5% of the unmarked spring chinook and steelhead salmon that were captured. The estimated capture of unmarked spring chinook salmon was 14,800 and we sampled about 518 of these fish. The estimated capture of unmarked wild steelhead salmon was 14,000 and we sampled about 490 of these fish.

ISRP: Immediate and short-term mortality are defined; moderate term mortality is not.
Sponsors: Moderate term mortality is defined as fish that survive to be re-captured in commercial or sport fishing gear or are recovered on spawning grounds or at hatcheries. This definition was associated with the telemetry tag portion of objective 4. We removed the telemetry related work in the 2003 through 2005 project to meet Columbia Fish and Wildlife Authority's cost reduction request.

ISRP: This ISRP was particularly surprised that comments were not submitted from the proponents of 35018 [should be 20010070] concerning the analyses presented in the Gayeski response and to the Columbia River Compact prior to the ISRP's preliminary report.
Sponsors: The Gayeski response was sent to the ISRP on August 23, 2002, the same day we sent the ISRP our combined proposal. We were unaware of the Gayeski response and the corresponding need to address it prior to responding to the initial ISRP comments, and so we did not do so.

However, several issues raised by Gayeski regarding steelhead handle and mortalities have already been addressed through gear modifications (4.25" mesh and optional steelhead excluder panel) adopted by Oregon and Washington at the September 12, 2002 Compact hearing. The 2003 fishery observation plan will also be evaluated with respect to concerns raised by Gayeski. In addition, several of the key issues raised by Gayeski are due to misinterpretation of the data. For example, he was specifically concerned that sample sizes of capture-release condition profiles did not match. He assumed observers watched each fish enter and exit the recovery box. This was not always possible due to a need to move periodically between fishing boats in a given area each day. Therefore, the profiles are actually based on the overall percentages of fish in each of 5 defined conditions upon entering and exiting the box and not a paired study. Sample sizes do not need to match. Changes in percentages indicate the effect of the recovery system.

Likewise, much of his concern stems from perceived differences in results for a given mesh size among separate portions of the 2001 study. Many of these differences likely result from major differences (trammel.vs. no trammel) in gear configuration among different sections thereby making comparisons difficult.

Sponsors' response to other concerns regarding objective 5

Issue 1: Implementation of a full-scale live capture commercial demonstration fishery in 2003 is premature because the gear tests are incomplete at this time.

- Implementation of a full-scale fishery is a critical part of the experimental process because of the uncertainty associated with applying results observed in a small-scale (2-3 boats) test fishery to a full-scale fishery (75-150 boats). The small-scale test fishery occurs under controlled circumstances to ensure that specific questions concerning net construction (appropriate mesh size, hang ratios, etc…) are answered but does not fully examine logistics of incorporating the most appropriate gear construction and fishing methods into a full-scale fishery. An example of this is the documentation of the unexpectedly high steelhead handle during the 2002 commercial demonstration fishery. This large steelhead handle was not predicted based on the results of the small-scale test fishery that was conducted in 2001.
- The proposed full fleet demonstration fishery for 2003 will include a 4 1/4-inch maximum mesh size restriction that is based on results from the 2002 study. We believe that this mesh size restriction will result in gear being effective relative to chinook selectivity and minimizing steelhead impacts. Data used to determine the appropriate mesh size for 2003 was collected from previous small-scale test fisheries, the 2002 full-scale demonstration fishery, and returns to escapement areas in the lower Columbia River basin during 2002.

Issue 2: If the states are confident enough or willing to implement a full-scale commercial demonstration fishery then why do they still need to conduct additional gear tests?

- Information to date indicates that there still may be significant benefits of fine-tuning mesh size and net configuration on chinook catch rates and chinook and steelhead handling mortalities.
- If assumptions concerning the gear to be used in 2003 are incorrect this gear testing will provide the data necessary to make adjustments to gear regulations for 2004.

Issue 3: What would the consequences be relative to the 2003 fishery if the states did not receive the BPA funds for fishery monitoring and evaluation as per objective 5?

- The states would need to fund the fishery monitoring and evaluation program themselves if the decision was to retain the currently proposed monitoring and evaluation plan. State dollars are not available to fund such an endeavor at this time. The Fisheries Management Enhancement Program concerning Willamette River spring chinook requires the release of wild chinook; therefore, non-selective fisheries are no longer an option for spring chinook in the Columbia River.
- The commissions of both states approve of selective commercial fishing in the Columbia River for 2003. For this to occur, the states would negotiate some lesser fishery monitoring and evaluation program with the NOAA Fisheries that the states are able to fund.
- The states would reconfigure, and likely reduce, the fishery to comply with monitoring and evaluation requirements set forth by the NOAA Fisheries.

Issue 4: Why should the BPA pay for any monitoring and evaluation of a full-scale fishery?

- The proposed 2003 fishery is still experimental in that it is employing incompletely tested gear on a large scale.
- Monitoring and evaluation of a fullscale fishery was part of the original scope of this project.
- Objective 5 is being proposed in direct response to RPA 164 set forth in the 2000 FCRPS Biological Opinion:

  > The Action Agencies shall work with NMFS, USFWS, and Tribal and state fishery management agencies in a multiyear program to develop, test, and deploy selective fishing methods and gear that enable fisheries to target nonlisted fish while holding incidental impacts on listed fish to within NMFS-defined limits. The design of this program and initial implementation (i.e., at least the testing of new gear types and methods) shall begin in FY 2001. Studies and/or pilot projects shall be under way and/or methods deployed by the 3-year check-in." and RPA 167 "The Action Agencies shall work with NMFS, USFWS, and Tribal and state fishery management agencies to develop improved methods for estimating incidental mortalities in fisheries, with particular emphasis on selective fisheries in the Columbia River basin, doing so within the time frame necessary to make new marking and selective fishery regimes feasible. The action Agencies shall initiate studies and/or develop methods by the 3-year check-in.