Recommendations Regarding the Utilization of Hatchery Returns of Salmon in Excess of Hatchery Production Goals

A Report to the Natural Resource Committees of the Washington State Legislature pursuant to ESSB 6444 section 307, subsection 18

Washington Department of Fish and Wildlife
November 1, 2010

Executive Summary

The Washington State Legislature included in the 2010 Supplemental Operating Budget a directive to the Washington State Department of Fish and Wildlife (WDFW) to "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks." The WDFW was directed to summarize the discussions, outcomes, and recommendations from the stakeholder process in a report to be provided to appropriate legislative committees by November 1, 2010. The proviso also instructs the WDFW to give due consideration to the recommendations before soliciting or awarding a new surplus salmon disposal contract.

Hatcheries operated by WDFW are an important tool to both help maintain salmon and steelhead stocks at risk and provide sustainable fishing opportunities. Almost all salmon hatchery production is linked to fulfilling state-tribal salmon management agreements or federal requirements for mitigation from habitat loss or damage. Hatchery salmon represent over 75% of all salmon harvested in the state, and these recreational and commercial fisheries can be an important source of jobs and revenue, particularly in rural areas. In addition to salmon, the hatcheries also produce steelhead, trout, and warmwater species for recreational fisheries.

Salmon returns to hatcheries may exceed the number necessary to meet production goals because of the need to protect comingled wild salmon or the implementation of fishery management strategies to ensure the protection and perpetuation of the salmon resource. Fisheries are managed each year to ensure sufficient wild salmon return to spawn in Washington's rivers, sufficient hatchery fish return to hatcheries to support future production, and to provide fishing opportunities for hatchery fish. Fishing levels are limited by the number of salmon forecasted to return and by the need to protect wild salmon. Abundant hatchery fish are often mixed with wild salmon, many of which are listed under the federal Endangered Species Act (ESA). Forecasting salmon returns, though bolstered by large multi-year data sets, complex model analyses, and scientific information, is an inexact science. To account for this uncertainty, fisheries are managed in a conservative manner to ensure the protection and perpetuation of the salmon resource.

Salmon in excess of hatchery production goals are valuable for many purposes including: 1) distribution to rivers to provide marine derived nutrients; 2) sale to a salmon processor to generate revenue for the Regional Fisheries Enhancement Group (RFEG) Program (RCW

77.95.060); or 3) donation to food banks to meet high quality protein needs of economically depressed people. Since the number of fish is limited, and the needs of each potential use great, diverse perspectives often exist regarding the best use of this state resource.

The legislature directed WDFW to work with stakeholders to identify how to most effectively use salmon in excess of hatchery production goals to meet these needs (i.e., "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks.") . The agency contracted with the William D. Ruckelshaus Center ("Center") to promote an effective stakeholder process. In addition, the agency contracted with the Center to conduct a Situation Assessment and develop an Economic Analysis of the various disposition options. These products were used to establish a baseline of information for use by stakeholders in the collaborative process as recommendations were developed to meet the intent of the legislation.

Prior to collecting input from the stakeholders on how to improve the disposition of surplus salmon program, the WDFW identified its critical needs relative to this program. The WDFW critical needs include: 1) removal of all of the salmon surplus from the hatcheries at no additional cost to the WDFW; 2) an increase in revenue to the RFEG Program; 3) continuation and enhancement of salmon contributions to food bank(s) and the Department of Corrections (DOC); and 4) reduced administration of the Surplus Salmon and Egg Program. In addition, we acknowledged that ongoing reductions in state funding of hatchery programs and the implementation of hatchery reform would both likely reduce the number of salmon surplus to needs in the future. Thus, efforts to increase revenues to the RFEG program and enhance contributions to food banks must be considered relative to the future overall availability of salmon.

The stakeholder process included three public meetings, 20 interviews, as well as numerous individual discussions. Although the stakeholders disagreed on some things, there appeared to be participant consensus relative to: 1) the food bank and DOC program was valuable and should continue or be enhanced; 2) the RFEGs need more funds to continue restoring salmon habitat in local watersheds; and 3) nutrient enhancement has value and should be continued or enhanced.

Based upon the collaborative stakeholder process, the WDFW provides the following recommendations to address the legislative request.

Best utilize the resource by:

a) Prioritizing low quality and unusable salmon at federal and local funded hatcheries for use in nutrient enhancement.
b) Prioritizing spawned females and unusable salmon at state funded hatcheries for use in nutrient enhancement.
c) Stipulating within the Request for Qualifications and Quotations (RFQQ) that the surplus salmon and disposal contract have a portion of salmon or the biomass byproducts from processing be made available for nutrient enhancement.

Increase revenue to the RFEG Program by:

a) Sell all fish surplus at state funded hatcheries, except females used in hatchery broodstock.
b) Require that a portion of all eggs from females sold be provided back to the Department for deposit into the RFEG revenue account.
c) Structure the RFQQ to be more competitive to increase the bid value associated with the sale of salmon surplus to state hatchery needs.

Enhance salmon nutrients to the food banks by:

a) Expanding the future surplus salmon disposal contract to include steelhead for the sole purpose of distribution to the food banks.
b) Prioritizing high quality (food quality) salmon from federal and local funded hatcheries for distribution to the food banks.
c) Require a portion of the salmon surplus at state funded hatcheries to be made available to the statewide food bank.

Introduction

Hatcheries operated by the Washington Department of Fish and Wildlife (Department) are an important tool to both help maintain salmon and steelhead stocks at risk and provide sustainable fishing opportunities. Almost all salmon hatchery production is linked to fulfilling state-tribal salmon management agreements or federal requirements for mitigation from habitat loss or damage. Hatchery salmon represent over 75% of all salmon harvested in the state, and these recreational and commercial fisheries can be an important source of jobs and revenue, particularly in rural areas. In addition to salmon, the hatcheries also produce steelhead, trout, and warmwater species for recreational fisheries.

Salmon returns to hatcheries may exceed the number necessary to meet production goals because of the need to protect comingled wild salmon or the implementation of fishery management strategies to ensure the protection and perpetuation of the salmon resource. Fisheries are managed each year to ensure sufficient wild salmon return to spawn in Washington's rivers, sufficient hatchery fish return to hatcheries to support future production, and to provide fishing opportunities for hatchery fish. Fishing levels are limited by the number of salmon forecasted to return and by the need to protect wild salmon. Abundant hatchery fish are often mixed with wild salmon, many of which are listed under the federal Endangered Species Act (ESA). Forecasting salmon returns, though bolstered by large multi-year data sets, complex model analyses, and scientific information, is an inexact science. To account for this uncertainty, fisheries are managed in a conservative manner to ensure the protection and perpetuation of the salmon resource.

Salmon returns in excess of production goals occur at many hatcheries (Fig. 1) and are valuable for many purposes including: 1) distribution to rivers to provide marine derived nutrients; 2) sale to a salmon processor to generate revenue for the Regional Fisheries Enhancement Group (RFEG) Program (RCW 77.95.060); or 3) donation to food banks to meet high quality protein needs of economically depressed people. Since the number of fish is limited, and the needs of each potential use great, diverse perspectives often exist regarding the best use of this state resource.

The Washington State Legislature included in the 2010 Supplemental Operating Budget a directive to the Washington State Department of Fish and Wildlife (WDFW) to "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks." The Department was directed to summarize the discussions, outcomes, and recommendations from the stakeholder process in a report to be provided to appropriate legislative committees by November 1, 2010. The proviso also instructs the Department to give due consideration to the recommendations before soliciting or awarding a new surplus salmon disposal contract.

Historical Practices for Distribution of Surplus Salmon

Prior to the early 1970s, the distribution of salmon surplus to hatchery needs was not well organized or systematic in disposal practices. Hatchery managers freely distributed adult salmon surplus to local correctional institutions or other programs for use as food. A large number of surplus salmon were also placed in landfills. The inconsistent approach and concerns that full or optimal utilization of the resource was not occurring led to investigations by the Washington State legislature. As a result of this investigation, best business practices were adopted and codified. The sale of surplus salmon and viable eggs by the Washington Department of Fisheries (WDF) were allowed under fairly strict guidelines (see RCW 77.12.451) and were intended to help offset hatchery operating costs.

In 1990, the Regional Fisheries Enhancement Group Program (RFEG) was initiated (RCW 77.95.060) and in 1995 was granted the authority by the legislature to utilize the revenue generated from the Department's sale of salmon surplus for a portion of their overall funding. By statute (RCW 77.12.177, (5)), the Department sells from state funded facilities salmon surplus to hatchery needs and deposits this revenue into the RFEG Program account.

By the early 1990s, there was an expanded interest internationally to purchase viable eggs from the State of Washington for use in salmon culture and species introduction programs principally in the southern hemisphere. This led the Department to sell viable eggs excess to hatchery needs, as well as the adult salmon surplus. Overall sale of these two principle products generated revenue in excess of $750K annually for deposit back into the general fund.

Concurrent with the increased revenue from the sale of viable eggs and adult salmon, the Department expanded its donation of high quality salmon to the statewide food bank for use in feeding the expanding needs of the indigent.

As federal ESA salmon listings and associated fishery restrictions began to take hold in the late 1990s in Washington, the Department expanded the distribution of salmon donated to the statewide food bank(s). About this same time, there was also a growing interest in distributing adult salmon carcasses in the watersheds to provide marine derived nutrients for ecological benefits.

By the early years of the current decade, three principle pathways had evolved for disposition of adult salmon surplus to hatchery needs (Fig. 2): 1) donation to food banks, 2) sale for revenue to the RFEG Program, and 3) distribution into watersheds for nutrient enhancement. Each disposition pathway has explicit and implicit values that the Department wants to maintain. However, the Department has a finite number of salmon surplus to hatchery needs so finding a balance for achieving the needs is paramount to future operations.

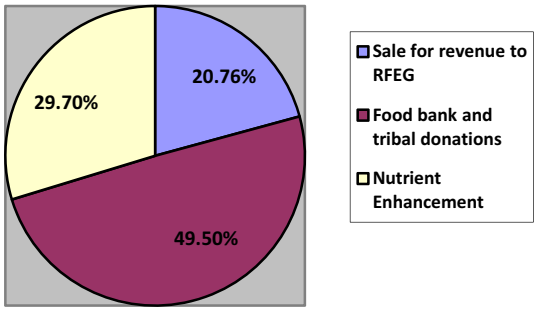


Figure 3. Average distribution of surplus salmon, 2006 – 2009.

In the most recent three years (2006 through 2009), an average 49.5% of surplus salmon were provided to foods banks and for tribal donations, 29.7% were provided for nutrient enhancement, and 20.8% were sold and generated revenue for the RFEG program (Fig. 3).

It is imperative that salmon surplus to hatchery needs are removed from facilities in an efficient, effective and timely manner since the Department does not have the financial base nor work force capabilities to dispose of the salmon. In addition, because the salmon are a perishable product the best utilization of the resource is optimized the closer removal occurs to mortality.

Stakeholder Process

The agency contracted with the William D. Ruckelshaus Center to provide facilitation, project management, conduct a Situation Assessment and develop an Economic Analysis of the various disposition options (Appendix E.).

The Situation Assessment provides the basis for understanding the different stakeholders' priorities as well as helping synthesize the areas of common value. The assessment also provided insight into areas of opportunity for improvement (Appendix A.). Given the number of potentially-interested stakeholders, it was determined that a representative set of stakeholders numbering no more than 25 would be interviewed for the Situation Assessment. Twenty interviews were conducted with affiliations as follows: six represented RFEGs, three worked at the Department of Corrections, three represented food banks, three were commercial fish processing companies (one of which is the current contract holder), one was with the Northwest Indian Fisheries Commission, two were with fish conservation groups, one was a WDFW hatchery manager and one was a commercial fisher.

The interviewees were asked a set of 11 questions pertaining to their involvement and values related to the Surplus Salmon and Egg Program. The general themes were synthesized and summarized in the Situation Assessment completed by Christina Sanders, Project Manager, Division of Government Studies and Services, Washington State University. Concurrently, an Economic Assessment of the Surplus Salmon and Egg Program was conducted by Dr. Daniel Huppert of the University of Washington (Appendix B.).

Department staff produced a 'Fact Finding' document (Appendix C.) that provided an overview of how other states, provincial governments and the federal government deal with surplus salmon returning to their hatcheries. In addition, the Department developed a short history of the Surplus Salmon and Egg Program using some limited historical data and information from retired WDFW employees involved in the program (Appendix D.).

The Situation Assessment and Fact Finding documents were updated based on discussion and suggestions. Updates to the Economic Analysis were also initiated. The first stakeholder meeting was held on September 2, 2010 in Olympia. All stakeholders who participated in the Situation Assessment interview process were invited to attend. In addition, there were other interested stakeholders that attended the meeting. The Economic Analysis, Situation Assessment and Fact Finding documents were provided and presentations were given on each paper. This meeting focused on developing a "common understanding" of the issues with all stakeholders. Though not mentioned explicitly in the legislation, nutrient enhancement was a great concern to many of the stakeholders. The group as a whole determined to keep nutrient enhancement as a viable pathway for disposition believing that this pathway was implicit in the legislation by virtue of "…to best utilize the resource…".

The second stakeholders' meeting was held in Olympia on September 20, 2010. All the participants from the first meeting were invited and a few additional interested stakeholders participated. The meeting focused on input from the stakeholders regarding their specific recommendations to improve the surplus salmon and egg program, using the legislative language from ESSB 6444.

Prior to the third and final stakeholder meeting, the Department developed a draft proposal of strategies and actions to implement in the future to meet the values and outcomes articulated in the previous meeting. This draft document was distributed four days prior to the third meeting in order to give the stakeholders the opportunity to review the ideas in advance of the meeting.

The third and final stakeholder meeting was held in Olympia on October 12, 2010 (Appendix H.). All participants from each of the two previous meetings were invited to participate. The draft proposal was reviewed thoroughly during the course of the third meeting to ensure the Department understood the values and priorities expressed by the stakeholders as well as the ideas generated for improving the Surplus Salmon and Egg Program in the future.

Some feedback was provided during the course of the meeting which suggested the Department had not provided enough actions or strategies to ensure nutrient enhancement goals for watersheds would be achieved. In fact, some participants expressed concern that implementation of the recommendations as initially proposed during the third stakeholder meeting would actually result in less salmon carcasses for nutrient enhancement.

Given this concern, the Department further modified the initial proposal to add spawned females into the "unusable" category at state funded hatcheries so the carcasses would go towards nutrient enhancement.

Stakeholder Recommendations

Areas of concern or ideas on how to improve the Surplus Salmon and Egg Program focused on three principle areas that were either explicit in the legislation or other ideas generated during stakeholder meetings. Ideas and concepts were formulated and expanded through collaborative and interactive discussions. The following represents what the Department heard as the issues and solution ideas. *It is important to emphasize that most of the ideas below represent the opinions and perspective of a subset of stakeholders, and not necessarily a consensus opinion of the full stakeholder group:*

Stakeholders' recommendations to best utilize the resource:

a) Use fish for nutrient enhancement within the hatchery watershed. If this is not possible, invest in nutrient enhancement analogs to enhance other watersheds.
b) Reduce the amount of discarded or rendered fish.
c) Maximize the usage of byproducts.
    i) Direct salmon waste byproducts/ biomass from processing for use in nutrient enhancement analogs.
d) Remove eggs at the hatchery from females that go to the food banks.
    i) Consider use of non-agency staff to remove eggs.
e) Improve the efficiency of hatchery practices, including improving capacity and handling practices to take advantage of high quality fish in timely fashion.
    i) This would require increased hatchery staff or support from volunteers or contract holder to implement.
    ii) Implement processing standards to reduce inconsistency of application e.g. selection, protocol, projections, handling.
f) Expand the use of volunteers to help operate hatcheries.
g) Restore funding to hatcheries to increase staffing level so adult surplus can be more readily handled which provides better quality and overall value.
h) Excess carcasses are not a liability – they are of value.
i) Implement the RFEG Proposal (see Appendix G) either as an MOA with the Department or improve contract bid process.

Stakeholder recommendations to increase revenue to RFEG Program:

a) Change the bid process to make it more competitive as a means of increasing revenue.
b) Have a 100% increase in hatchery production to increase overall surplus.
c) Retain the value of eggs from females that are donated to food banks - donate fish but sell eggs.
d) Model the Washington Surplus Salmon and Egg Program after Oregon, Satsop Springs pilot, or Nisqually Tribe program (see Appendix C).
e) Improve accounting and transparency of revenue at all steps in process to provide complete transparency
f) Use salmon process waste byproducts biomass for analogs - no wastage.

Stakeholder recommendations to enhance nutrients to food bank(s) by:

a) Contemporary disposition practice has increased amount of fish going to the food banks.

i) Northwest Harvest indicated they need at least 200,000 lbs. of boneless skinless salmon fillets and patties.

b) Ensure consistency and certainty of quantity and quality of salmon distribution.
   i) Ensure process is Hazard Analysis and Critical Control Points (HACCP) approved.
   ii) Ensure that all fish are handled by a certified/licensed processor.

c) Monitor and/or limit distribution to local food banks - instead work to link them into statewide food bank network.
   i) Concerns were expressed regarding the risk/management liability for safe handling of perishable product if outside statewide food bank network.

d) Continue to meet the need for high quality protein to the Department of Corrections. DOC has been receiving processed product at a reduced rate through the existing contract for many years.
   i) DOC indicated they need at least 180,000 pounds.

WDFW's Proposed Actions and Strategies

Based upon the issues described and associated ideas developed through the stakeholder process, the Department *proposed that the following actions or strategies* be implemented in the future Surplus Salmon and Egg Program. These actions or strategies would enhance nutrients to the food banks and increase revenue to the RFEG Program, while also ensuring best utilization of the resource to meet other valuable activities such as nutrient enhancement:

1. Ensure a competitive contract process – though the RFEG proposal offers the opportunity to enter into a Memorandum of Agreement (MOA) with the RFEG Coalition to essentially run the Salmon Surplus and Egg Program for the Department, it may move from one end of the spectrum that has drawn criticism (single contract holder, inadequate opportunity for competition) to another end; an MOA with the RFEG Coalition could be subject to the same criticism.
   a. A competitive contract would have a better chance of ensuring certainty and transparency broadly acknowledged as desirous in stakeholder process.
   b. MOA would include at least three parties, potentially decreasing overall revenue potential as arrangement would have gross income from processing activities shared between RFEG and processor(s).
   c. RCW 43.19.1919 describes the process for disposing of state property surplus to needs. General Administration historically bid the Surplus Salmon and Egg contract, and thus would be subject to the rules and regulations of the competitive bidding process.

2. Limit contract to no more than a biennium before rebidding. No annual extension.
   a. Ensures contract adjusts to market changes to optimize revenue.
   b. Allows contract to be responsive to hatchery reform implementation, budget reductions and changes in market conditions.
   c. Rebidding on a more frequent basis (e.g. annually) would cost more money and staff time.

    d. Results from previous year would not be evident until second year, which would allow necessary and appropriate changes on an every two year basis.

3. Remove the 5-year experience qualification from current contract and replace with a bond.
    a. Require a bond of about $500,000 dollars to ensure the Department has the ability to pay for disposal of salmon that are not picked-up should there be a failure in the contract.

4. Require involvement with a licensed processor that is Hazard Analysis and Critical Control Points (HACCP) approved.
    a. HACCP is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product.
    b. This requirement is in the current contract and helps meet the principle issue of ensuring quality of salmon to economically depressed WA citizens.
    c. Consider including requirement for experience transporting and processing a perishable item.

5. Need to ensure 'chain-of-custody' to meet enforcement tracking and accountability.
    a. Can utilize fish tickets provided at hatcheries should volunteers do surplus salmon pick-up and transport to processor(s).

6. Contract needs to be statewide to ensure all values/priorities met. Federal and local funded facilities are instrumental to maintaining or enhancing food bank donations since the revenue generated from sale at those facilities is not deposited into the RFEG revenue account.
    a. If contract is separated into regions it is possible some regions would not receive bids because all fish picked up would need to be donated to the food banks. Thus it will cost the contract holder without opportunity for financial gain.

7. All food quality fish from federal and local funded facilities would be donated to Northwest Harvest and/or local food banks as requested (see above relative to revenue).
    a. Similar approach to United States Fish and Wildlife Service process (Appendix C.).
    b. All hatchery spawned female fish, low quality fish or unusable fish would go to nutrient enhancement, except pond mortalities and medicated carcasses.

8. For state funded facilities a portion of the food quality fish would be donated to Northwest Harvest. Currently this represents about 40% of total surplus fish from all facilities or 15% of total fish from state funded hatcheries.
    a. All food quality males would be donated to the food bank(s) to maintain provisions but, control opportunities for secondary financial gain from females with eggs.

b. All unspawned females and low quality fish would be sold to generate revenue for RFEG Program.
c. All hatchery spawned females and unusable fish would go to nutrient enhancement, except pond mortalities and medicated fish.

9. Require a portion of all eggs taken and sold from salmon either donated under contract or sold under contract ***at state funded facilities*** be directed back to Department for deposit into RFEG Program revenue account.
    a. Represent a specific bid classification; subject to bid process and RFQQ.
    b. Eliminates need for additional contract and enhances revenue for RFEG Program.
        i. Separate contract that requires removal of eggs at facilities may be inconsistent with current Washington Federation of State Employees (WFSE) Collective Bargaining Agreement articles. In addition, it increases Department liability.
    c. Department does not have the staff and necessary resources to remove eggs from females prior to putting into disposition process.
        i. Cutting females open in the field at hatcheries eliminates them from food bank disposition track because it violates food quality handling standards.

10. Include a component in the contract and extra points for taking Lake Whatcom kokanee and/or using them in the development of fish meal for nutrient enhancement analogs.
    a. Represents additional fish biomass that can be used for nutrient enhancement.
    b. Reduces Department rendering and provides cost savings of $3,000 annually.

11. Bonus points provided in RFQQ for bids that direct all salmon parts back to environment for beneficial use.
    a. Fish meal developed to support nutrient enhancement analogs.
    b. Would require processing for sterilization in some manner in order to meet Fish Health Disease Management policies.

12. Include steelhead in new Surplus Salmon and Egg contract.
    a. Food bank **only** disposition track provides means to enhance nutrients to food banks.

13. Accountability and transparency – annual summary report by contract holder provided back to Department[1].
    a. What was received – conversion of numbers to pounds of processed product
    b. What was donated to food banks.
    c. What was purchased by Department of Corrections at a reduced rate.
    d. What was sold as market product; fish and egg.
    e. Summary break-out that shows percentage of total surplus into each pathway.

Projected changes to the percentages in the proposed distribution pathway (Figure 4) are explained as follows:

[1] Items listed represent minimum and additional reporting requirements may be added.

Figure 1

Washington Department of Fish and Wildlife
Surplus Salmon and Egg Program

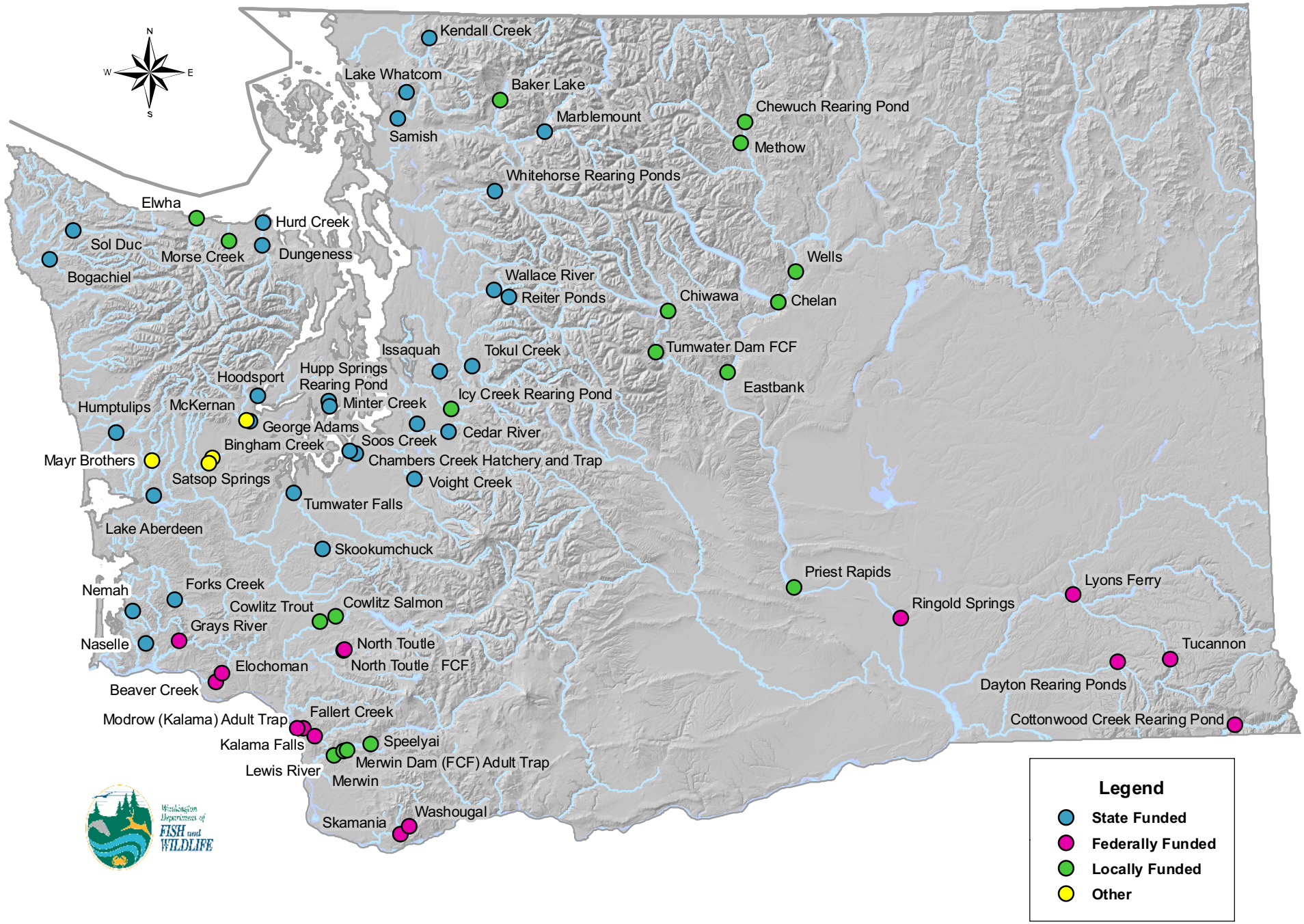
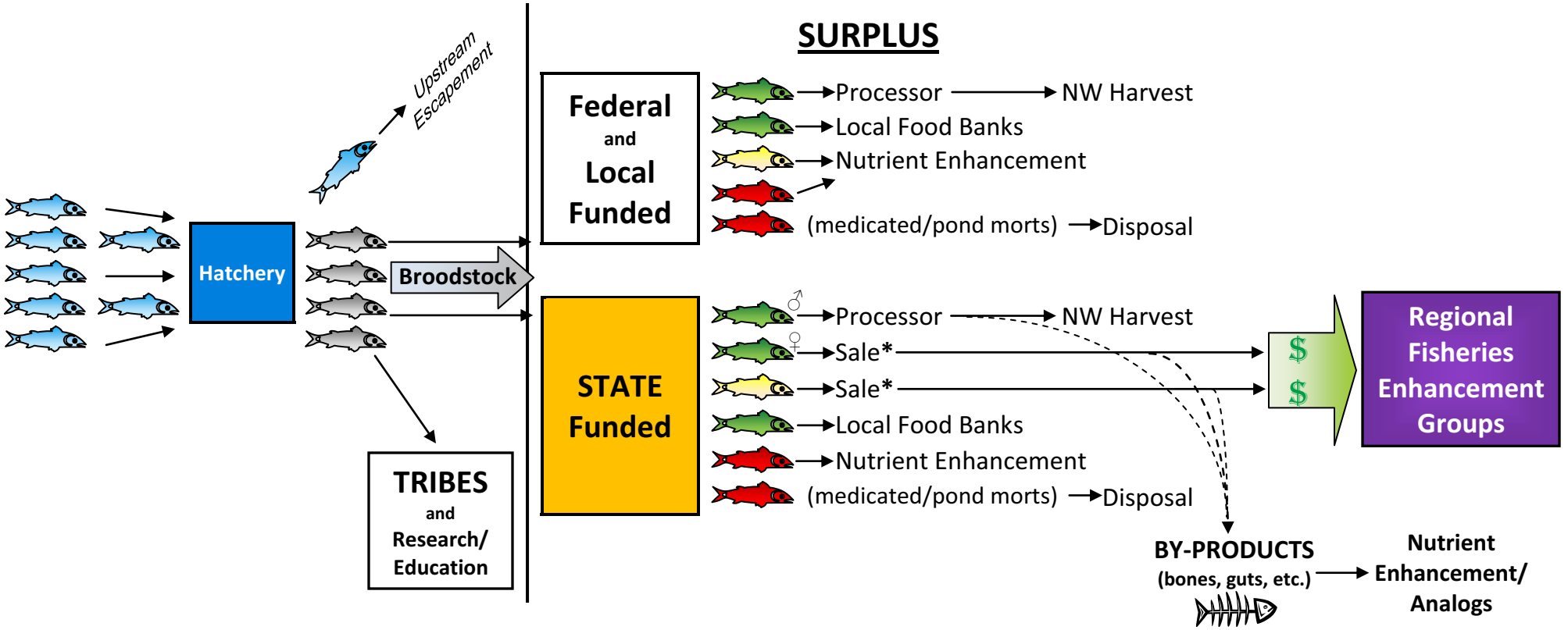


Figure 2

DISPOSITION "FLOW" OF RETURNING ADULT SALMON AND STEELHEAD TO WDFW HATCHERY FACILITIES



= Live Fish
= Dead Fish

= Quality Good (Human Consumption)
= Quality Low
= Quality Unusuable or spawned females

$= Revenue from Direct Sale of fish to Contractor + % of Egg Sales by Contractor

*** Salmon only – NO STEELHEAD**

October 25, 2010:LEK

Appendix A.

WASHINGTON STATE UNIVERSITY

THE WILLIAM D. RUCKELSHAUS CENTER

UNIVERSITY OF WASHINGTON

WDFW Surplus Hatchery Salmon Distribution Study

Situational Assessment

Christina Sanders, Project Manager

Division of Governmental Studies and Services

Washington State University

Olympia, WA

Funded through a Contract with the

Washington Department of Fish and Wildlife

To the

The William D. Ruckelshaus Center

Washington State University and

University of Washington

September 20, 2010

The Washington State Legislature included in its 2010 State Budget a *proviso* directing the Washington State Department of Fish and Wildlife (WDFW) to "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks." The proviso instructs WDFW to provide, by November 1, 2010, a report to the appropriate Legislative committees summarizing the resulting discussions, outcomes and recommendations. The proviso also instructs WDFW to give due consideration to the recommendations before soliciting or awarding a new surplus salmon disposal contract.

The following information has been gathered as a component of the stakeholder input process. The purpose of this interview-based situational assessment was to develop a summary of interests, positions, objectives, motivations and desired outcomes. This report summarizes the opinions and perspectives of individuals interviewed via telephone by staff at the WSU Division of Governmental Studies and Services, consequently it does not necessarily reflect the overall position of any entity involved in this process. This input from internal and external stakeholders is intended to be used in the development of recommendations about an appropriate process for engaging stakeholders in discussion about the future of the salmon disposition program, including meetings between WDFW and appropriate stakeholders. Those meetings will be held to solicit input that will inform WDFW's recommendations to the Fish and Wildlife Commission, State Legislature and the public.

Given the number of potentially-interested stakeholders, it was determined that a representative set numbering no more than 25 would be interviewed. Twenty interviews have been conducted to-date. The affiliations of interviewees are as follows: six represent Regional Fish Enhancement Groups, three are with the Department of Corrections, three are with Food Banks, three are with commercial fish processing companies (one of which is the current contract holder), one is with the NW Indian Fish Commission, two are with Fish Conservation groups, three are hatchery managers and one is a commercial fisher. What follows is a listing of common themes heard in the interview responses, followed by further detail on each theme along with quotes and reference to affiliation as appropriate. Appendix B at the end of this assessment includes a list of recommendations compiled by the RFEG's. It is included not because it represents the views of any other entity representatives, but because it provides what could be seen as the RFEG's unified response to most of what was asked during the telephone interviews.

General Themes:

Satisfaction with System/Suggestions for Change:

Interviewees who had some knowledge of the history of surplus hatchery salmon disposition in Washington felt strongly that future contract holders should account for all fish and eggs taken from the hatcheries, and that all entities should account for the fish they receive and how that fish is dispersed. Many felt that there should be more transparency in the contracting and management of the program. These interviewees felt that changes should be made to bring more stakeholders, especially processors, to the table. Several interviewees also expressed the opinion that the full value of the fish not being accounted for and some parts of the fish are wasted. To maximize benefit to all, they say, every part of the fish should be used and WDFW should be more focused on achieving the most return value[1] from the surplus salmon disposal program.

> "The mission for the Department should be threefold: 1) WDFW should no longer be paying for the fish to be disposed of, 2) the provision of resources to the RFEG's should have more attention paid to it, and 3) provision of fish protein to food banks, etc. should continue to be a priority."

Quality of Fish and the Critical Issue of Timing:

Several interviewees expressed concern regarding the quality of some of the fish coming from the hatcheries and indicated that changes should occur to ensure that the fish are processed more quickly, in order to maximize the value of the fish. There was an overriding sentiment that the state should now be considering the fish not just as carcasses that need to be removed, but as a possible funding source. Many felt that the hatcheries overall are underfunded and, as a consequence, do not have the personnel, capacity and quality facilities required to manage the fish quickly enough that they retain the best quality for use by others. Some recipients indicated that they have received some fish that are of poor enough quality that they had to be sent back to

[1] For a fuller analysis of the financial, environmental and/or social benefits that derive from WDFW's surplus salmon disposal strategies, see the economic analysis that is a companion piece to this assessment report.

the processor. Their feeling is that the fish are not being iced and processed quickly enough and, as a result, quality is lost.

Concern for Sustainability of Hatcheries:

Some interviewees were concerned that a number of hatcheries are seriously underfunded and that some have already had to close down operations. They feel that hatcheries need to be able to use some of the surplus salmon as a method of obtaining funding for the hatcheries themselves, not just for the RFEG's and other stakeholders. Several stated that the hatchery model used in Alaska allows for a cost recovery process to support facility operations and that Washington should take a closer look at aspects of Alaska's model[2]. Concern was expressed that, given the opportunity, RFEG's will intentionally increase surplus salmon to support themselves without regard for other stakeholders, and that the real purpose of the hatchery salmon: to benefit the citizens of Washington, would not be a priority. A couple of interviewees believe that the existence of hatcheries at all is destroying the ability of wild salmon to survive into the future.

Fish for Populations in Need:

Stakeholders from all areas recognize, and in some cases strongly emphasized, the importance of providing fish to the Food Banks and to the Department of Corrections. Although those representing recipient groups of the surplus fish were as passionate about this aspect of the program as one would expect, it is interesting to note that some who expressed great commitment to and pride in the use of fish for food for needy populations were not affiliated with either the Food Banks or DOC. Representatives of Food Banks contacted thus far are generally happy with the system as it is. They are very appreciative of the fish they receive and believe the program to be working well overall. Representatives of the RFEG's and some representatives of entities receiving fish did indicate that in some cases the fish is not of good food quality, and that, especially over the last year or so, they have had to send back a "fair amount" of fish products received.

[2] See description of the Alaska model in the fact-finding document that is a companion piece to this assessment report.

Nutrient Enhancement

Overall the interviewees nearly unanimously see nutrient enhancement as an extremely important activity and are hopeful that it will become a greater priority in future contract agreements. Some believe that currently the system is not maximizing the amount of fish that could be being put back into the system to support the recovery of wild salmon. There is some feeling that carcasses that are not of food quality are still viewed as being without any value when, in fact they should be viewed as highly valuable for the health of the streams and for long term salmon recovery. Interviewees expressed a need for increased recognition of the value of the fish as a resource, not just as an economic value, but as an ecological value. They remain concerned that the full worth of the fish is not maximized as long as there are parts being discarded that could be used for nutrient enhancement.

Fairness and Transparency:

Most interviewees did not go so far as to say that the contracting and/or operation of the surplus salmon disposition system is deliberately unfair or deliberately lacks transparency. But several thought that steps could and should be taken to ensure greater fairness and transparency. Examples included the idea that WDFW should restructure the requirements for bidding on the contract to make it open to more bidders. Concern was expressed that the language of the bidding requirements is such that only the current contractor has the required number of years of experience managing such a program.

"WDFW should seek out, identify and allow other processors to bid on the contract(s)."

Several interviewees indicated that the current arrangement accomplishes the state's original goal of having the surplus salmon disposed of in an effective and cost-efficient manner. However, concern was expressed that this single goal is outdated, that the Department should now also be concerned with achieving the best value for the fish and the eggs, and thus the contracting arrangement should be updated. Some interviewees feel very strongly that in order for the process to be transparent, the public should be aware of the actual profits being made by the sale of the fish and the eggs, and that stakeholders are unable to determine how the process could be made more fair without this level of transparency.

Some interviewees believe that the current contractor is making a large profit on the sale of surplus salmon. But some of these interviewees indicated that often the salmon and the eggs are not of a high enough quality to receive a good market price, and that the surplus is not being processed quickly enough for there to be much high quality fish, a problem which is partly dependent upon location, the stage of the season and the resources and capacity of the particular hatchery.

Some suggested that a regional system might be better. They suggested that such a system would allow more processors to be a part of the system, which would be seen as more fair and might allow opportunity for mutual learning in the various steps and processes, and provide for the establishment of best practices overall. Some interviewees would like the RFEG's to serve as a sort of broker in each area of the state, to assist WDFW in finding the appropriate organization to process the fish, so that all of the stakeholders obtain the maximum benefit. Some interviewees would like the current RFP language modified so that RFEG's and others would qualify as bidders and some would prefer that the Legislature award the state contract directly to the RFEG's.

> "There should be a partnership between the stakeholders: the RFEG's, the Food Banks and WDFW; that doesn't exist now."

<u>What stakeholders need to know to participate in discussions</u>:

This question stumped several interviewees; however, the most common responses included some variation of the following:

- Potential volume of fish in different areas of the state.
- Some understanding of what it would take to manage the number of fish involved, some history on how this situation has evolved over time, and some understanding of what legal requirements/allowances are currently in place.
- People also need to know what is being achieved under the current contract and what might be achieved under a revised new contract.

Other Disposition Strategies or Elements that WDFW Should Consider:

Interviewees seemed to be most aware of the State of Alaska's model and believe that there are components of that model from which the State of Washington could benefit. Some interviewees believe that the current system in Washington is the model to follow, and some believe that a pilot project conducted in the Chehalis Basin [the Bingham Project] represents a model that could work statewide.

Other Comments of Interest:

- Although distribution of fish to food banks is a priority for WDFW in the contracting process, at least one Food Bank representative was under the impression that the potential exists for the food banks to lose the opportunity to receive fish as they currently do, if the state enters into an agreement with a different contractor. "Right now, the funneling of the fish through the food bank system is done of the current processor's own goodwill."

- A concern was expressed that fish being picked up from the hatcheries and going directly out to local communities might not receive the best food handling practices. As a consequence, they would like to see all of the fish that is being used for food be handled by licensed processors.

- "The process should be streamlined and the restrictions on what can be done with the product for state mandated uses should be eliminated. It makes the contract too complicated and too risky for companies to want to bid."

- Several interviewees emphasized their belief that WDFW and the current contractor are not doing anything wrong, but that times have changed and a new system should be put into place that reflects the market value of the surplus fish and provides for more stakeholders to receive funding through the disposal process.

APPENDIX A

INTERVIEW QUESTIONS

WDFW Surplus Hatchery Salmon Distribution: Situational Assessment

Introductory Statement and Notification of Implied Consent

*Thank you for taking the time to meet with us and for your willingness to assist with this assessment. The **Division of Governmental Studies and Services (DGSS)** from Washington State University is carrying out this assessment for the William D. Ruckelshaus Center[3]. This assessment calls for DGSS staff to conduct interviews with a number of stakeholders sharing an interest in the distribution of surplus hatchery salmon. Representative input from a broad range of stakeholder groups is critical to the development of a clear understanding of the issues involved in maintaining a transparent and fair distributional process that best utilizes the resource, increases revenues to enhancement groups and provide nutrients to food banks. As you know, your participation in this process and in this interview is entirely **voluntary** – you should feel under no pressure or obligation to participate. We will not report the names of those who are interviewed, or of those who choose not to be, to anyone outside of WSU. Your responses and comments will be summarized and synthesized, and these interview summaries will not be attributed to any specific individuals. Our goal is to protect, as much as possible, the identity of our interview subjects through this process. Do you have questions before we begin? This interview ought to take no more than an hour. Are you willing to proceed?*

1. Please tell us a little bit about yourself (job title, roles/responsibilities, relevant history) and describe how you, or your organization, are involved in these issues.
2. How would you describe your ***level of satisfaction*** with the operation of this system at the present time? Would you say the system in place "works fairly well" or "doesn't work very well at all"? Please explain what leads you to hold the view you do.
3. How would you measure success for the future of the salmon disposition program? What will happen (or not happen)? What will change (or stay the same)?
4. Some concerns have been raised about issues of *transparency* in the operation of the surplus hatchery salmon disposition process used by WDFW. Do you share those concerns? If so, what actions might WDFW take to make this process more transparent for those people who are interested in it?
5. Similarly, some concerns have been raised about issues of *fairness* in the operation of the surplus hatchery salmon products distribution process. Do you share those concerns? If so, what actions might WDFW take to make this process more 'fair'?

[3] Information on the Center and DGSS available at www.ruckelshauscenter.wsu.edu and http://dgss.wsu.edu/.

6. If you were invited to recommend c*hanges* in the WDFW disposition system, what two or three changes would you recommend?

    a. _____
    b. _____
    c. _____

7. To what degree would you be willing to participate in organized and targeted efforts to make progress on each of your recommendations?

    a. _____
    b. _____
    c. _____

8. Are you aware of any disposition strategies or elements in other states or provinces that you think WDFW should look at as a model?

9. Would you be interested in participating in facilitated discussion between WDFW and its stakeholders as part of WDFW's process to develop recommendations for the surplus salmon disposition program?

10. Any other persons we should be talking to concerning the WDFW surplus hatchery salmon products distribution system? Who else needs to be involved in the discussion?

11. What background information do you think stakeholders need in order to participate in the discussion?

Anything to add to what we've discussed up to this point? What should we have asked that we did not?

APPENDIX B

The following recommendations were compiled by the RFEGs in preparation for the stakeholder process.

Suggested changes to the Request for Proposals process:

1. Remove preference for bidders with five years of experience doing similar work. This eliminates the RFEGs and eliminates competition among potential bidders. There has not been sufficient competition for the contract in the past.
2. Remove requirement that bidders must be a licensed processor. Bidders could document ability to partner with a processor.
3. The process should weigh ecological value. Add preferential points for maximizing use of the resource (nutrient enhancement) and use of "profit" to increase value to the salmon recovery.

Suggested changes to the contract:

1. Add clauses that open books for regular review by WDFW / RFEGs and include review of profits earned from value-added products. Can Ruckelshaus Center (under their current scope of work with WDFW) help with suggestions to improve the transparency of the contract and provide better accountability? Currently the contractor is able to make a lot of revenue from value-added products, but the profit is hidden.
2. Value of fish going to food banks should be accounted for in the contract.
3. WDFW could either set a minimum per fish price, a minimum contract value, or establish a percentage-based profit sharing agreement.
4. The contract could specify that only male fish go to food banks, not females.

Other recommendations and considerations (outside the contract)

1. WDFW should send the contractor an invoice that accounts for every hatchery in the contract, even if there is no revenue derived from some hatcheries. This will improve transparency.
2. Where feasible, donations to food banks should go through the general processor (or contractor), not directly to local food banks, because this allows for the utilization of the roe. It is recognized that sometimes this is not feasible, particularly when there are just a few fish at a remotely located hatchery.
3. Spring Chinook, steelhead and kokanee could be defined as food bank fish because they can't be used for nutrient enhancement.
4. Specific hatcheries could be assigned as "food bank only" based on their proximity to the processor and the type/ number of fish cultured at the hatchery.
5. RFEGs believe future contracts should be market-based. Under the Ruckelshaus Center's work with WDFW, we hope that Ruckelshaus Center's economic analysis will point toward market-based options (market-based sales, value-added sales, a contract based on percent of profits, etc.)
6. WDFW needs to implement and ensure hatchery policies that minimize category "F" unusable fish – pond morts and fungus fish.
7. WDFW needs a public process for vetting hatchery closures and privatizations, as this removes surplus salmon from the contract.

Appendix B.

WASHINGTON STATE UNIVERSITY

THE WILLIAM D. RUCKELSHAUS CENTER

UNIVERSITY OF WASHINGTON

Economics of WDFW Surplus Hatchery Salmon Disposition

A Report to the Washington Department of Fish and Wildlife

by

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Funded through a contract with the

Washington Department of Fish and Wildlife

to

The William D. Ruckelshaus Center

Washington State University and

University of Washington

October 25, 2010

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EXECUTIVE SUMMARY

The goal of this report is to estimate the financial, environmental and/or social benefits derived from Washington Department of Fish and Wildlife (WDFW) surplus hatchery return salmon disposal strategies. During the past 20 years or so, as salmon populations have been listed under the Endangered Species Act (ESA), more fisheries have been closed to protect listed stocks, which can prevent the full harvesting of hatchery returns in excess of broodstock needs. Hatchery managers have had to deal with greater levels of surplus fish returns. WDFW is implementing hatchery reforms intended to resize hatchery programs to more accurately reflect current harvest needs and opportunities. But because estimating returns is an inexact science, it is likely there will continue to be some level of surplus fish returning to the hatcheries in the future.

A primary objective of the WDFW surplus hatchery fish disposal process has been to remove fish from hatchery ponds throughout the State quickly and reliably. Recently, however, the Washington State Legislature has directed WDFW to "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks." This places attention on the economic values of the surplus fish disposal examined here.

This report focuses on the three predominant surplus salmon distribution options: (1) sales of surplus fish to a commercial buyer (20.76% of the surplus returns during 2006-2009); (2) donation of surplus fish to food banks or other public entities (49.5%); and (3) placing carcasses in-river to contribute nutrients to the river ecosystem (29.7%). The objective of this report is to assess the economic value of salmon and eggs disposed of in these three ways.

Commercial Sales

"Commercial sales" describes the fish sold to American-Canadian Fisheries, a commercial fish processor under a contract with WDFW to collect surplus fish returning to state operated hatcheries. The fish sold to American-Canadian include both fish that are processed and sold on the wholesale fish market, and a large number that are processed and

sold at a reduced rate to the Washington State Department of Corrections. In addition, some of the fish collected by American-Canadian are disposed of as unusable fish. The values of these whole fish are calculated as a fraction of the ex-vessel prices paid for similar fish that are in better condition than the hatchery returns. Because the surplus salmon generated at WDFW hatcheries vary in geographic location, species and condition, they naturally have widely varying economic values. The sales value of products produced from hatchery fish collected by American-Canadian Fisheries in recent years was not made available to the author of this report. Hence, a single, valid economic value cannot be established for these fish, and we provide, instead, an estimated range of values, based upon some reasonable assumptions. If "good" condition hatchery returns are worth 2/3 of recent ex-vessel prices, and "poor" condition fish are worth 1/3 the ex-vessel price, the overall value estimate would be a total of $480,000 per year during the recent period of 2006-2009, yielding an average value per fish across fish species and conditions of $5.58. The value per fish for individual species would be $9.87 per Chinook salmon, $1.73 per chum, $3.13 per coho and $0.57 per pink salmon. Under an alternative assumption that the "poor condition" fish yield no net value and the "good condition" fish yield a value equal to half the ex-vessel prices, the estimated total value to American-Canadian would drop to $180,000 per year, with an average price per fish of $2.09. So, the estimated value of whole fish distributed to the commercial fish processors ranges from roughly $2.09 to $5.58 per fish, depending upon how much the upstream migration to the hatchery reduces the quality and value of the fish.

Looking further up the food processing chain, we can estimate the wholesale value of food products produced from the fish sold to American-Canadian. Price and product yield information from the salmon fisheries in Alaska are applied to the hatchery surplus fish, under the assumptions described above regarding the effect of upstream migration on product values. If the "good condition" fish produce food products worth 2/3 of the recorded wholesale prices, and the "poor condition" fish produce products worth only 1/3 of the recorded wholesale prices, the products (mainly headed and gutted fish [H&G], fillets, and roe) from surplus fish distributed to American-Canadian would be worth $710,000. If the wholesale products from "good condition" fish are worth only 1/2 the recorded wholesale prices, the "poor condition" fish are worth nothing, and the fish roe are worth the wholesale prices, then the overall wholesale value would be $353,000.

Distributions to Food Banks, Tribes and Education/Research

The annual average distribution to this category during 2006-2009 was 205,185 fish, of which roughly 90% was donated to food banks. About 74% of the donations to food banks were collected and processed into food products by American-Canadian Fisheries and then delivered to Northwest Harvest. Hence, the economic value of surplus salmon distributed in this category is calculated as though the total is distributed to food banks. That is, the value to tribes and other recipients is assigned the same value as estimated for food banks.

The "ex-vessel equivalent value" of these fish is estimated by the same procedure used for the commercial sales of surplus fish, described above. The annual average ex-vessel value of salmon during 2006-2009 was $1.35 million per year, assuming that "good condition" fish are worth 2/3 of the ex-vessel prices and that "poor condition" fish are worth 1/3 of the ex-vessel prices. This amounts to an average of $6.58 per fish. Under the alternative assumption that hatchery surplus fish are worth the lower amount of 1/2 the ex-vessel prices for "good condition" and nothing for "low condition", the ex-vessel equivalent value would be $744,000 in total, or $3.62 per fish.

This category of surplus fish distribution can also be evaluated at the wholesale product level, as was done for the "commercial sales" category. Lacking useful wholesale price data for steelhead products, the wholesale values for steelhead were estimated by assuming that the wholesale prices equal those for Chinook times the ratio of steelhead to Chinook ex-vessel price. The result yields an annual average value of $2.05 million, assuming that "good condition" fish generate H&G and fillets worth 2/3 of recorded wholesale prices and the roe is worth the recorded wholesale price. Roe makes up roughly 17% of the total value. Under the alternative assumptions that "good condition" fish generate wholesale products worth 50% of recorded prices, that "poor condition" fish are worth nothing, and roe is still worth the full wholesale price, the estimated wholesale value per year drops to $1.38 million per year. About 74% of the annual value of the roe products–$261,000–would be earned by American-Canadian Fisheries, as they retain this the roe from fish processed as H&G or fillets delivered to Northwest Harvest. The rest of the estimated value derives from fish delivered directly to the food banks, tribes, and education/research projects.

Nutrient Enhancement

Estimating the value of surplus salmon used to enhance nutrients in Washington state rivers is extremely challenging. The introduction of salmon nutrients increases the production of invertebrates, which results in greater food and higher growth rates for juvenile fish, along with improving conditions for other species of fish as well as related predators and prey. There is a presumption that the introduction of nutrients with salmon carcasses, or "analogues," will drive a number of ecological processes that generate benefits. But we cannot quantify these benefits sufficiently enough to place an economic value on the process. Many salmon used for nutrient enhancement come from adult salmon spawned at the hatchery and thus have very little value outside of the nutrient enhancement option, although they could be used for production of low-valued fish meal and oil. So, to the extent that the salmon used for nutrient enhancement are not diverted from the highly-valued human food supply, there is a clear and possibly significant economic value to that usage. On the other hand, the spawned fish are part of the hatchery broodstock and are not categorized as "surplus" fish that are the focus of this report. When nutrient enhancement draws upon the supply of surplus fish that could move to food banks or commercial uses, though all alternatives have value, we cannot determine the implicit value of the nutrient enhancement as compared to the explicit value of food banks or commercial uses without more scientific research and modeling to quantify the effects on the stream ecosystems.

Social Value

Clearly, the motives for devoting a substantial portion of the surplus fish to food banks and for the enhancement of streams are driven by a broader interest associated with feeding the indigent and improving stream ecosystems. To estimate this "social value" of donations, we would need to assess the value that the public at-large places upon the delivery to food banks from the surplus salmon return, over and above the direct value enjoyed by the consumers of the fish. Similarly, improved stream ecosystems are likely valued by a wide range of individuals independent of the specific effects on salmon runs. However, without additional field research, we do not yet have a reasonable approximation for these additional social values. But it is very likely that these social values could play a significant role in a

comprehensive valuation of the programs being considered as alternative uses of surplus salmon.

Conclusions

- Surplus hatchery returns have economic value as raw material for commercial fish products, as donations to food banks, and as nutrient enhancement to salmon rivers. An increase in fish distributed to one category will be matched by a decrease in fish available for the others.
- The economic assessment is relatively straightforward for the commercial sales value – yielding an ex-vessel equivalent value between $180,000 and $480,000 per year. The value of wholesale food products (headed and gutted fish, fillets, and roe) produced from these fish is estimated to range between $353,000 and $710,000. These values pertain to the fish sold to American-Canadian Fisheries.
- For fish distributed to food banks, tribes and education/research, the ex-vessel equivalent value was estimated to fall between $744,000 and $1.3 million. The estimated wholesale value of processed fish products from these fish would range from $1.38 million to $2.05 million. About $261,000 of this value would be retained by American-Canadian Fisheries, as they retain the roe from fish processed and donated to the Northwest Harvest.
- There is clearly a value associated with distributing salmon carcasses to enhance stream nutrients. Quantifying those values would require predictions of how the enhancement would increase salmon runs and other ecosystem functions. Since these kinds of predictions are not currently available, the economic value of nutrient enhancement has not been quantified.
- The social (or non-economic) values for donations to food banks, tribes and education/research could be substantial, but are not quantified in terms of dollars.
- The gaps in this economic assessment could be addressed by specific studies targeting the values driven by ecosystem enhancement in salmon streams, the social values associated with donations to food banks, and the costs of collecting, processing and marketing commercial salmon products. Such studies are within the range of research being done by fishery economists, but the large-scale studies needed to make accurate

predictions across the range of hatcheries and surplus returns in Washington state could be expensive and time-consuming.

Introduction

The goal of this report is to estimate the financial, environmental and/or social benefits derived from Washington Department of Fish and Wildlife's (WDFW) surplus hatchery return disposal strategies. During the past 20 years or so, as salmon populations have been listed under the Endangered Species Act (ESA), more fisheries have been closed to protect listed stocks, which can prevent the full harvesting of hatchery returns in excess of broodstock needs. Hatchery managers have had to deal with greater levels of surplus fish returns. WDFW is implementing hatchery reforms intended to resize hatchery programs to more accurately reflect current harvest needs and opportunities. But because estimating returns is an inexact science, it is likely there will continue to be some level of surplus fish returning to the hatcheries in the future. A primary objective of the WDFW surplus hatchery fish disposal process has been to remove surplus fish from hatchery ponds throughout the State quickly and reliably. Recently, however, the Washington State Legislature has directed WDFW to "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks." This places attention on the economic values of the surplus fish disposal examined here.

Background

As WDFW hatchery managers have dealt with greater levels of surplus fish, they have contracted with a private firm to dispose of a significant fraction of the fish. The primary objective for this contract is to dispose of the adult salmon surplus to hatchery needs quickly and effectively. WDFW is implementing hatchery reforms intended to resize hatchery programs to more accurately reflect current harvest needs and opportunities. But estimating returns is an inexact science because of highly variable survival and it is likely there will continue to be some level of surplus fish returning to the hatcheries. Currently, WDFW is working with its stakeholders to assess the three options for distributing the surplus fish described above: (1) sales of surplus fish to a commercial buyer; (2) donation of

surplus fish to food banks or other public entities; and (3) placing carcasses in-river to contribute nutrients to the river ecosystem. In addition, some fish are in such poor condition that they need to be disposed of on-site or sent to landfills (though some of these poor conditioned fish may be processed into "analogues" for deposit in upstream ecosystems). Finally, a large number of the excess returning fish remain in-river and may spawn intermixed with wild fish. This economic study does not assess the value (or risks) of the fish remaining in-river nor the hatchery returns that are disposed of on-site or in landfills.

A complete economic assessment of the three main distribution options requires quantitative information about the economic values of fish distributed in the three options—market and non-market values of surplus salmon and eggs distributed—and an assessment of the value of ecosystem improvements related to surplus returns placed in-river for nutrient enhancement. This does not require a full assessment of the hatcheries' benefits and costs, as this analysis looks only at the effects of the various distributions of surplus fish returning. That is, this study will not determine whether the production of hatchery fish generates economic benefits overall, nor whether the amount of surplus returns is economically desirable. It simply assesses how the benefits associated with the surplus fish vary depending upon how they are distributed. The most difficult element is assessing the economic value of fish used to enhance nutrients. That economic effect depends upon the ecological impact of the nutrients, and those effects would likely include commercial and recreational values of any increase in run size caused by nutrient enhancement, as well as values for other ecosystem effects. This element places the greatest demands on the analysis, and it will be the least complete part of this assessment.

Because the surplus salmon generated at WDFW hatcheries vary widely in geographic location, species and condition, they will naturally have varying economic values. When the surplus fish are sold, the value may be represented by the price paid for the fish, if that price is generated in a competitive market. Recreationally caught fish have values reflected in the fishers' willingness to pay for the recreational opportunities that are not revealed by market prices. Economists have devised methods of assessing these values based upon survey data, using the travel cost or contingent valuation methodologies. Both the commercial sales value and the recreational value are "gross economic values." The sales value of the commercial

fish products, minus the costs of rearing the smolts, harvesting the fish, and processing into marketable products, is termed the "net economic value" (NEV) of the fish. Similarly, the net economic value of recreationally-caught fish would be the overall willingness to pay for the recreational opportunities, minus the cost of the fishing trips. These are useful measures of benefits (economic benefits minus costs) of hatchery fish that are caught before returning to the hatchery.

Applying these economic measures to the surplus hatchery returns, the values held by the recipients of sold fish, the values enjoyed by those accepting donated fish, plus the value of future harvests attributable to fish used to enhance nutrients in-stream, would be used to estimate overall economic values associated with the surplus returns. Tables 1 and 2a – 2d summarize the volume of surplus salmon returns and the distribution of those returns among the categories reported by WDFW. These tables do not include the estimated numbers that return to spawn in the river or the number of spoiled fish that are disposed from the hatcheries (rendering or landfill). Hatchery managers do not control the fish straying to in-river spawning sites, and the fish that are disposed of on-site would not be sold or donated. Hence, those numbers are less subject to decisions about distribution of surplus returns, and they are not included in this discussion.

Overall, the donations to food banks, educational/research programs and tribes amounted to about 49.5% of the surplus returns during 2006–2009 (Table 1). Roughly 74% of these donations involve fish collected by American-Canadian Fisheries, processed into consumer products (e.g. skinless-boneless fillets), and delivered to the Washington State Food Bank (operated by Northwest Harvest).[1] Much of the rest were collected from the hatcheries by a large number of local food banks. The distribution to Native American tribes, accounting for 3.9% of the total surplus returns, includes those allocated by law as ceremonial and subsistence fish. The ceremonial and subsistence fish are not subject to re-distribution under WDFW's surplus fish distribution system. Sales to American-Canadian Fisheries accounted for 20.75% of total surplus returns. Distribution in-stream for nutrient enhancement accounted for 29.7% of the surplus salmon return to hatcheries during 2006–2009. Tables 2a – 2d display the species and condition of fish distributed to tribes, food banks,

[1] Based on WDFW hatchery information – from Form 3-Fish and Egg Disposition Tickets.

education/research, and sold to American-Canadian Fisheries. From these, it is clear that Chinook, chum and coho are the predominant species in the disposal program, with coho being the greatest proportion at 52.8% of total distributions for 2006–2009. Still, a fair amount of pink, sockeye and steelhead are donated or used for nutrient enhancement respectively.

Salmon prices have varied greatly over the past two decades, as shown in Figure 1. From 1980–2003, a general downward trend in salmon prices paid to fishermen was attributed to an increasing volume of farmed salmon available in world and domestic markets. However, during 2003–2009, there appears to have been a recovery to earlier price levels. Whether this will continue is unclear. The price per pound for any given species varies widely based upon location and condition. There is a general tendency for salmon caught further upriver to generate lower prices. For example, the recorded ex-vessel price for Chinook salmon in the Columbia River drops from $2.98 per pound in the estuary (Youngs Bay) to $0.84 per pound in the river above Bonneville dam (river mile 146). Surplus returns to hatcheries tend to be mature fish in spawning condition, whereas most of the commercially caught fish in saltwater or estuaries are maturing or beginning their migration towards spawning areas. The quality of the fish products, such as headed and gutted fish (H&G) or fillets, tend to be lower among the surplus returns to hatcheries than in the predominant fisheries. And many of the returning fish in spawning condition that are held in ponds for long periods will be of too poor quality for rendering into H&G or fillets. On the other hand, the female salmon returning to hatcheries will have mature skeins of roe, which are often a high-priced product. These differences in the mix of products and quality of products from surplus returns versus commercial fisheries should be reflected in the economic values for the fish.

Market prices for commercially caught salmon and for salmon-based products normally provide a basis for estimating values for fish harvests. Because the surplus hatchery fish are not sold in a competitive market, we do not have market price information for those fish. Sales to American-Canadian Fisheries reflect a contract arrangement with several dimensions, including requirements to collect fish, process it and deliver it to food banks. Hence, the agreed contract price per fish reflects all contract elements. And price records for fish and/or eggs donated to worthy participants, such as food banks, simply do not exist.

Sales prices for fish processed by American-Canadian Fisheries, and the associated product yields per fish and processing costs, have not be made available for this study. Hence, values of these surplus fish could be approximated using the market prices or they could be estimated from information obtained through interviews or surveys with the recipients. Further, when used to enhance nutrients in streams, the value of the surplus salmon will depend upon the degree to which nutrient enhancement contributes to increased productivity of salmon stocks and/or other valued ecosystem components in the streams. Investigation of this issue will involve ecological modeling and economic assessment of the values of ecosystem components (including enhanced salmon runs). With a valid indicator of increased run size due to nutrient enhancement, we could assign both market values for commercially caught fish and recreational values for sport-caught fish. Currently, there is no comprehensive information available to reveal the degree of fish stock enhancement (or other commercial or recreational benefits) associated with increased stream nutrients from surplus hatchery fish distributed in-stream.

These observations reveal the basic challenge of quantifying the economics of surplus fish distribution. As noted by James Boyd (2005), "The value of nature is inherently complex. Rarely is there a clear-cut, 'right' answer to questions such as which ecosystem is most valuable or which ecosystem service provided by a given habitat is most important." Similarly, addressing all three avenues for generating economic value from surplus hatchery returns is a challenging task. Not all of the necessary research and data needed to clearly quantify the economic values is available for this study. Hence, the results presented here will depend upon some simplifications and approximations to the likely values of surplus fish. The shortcomings of this approach, and options for further research, will be noted in the conclusion.

Assigning Economic Values

Economic values for the surplus hatchery fish sent to each of the three distribution options need to be at least roughly estimated to support a comparison of values contributed by the three options. The following discussion lays out some of the options for assessing these values.

Commercially Sold Fish

To begin with, the value of fish sent to American-Canadian Fisheries that are sold as commercial fish products can be estimated in one of two ways: (1) by estimating the ex-vessel price equivalent for salmon (whole fish) collected from the hatcheries, or (2) by estimating the wholesale value of the various products sold (e.g. fillets, patties, steaks, roe), deducting estimated costs of collection, discards, processing from whole fish to products, and delivery and marketing costs. The two methods coincide when ex-vessel prices equal the net value to processor/retailers of having an additional fish. As retail prices rise and fall, those changes are translated back to the amount that processors are willing to pay fishermen. The complication here is that the value of hatchery fish, like the price of commercially harvested fish, varies by species, condition, location, season and roe content. To estimate the value for hatchery surplus fish, using ex-vessel salmon price data, we need to match up the hatchery fish to commercial fish with similar characteristics. That is, what would those hatchery fish sell for in a competitive marketplace for raw, whole fish?

The second method follows the logic that raw fish prices fluctuate up and down with the wholesale price of consumer fish products, and the price offered for ex-vessel fish is roughly equal to the wholesale value of the products minus the cost of converting the raw fish to the wholesale market products. We could take the wholesale value of products produced (fillets, steaks, H&G, roe, etc.), and subtract the cost of processing and handling those fish products. Then we would multiply by the yield rate (amount of product generated per pound of whole fish) to calculate the net value per pound of raw fish. For example, suppose the price for coho salmon, H&G frozen, is $2.25 per pound, and the cost of obtaining the raw fish, transporting, processing and delivering a pound of H&G frozen salmon to the wholesale market is $1 per pound. This leaves $1.25 per pound of H&G product that the processor could offer to pay for the raw fish. The yield of H&G Chinook per pound of raw fish is reported as averaging 75% by Crapo, et al. (2004, p. 15). Hence, each pound of H&G product requires (1/.75) = 1.333 pounds of whole Chinook. So, 1.333 pounds of whole Chinook would be worth, at most $1.25; or one pound of whole Chinook would be worth $1.25/1.333 = $0.94 per pound. This would be the net value per pound of raw fish, after converting the whole fish to H&G product and subtracting the costs of processing and handling the fish. Either of the two procedures described here is a rough estimation method,

but the second procedure requires a longer chain of quantitative information: wholesale product prices, yield rates for each product, and processing costs for each product. And the two measures could provide significantly different value estimates.

The first method is implemented based upon the ex-vessel price averages for 2008–2009 from the Washington State fish ticket data included in the Pacific Fisheries Information Network (PacFIN) data base managed by the Pacific States Marine Fisheries Commission (see Tables 4a and 4b). For each species, the pounds per fish landed during 2008–2009 (Table 5) were averaged over the two years using weights from areas that are closer to the spawning grounds (in rivers and the Puget Sound, not the ocean troll fishery). Similarly, the prices by fishing area were averaged over the river and Puget Sound areas to obtain the average ex-vessel prices per pound sold (Table 6). These per fish values vary widely across species, with the highest value being $2.11 per pound for Chinook, and the lowest being $0.25 per pound for pink. We know that fish returning to the hatcheries have generally lower quality flesh than the salmon taken in the commercial fisheries, but we do not have accurate information on how much less they are worth per pound. So, we make some reasonable assumptions about the reduced value, in order to assess the range of values that pertain to the hatchery returns that are sold to American-Canadian Fisheries.

Assuming that "good" hatchery returns are worth 2/3 the ex-vessel price in Table 6, and "low" condition fish are worth 1/3 the ex-vessel price, we multiply the prices times the pounds of fish in the high and low condition categories, to get the estimated "ex-vessel equivalent" values for surplus hatchery fish distributed to American-Canadian Fisheries (Table 7a). This results in an ex-vessel equivalent value of $480,000 per year during 2006–2009, yielding an average value per fish across fish species and conditions of $5.58. An alternative assumption is that the "low condition" fish yield no net value and the "good" fish yield a value equal to half the ex-vessel prices to the processors. Under this assumption, the estimated total value of the annual distribution to American-Canadian Fisheries would drop to $180,000 with an average price per fish of $2.09. So, we could roughly estimate that the value per fish distributed to the commercial fishery processing industry would be in the range of $2 to $5.58, depending upon species and how much the upstream migration to the hatchery reduced the quality and value of the fish. Clearly, these estimates suffer from our

inexact measure of the price per pound and other judgments made in selecting the ex-vessel prices to use and the weights per pound based upon inshore and river harvests.

Implementing the second fish valuation procedure, based upon the wholesale value of fish products minus cost of processing and handling the fish, is much more complicated, mainly due the lack of information on processing and handling costs. The wholesale prices vary significantly across product types and qualities and from year to year. Consequently, any estimates from this method are bound to be very rough. But to display how this method could be implemented, we use the well-documented salmon product prices from Alaska (Table 9), and product yields for H&G and fillets (Table 8) drawn from an Alaska Sea Grant report authored by Chuck Crapo and others. For good condition fish we selected the high end of the reported range of product yields for H&G and frozen skinless-boneless fillets. For the low condition fish we use the low end of the reported product yield ranges. For roe, we use the highest reported yields, since the hatchery surplus fish are ready to spawn. The product yield rates are multiplied by the fish weights to obtain the product quantity per fish, then multiplied by the wholesale price to obtain the estimated wholesale value per fish. So, for example, a good quality 12.7 pound Chinook could yield $32.89 in wholesale value of H&G, or $33.56 in frozen fillets. In addition, each non-spawned good or low condition female would yield $5.25 in roe. Finally, we implement a two-level estimate of wholesale values, using the assumptions explained earlier for the "ex-vessel price equivalent" estimates. In Table 10a we show the estimated wholesale value of each product derived from the salmon sold to American-Canadian Fisheries, assuming that the "good condition" fish will generate products worth 2/3 of the reported wholesale prices, that "poor condition" fish products are worth 1/3 the wholesale prices, and that unusable fish are worth nothing. Further, we assumed that 1/10 of the fish will be processed into H&G products, that the rest is processed into fillets, and that each non-spawned female fish yields a 10 percent roe yield. The resulting estimates generate a range of wholesale value from $353,000 to $710,000, reflecting the low to high wholesale value assumptions for H&G and fillet products. And both the high and low estimates include the $129,000 value for roe produced. Without much more in-depth information about processing costs, we cannot carry out the necessary calculations to estimate the net value of each species of salmon to processors. But the gross

wholesale value estimates displayed in Tables 10a and 10b are a useful benchmark for considering the value of these salmon.

Value of Surplus Fish Distributed to Food Banks, Tribes, and Education/Research

The numbers of whole fish distributed to this category of recipients can be estimated using the same techniques used for the Commercial Sales category. As shown in Tables 10c and 10d, the overall value of wholesale products from these fish ranges from $1.38 million to $2.05 million, reflecting the low and high estimates for value of H&G and fillet products. Again, the value of roe is assumed to be high for all the non-spawned females of "good condition" or "poor condition." Hence, the roe value of $334,000 is the same for both estimates. It should be noted that 74% of the surplus hatchery fish in this category were collected from the hatcheries by American-Canadian Fisheries. American-Canadian Fisheries delivers the fillets and H&G to the state food banks, but retains the roe. Hence, a large portion of the roe wholesale value would accrue to American-Canadian Fisheries rather than directly to the food bank.

Value of Surplus Fish Used for Nutrient Enhancement

Estimating the value of surplus salmon used to enhance nutrients in Washington state rivers is an even more challenging task than estimating the values to commercial firms or food banks. There has been substantial attention paid by stream ecologists and fishery scientists to the stream nutrient issues (see Hatchery Scientific Review Group, HSRG, 2009b). As salmon runs decline in spawning rivers, the input of marine-derived nutrients declines and this lowers the overall productivity of the streams. Lowered productivity affects the growth rates of juvenile salmon and has numerous other ecosystem impacts. The HSRG advocates the use of salmon carcasses (or "analogue" carcasses) for nutrient enhancement. In their summary, they note that introduction of salmon nutrients increases production of invertebrates, which result in greater food for juvenile fish and higher growth rates for the juveniles, as well as improved conditions for other species of fish and related predators and prey. And larger juveniles tend to experience greater over-winter survival. Still, the relationship between juvenile salmon survival and the addition of nutrients to the streams has yet to be demonstrated empirically (HSRG, 2009b p. 3). So, there is a presumption that introduction of nutrients with salmon carcasses or "analogues" will drive a number of

ecological processes that generate benefits, but we can't quantify this in order to place an economic value on the process.

If we could predict increased run size for salmon species due to nutrient enhancement, we could then assign values based upon increased commercial and recreational harvest, plus increased return to hatcheries. The commercial value could be assessed based upon the ex-vessel prices, as described above for the fish distributed to American-Canadian Fisheries. The recreational catch value could be based upon some past economic studies of the recreational fishery (e.g. Cameron and James, 1987; Huppert, 1989; Olsen, et al, 1990).

On the other hand, much of the salmon used for nutrient enhancement is derived from spent spawning fish at hatcheries—fish that would be discarded by a commercial or food bank recipient. They might be used for producing low-value fish meal and oil, but these fish have very little value outside of the nutrient enhancement option. So, to the extent that the salmon used for nutrient enhancement do not come from the highly-valued human food supply, there is a possibly significant net value to that usage. When the nutrient enhancement draws upon the supply of fish moving to food banks or commercial uses, both alternatives have value, but we cannot determine which value is the higher one without more scientific research and modeling to quantify the effects on the stream ecosystems.

Consideration of Non-Economic Social Values

Clearly, the motives for devoting a substantial portion of the surplus fish to food banks and the enhancement of nutrients in streams are driven by a broader interest associated with feeding the indigent and improving stream ecosystems. Based upon the last four years of surplus fish distribution, it appears that roughly 41.6% of the fish are delivered to the Washington State Food Bank, while various smaller, regional food banks receive 2.9%. In order to provide an estimated social value for these donations, we would need to assess the value that the public at large places upon the delivery of food products generated from the surplus salmon return, over and above the direct value enjoyed by the consumers of the fish. These would represent a "social" value, which does not reflect the value that people would pay to donate the seafood, but represents a general value associated with helping the indigent to enjoy a varied diet. In addition, the distribution of salmon to Native American tribes for ceremonial and subsistence contributes to the social value of maintaining tribal culture.

Similarly, improved stream ecosystems are likely valued by a wide range of public groups and individuals independent of the specific effects on salmon runs. Bell, et al. (2003), for example, find that Washington state residents in the Grays Harbor and Willapa Bay regions would be willing to pay, on average, between $76 – $120 per year for enhancement programs that double or quadruple the coho salmon runs in their regions. And these values were not significantly related to whether the individuals had been salmon fishing. Without additional field research, we do not yet have a reasonable approximation to the additional social values for the steam ecosystem enhancements of concern. But it is very likely that these social values could play a significant role in a comprehensive valuation of the programs being considered as alternative uses of surplus salmon.

Conclusions

As noted earlier, there have been surplus returns of hatchery-reared fish over-and-above the need for hatchery broodstock at many Washington state hatcheries. Due to inherent uncertainties in forecasting adult salmon returns, there will likely continue to be surplus fish returns in the future. Overall, the surplus hatchery returns have economic value as raw material for commercial sale, as donations to food banks, and as nutrient enhancement to salmon rivers. Because the total number of fish returning in any year is finite, an increase in fish distributed to any one of the categories will be matched by a decrease in fish available for the others. Using economic values of alternative distributions could be reasonable criteria for allocating the surplus among the categories of recipients.

Quantitative economic assessment is relatively straightforward for the commercial values – using recent ex-vessel prices from commercial in-shore fisheries. For the fish distributed to American-Canadian during 2006–2009, the ex-vessel equivalent value is reckoned to be between $180,000 and $479,000 per year, depending upon what fraction of the ex-vessel prices the good and poor condition fish are worth. With more extensive information about the costs of fish processing, the net economic value of distributed fish could be estimated from the wholesale product values minus the costs of processing and handling the fish. We did not assess net commercial values in this fashion, due to lack of comprehensive cost information. But we did carry out the assessment of gross wholesale value of surplus

hatchery fish. This yielded a wholesale value of between $353,000 and $710,000 for the fish sold to American-Canadian Fisheries

The surplus hatchery fish distributed to food banks, tribes and education/research projects was estimated in the same fashion. This yielded an ex-vessel equivalent value of between $744,000 and $1.35 million per year during 2006-2009. Again, applying the same wholesale value estimation method as used for the Commercial sales to American-Canadian, we obtain estimates of between $1.38 million and $2.05 million wholesale product value per year. And we note that about 74 percent of the fish distributed in this category are collected from the hatcheries by American-Canadian Fisheries, processed predominantly into fillet products for distribution to the state food banks. American-Canadian retains the roe from these fish, which should generate about 74% of the wholesale roe value, which would equal $261,000.

Finally, there is clearly a value associated with distributing salmon carcasses (or "analogue" products) to enhance stream nutrients. Quantifying those values would require predictions of how the nutrient enhancement increases salmon runs and other ecosystem functions. Since these kinds of predictions are not currently available, the economic value of nutrient enhancement has not been quantified. And the social (non-economic) values for donations to food banks, Native American tribes, and education/research could be substantial, but are not quantified in terms of dollars. The gaps in this economic assessment of hatchery returns could be addressed by specific studies targeting the values driven by ecosystem enhancement in salmon streams, the social values associated with donations to food banks, and the costs of collecting, processing and marketing commercial salmon products. Such studies are within the range of research being done by fishery economists, but the accurate, large-scale studies needed to make accurate predictions across the range of hatcheries and surplus returns in Washington state could be expensive and time-consuming.

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Figure and Tables

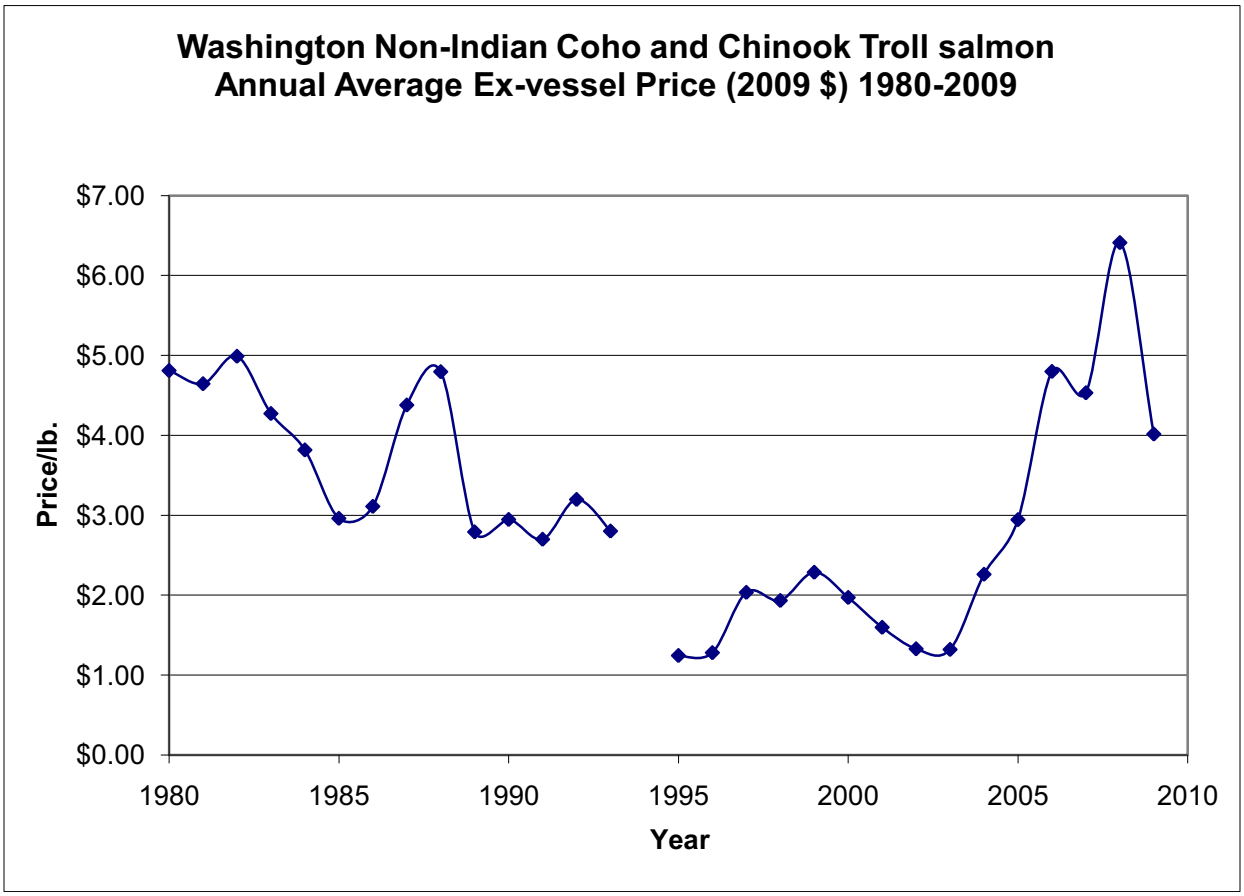


Figure 1. Annual Average Ex-vessel prices of coho and Chinook salmon caught by ocean trollers off Washington state (converted to 2009 dollars using the GNP price deflator). Note: no price data for 1994.

Table 1. Distribution of Surplus Salmon Returns for 2006-2009.[2]

Year	Total surplus returns[1]	Donated to Tribes	Donated to Food Banks	Donated to Educ & Research	Sold to American-Canadian Fisheries	Used for Nutrient Enrichment
2009	478,526	17,552	189,426	5,165	104,999	161,384
2008	419,570	16,781	222,348	2,678	56,240	121,523
2007	391,376	16,307	167,260	5,009	101,978	100,822
2006	367,326	14,501	158,174	5,536	80,604	108,511
Total	1,656,798	65,141	737,208	18,388	343,821	492,240
%		3.93%	44.5%	1.11%	20.75%	29.71%

Table 2a. Annual Average Surplus Salmon Distributed to Tribes. 2006-2009

Species	Male			Female				Total
	Good Condition	Poor Condition	unusable	Good Condition	Poor Condition	unusable	% Spawned	
Chinook	2761	87	0	1635	20	0	0.468%	4504
Coho	4165	86	3	3185	24	2	0%	7465
Chum	0	0	0	0	0	0	0%	0
Pink	0	0	0	0	0	0	0%	0
Steelhead	2026	7	0	2281	3	0	1.9%	4317
Sub-total	8952	180	3	7101	48	2	0.7%	16285

Table 2.b Annual Average Surplus Salmon Sold to American Canadian Fisheries. 2006-2009

Species	Male			Female				Total
	Good Condition	Poor Condition	unusable	Good Condition	Poor Condition	unusable	% Spawned	
Chinook	9613	12603	30	2158	5289	30	52.3%	29724
Coho	1291	12169	57	1211	10713	86	9%	25528
Chum	1837	14384	1	1482	12339	3	35.3%	30045
Pink	372	0	0	287	0	0	0%	659
Steelhead	0	0	0	0	0	0	0.0%	0
Sub-total	13114	39156	88	5138	28341	119	29.4%	85955

[2] Total does not include hatchery fish returning live to the river, or fish disposed of from the hatcheries. These amount to another 261,723 fish over the four-year period.

Table 2c. Annual Average Surplus Salmon Distributed to food banks. 2006-2009

Species	Male			Female				Total
	Good Condition	Poor Condition	Unusable	Good Condition	Poor Condition	Unusable	% Spawned	
Chinook	13131	11664	37	6145	4351	0	2.09%	35328
Coho	47722	13735	0	31551	9972	0	0%	102980
Chum	3817	16116	0	1422	10647	0	0%	32002
Pink	2245	36	0	2923	9	0	0%	5213
Steelhead	4057	259	1	4275	188	0	0.61%	8780
Sub-total	70971	41811	38	46315	25167	0	0.35%	184302

Table 2d. Annual Average Surplus Salmon Distributed to Education, Research, or transferred outside WDFW. 2006-2009.

Species	Male			Female				Total
	Good Condition	Poor Condition	Unusable	Good Condition	Poor Condition	Unusable	% Spawned	
Chinook	96	1094	106	44	413	116	64.15%	1869
Coho	82	1423	13	50	759	1	55.60%	2328
Chum	7	26	13	3	18	13	3.73%	79
Pink	0	0	0	0	0	0	0.%	1
Steelhead	88	7	9	77	4	8	0.84%	193
Kokanee	65	0	0	62.5	0	62.5	100.00%	190
Sockeye	0	0	0.25	0	0	0	0.00%	0.25
Sub-Total	337	2551	142	237	1193	201	56.26%	4660

Table 3. Percent in each Species/Condition Class, 2006 – 2009.

4-Yr total	Not Spawned	Spawned	Good	Low	Unusable
Chinook	68.7%	31.3%	39.6%	60.2%	0.2%
Chum	64.1%	34.3%	10.9%	87.5%	0.0%
Coho	91.1%	8.9%	9.8%	89.6%	0.6%
Pink	75.7%	24.3%	99.1%	0.9%	0.0%
Total	73.7%	25.7%	28.0%	78.1%	0.2%

Table 4a. Average ex-vessel prices per pound, based upon PacFIN data for 2008-2009.

	Puget Sound	Skagit River	Hood Canal	San Juan Is.	Strait Juan de Fuca	Outer WA Coast	Col R Below Bonneville	Upper Col. R
Chinook	$2.09	$2.31	$2.32	$2.32	$3.01	$3.99	$1.996	$1.82
Chum	$0.79	$0.67	$0.77	$0.79	$1.08	$0.50	$0.54	$0.86
Coho	$1.43	$1.33	$1.46	$1.38	$1.39	$1.49	$1.24	$0.88
Pink	$0.250	$0.250	$0.247	$0.255	$0.252	$0.190		

Table 4b. Average ex-vessel prices per pound, based upon PacFIN data for 2008-2009.

Species	Green-Duwamish River	Skagit River	Point Roberts	San Juan Is.	Strait Juan de Fuca	Outer Coast Rivers	Col R Below Bonneville	Upper Col. R
Sockeye		$1.79	$1.39	$1.22	$1.88		$1.63	$1.48
Steelhead	$0.72	$1.54			$1.92	$1.93		$0.67

Table 5. Estimated Average Weights for Hatchery Fish (based upon PacFIN data from 2008-2009)

Species	Pounds/fish	Areas included in weight averaging
Chinook	12.73	Col R., Cape Flattery, North Puget Sound, east of Whidbey, Skykomish, Hood Canal
Chum	8.75	Green-Duwamish, Puyallup, Skykomish, Klickitat, East of Whidbey
Coho	7.37	Col R, Cape Flattery, Deep Creek, Chehalis, Hoh-Quillayute, East Whidbey Is, Green-Duwamish R, Puyallup R, Hood-canal, Upper Col R,
Pink	3.43	Central Puget Sound, Hood Canal, South Puget Sound, Skagit R, East Whidbey Is, Green-Duwamish R, Puyallup R
Sockeye	5.18	Col R, Skagit R, Pt Roberts, Green-Duwamish R
Steelhead	7.31	Col R, Hoh-Quillayute, Makah Bay, various rivers, East Whidbey

Table 6. Estimated Average price/pound ex-vessel prices from PacFIN data for 2008-2009.

	Ex-vessel Price/lb.	Areas Used in Price Averaging
Chinook	$2.11	Puget Sound, Skagit R., Hood Canal, Col lower & upper
Chum	$0.73	Puget Sound, Skagit R., Hood Canal, Col lower & upper
Coho	$1.27	Puget Sound, Skagit R., Hood Canal, Col lower & upper
Pink	$0.25	Puget sound, Skagit R. Hood Canal
Sockeye	$1.63	Skagit R, Col R lower& upper
Steelhead	$0.98	Green-Duwamish, Skagit and upper Col. R

Table 7a. Annual Average Ex-vessel Equivalent Value of Salmon Sold to American-Canadian Fisheries. Assumes spawned female fish are unusable.

	Good Condition at 2/3 ex-vessel prices	Poor Condition at 1/3 ex-vessel prices	Unusable	Value with Good=2/3 and Low =1/3 ex-vessel prices	Value with Good = 1/2 ex-vessel prices and Low = 0
Chinook	$210,451	$124,946	$0.00	$335,397	$157,830
Chum	$14,057	$46,246	$0.00	$60,303	$10,542
Coho	$15,590	$67,868	$0.00	$83,458	$11,692
Pink	$375	$0	$0.00	$375	$281
Value/yr.	$240,473	$239,060	$0	$479,533	$180,346

Table 7b. Annual Average Ex-vessel Equivalent Value of Salmon Distributed to Food Banks, Educational projects, and others. Assumes spawned female fish are unusable

	Good Condition at 2/3 ex-vessel prices	Poor Condition at 1/3 ex-vessel prices	Unusable	Value with Good=2/3 and Poor =1/3 ex-vessel	Value with Good = 1/2 ex-vessel Price and Poor = 0
Chinook	$425,701	$152,251	$0.00	$577,952	$319,260
Chum	$22,231	$56,762	$0.00	$78,993	$16,672
Coho	$540,530	$79,579	$0.00	$620,109	$405,377
Pink	$2,940	$13	$0.00	$2,953	$2,205
Steelhead	$67,983	$1,242	$0.00	$69,225	$50,985
Value/yr.	$991,402	$288,604	$0	$1,349,231	$743,514

Table 8. Product Yield rates adapted from Crapo, et al. Based upon round weight equivalent.

	H&G Good Condition	H&G Poor Condition	Skinless-Boneless fillets-High	Skinless-Boneless fillets -Low	Roe
Chinook	72%	68%	36%	30%	10%
Chum	74%	71%	36%	30%	10%
Coho	75%	70%	38%	30%	10%
Pink	73%	73%	33%	30%	10%
Sockeye	74%	66%	35%	30%	10%

Table 9. Alaska Salmon Product Prices - Wholesale Prices in May-August, 2006 – 2009.

Product-Species	May-Aug 2006	May-Aug 2007	May- Aug 2008	May-Aug 2009	Average	Range as % of Ave.
H & G Frozen						
Chinook	$3.14	$3.18	$5.21	$2.83	$3.59	66%
Sockeye	$1.86	$2.01	$2.22	$2.39	$2.12	25%
Coho	$1.83	$2.39	$2.72	$2.09	$2.26	39%
Pink	$0.78	$0.75	$0.96	$0.91	$0.85	25%
Chum	$0.95	$0.89	$1.10	$1.17	$1.03	20%
H&G Fresh						
Chinook	$5.56	$6.23	$7.81	$5.99	$6.40	35%
Sockeye	$3.13	$3.15	$3.57	$3.67	$3.38	16%
Coho	$2.36	$2.51	$3.29	$2.90	$2.77	34%
Pink	$0.66	$0.67	$0.94	$1.44	$0.93	84%
Chum	$1.00	$0.67	$1.33	$1.40	$1.10	66%
Roe						
Chinook	$4.28	$3.76	$8.83	$5.17	$5.51	92%
Sockeye	$2.79	$3.48	$6.27	$4.96	$4.38	80%
Coho	$3.74	$4.33	$4.97	$5.48	$4.63	38%
Pink	$4.04	$4.55	$9.14	$4.48	$5.55	92%
Chum	$6.11	$6.89	$13.45	$7.60	$8.51	86%
Fresh Fillet						
Chinook	$7.64	$9.12	$6.45	$9.55	$8.19	38%
Sockeye	$5.48	$5.37	$7.04	$6.88	$6.19	27%
Coho	$4.19	$2.86	$6.00	$5.86	$4.73	66%
Chum	$2.28	$2.32		$2.32	$2.31	2%
Frozen Fillet						
Chinook	$5.44	$6.67	$4.95	$5.12	$5.55	34%
Sockeye	$4.32	$4.11	$4.45	$3.86	$4.19	14%
Coho	$3.48	$4.26	$4.56	$4.47	$4.19	26%
Pink			$1.45		$1.45	
Chum	$2.00	$1.91	$2.09	$2.15	$2.04	12%

Source: Alaska Seafood Market Bulletin. November 2007 and December 2009. Available on-line at: www.alaskaseafood.org

Table 10a. Estimated Annual Wholesale Value of Fish Products from Surplus Hatchery Salmon Sold to Canadian-American Fisheries, 2006-2009. Based upon 2008-2009 Alaska Wholesale Prices. Good Condition Fish Valued at 2/3 Wholesale Prices, and Poor Condition Fish valued at 1/3 Wholesale Prices. Roe Valued at full Wholesale Price.

Species	H&G		Fillets		Roe	Subtotals
	Good Condition	Poor Condition	Good Condition	Poor Condition	Roe Value	
Chinook	$25,815	$14,525	$229,269	$121,214	$24,785	$415,609
Chum	$1,472	$4,621	$15,850	$47,600	$66,578	$136,121
Coho	$2,082	$8,344	$22,906	$86,614	$36,959	$156,904
Pink	$93	$0	$719	$0	$547	$1,359
SubTotals	$29,462	$27,489	$268,745	$255,428	$128,868	$709,993

Table 10b. Estimated Annual Wholesale Value of Fish Products from Surplus Hatchery Salmon Sold to Canadian-American Fisheries, 2006-2009. Based upon 2008-2009 Alaska Wholesale Prices. Good Condition Fish Valued at 1/2 Wholesale Prices, and Poor Condition Fish valued at $0. Roe Valued at full Wholesale Price.

Species	H&G		Fillets		Roe	Subtotals
	Good Condition	Poor Condition	Good Condition	Poor Condition	Roe Value	
Chinook	$19,360	$0	$171,944	$0	$24,785	$216,089
Chum	$1,104	$0	$11,887	$0	$66,578	$79,569
Coho	$1,561	$0	$17,179	$0	$36,959	$55,699
Pink	$70	$0	$540	$0	$547	$1,156
SubTotals	$22,096	$0	$201,549	$0	$128,868	$352,513

Table 10c. Estimated Annual Wholesale Value of Fish Products from Surplus Hatchery Salmon Distributed to Food Banks, Education, and others, 2006-2009. Based upon 2008-2009 Alaska Wholesale Prices. Good Condition Fish Valued at 2/3 Wholesale Prices, and Poor Condition Fish valued at 1/3 Wholesale Prices. Roe Valued at full Wholesale Price.

Species	H&G		Fillets		Roe	Subtotals
	Good Condition	Poor Condition	Good Condition	Poor Condition		
Chinook	$52,219	$17,814	$463,768	$147,703	$84,232	$765,736
Chum	$2,328	$5,667	$15,246	$51,287	$90,050	$164,578
Coho	$72,175	$9,794	$657,852	$89,711	$153,866	$983,399
Pink	$733	$3	$7,321	$11	$5,580	$13,648
Steelhead*	$5,999	$86	$96,198	$1,124	$19,300	$122,618
Sub-totals	$133,454	$33,364	$1,240,295	$289,836	$353,029	$2,049,979

Table 10d. Estimated Annual Wholesale Value of Fish Products from Surplus Hatchery Salmon Distributed to Food Banks, Education, and others, 2006-2009. Based upon 2008-2009 Alaska Wholesale Prices. Good Condition Fish Valued at 1/2 Wholesale Prices, and Poor Condition Fish valued at $0. Roe Valued at full Wholesale Price.

Species	H&G		Fillets		Roe	Subtotals
	Good Condition	Poor Condition	Good Condition	Poor Condition		
Chinook	$39,162	$0	$347,809	$0	$84,232	$471,203
Chum	$1,746	$0	$11,434	$0	$90,050	$103,230
Coho	$54,129	$0	$493,365	$0	$153,866	$701,360
Pink	$549	$0	$5,490	$0	$5,580	$11,620
Steelhead*	$4,499	$0	$72,077	$1,124	$19,300	$95,877
Sub-totals	$100,086	$0	$930,175	$0	$353,728	$1,383,289

*Steelhead wholesale price calculated as Chinook Wholesale price x Steelhead ex-vessel price/Chinook ex-vessel price.

Appendix C.

Brief Review of Hatchery Carcass and Egg Programs

Mark Kimbel

Washington Department of Fish and Wildlife

Fish Program, Hatcheries Division

and

Regional Fisheries Enhancement Groups

September 20, 2010

Brief Review of Hatchery Carcass and Egg Programs

Introduction

In the 2010 State Budget, the Washington State Legislature directed the Washington State Department of Fish and Wildlife (WDFW) to "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks." WDFW is required to provide, by November 1, 2010, a report to the appropriate Legislative committees summarizing the resulting discussions, outcomes and recommendations of this stakeholder process. In addition, WDFW must give due consideration to the recommendations before soliciting or awarding a new surplus salmon disposal contract. The current contract ends July 31, 2011.

The following information has been gathered as a component of the stakeholder input process. The purpose of this review is to gather information regarding how other natural resource agencies dispose of and distribute surplus salmon returning to their hatchery facilities and to determine if any of these strategies can be used by WDFW to help develop its "best use" practices. This is not meant to be an exhaustive review due to time and resource considerations, but rather a brief look at how other agencies handle hatchery surplus.

The eight agencies listed below were contacted by phone and asked to describe their system for dealing with hatchery surplus.

U.S. Fish and Wildlife (USFWS)

Carcasses at USFWS hatchery facilities cannot be sold as they are deemed government property, yet have no monetary value. The top priority for distribution is to the tribes. After tribal requests have been filled, carcasses are donated to the Oregon State Food Bank and Northwest Harvest. These carcasses are picked up by American Canadian.

USFWS conducts nutrient enhancement programs at some facilities. Medicated carcasses go to a rendering plant at no cost to USFWS or are buried on-station.

A tribal fish processing plant near the Bingen/White Salmon area on the Columbia River is scheduled to be up and running in the near future. Since the USFWS' number one priority for these carcasses is that they go to the tribes, it is possible that all food quality fish from their facilities will be going to this processing plant and the current donations to the food banks could be eliminated.

Nisqually Indian Tribe

All carcasses from the Clear Creek and Kalama Creek Hatcheries are given away to individual citizens or local food banks, church groups, etc. No fish are sold. Unusable fish and pond mortalities are buried on hatchery grounds. Low quality fish are frozen at the hatchery and later distributed throughout the Nisqually River watershed for nutrient enhancement.

All females are stripped of eggs and these non-viable eggs are sold to Franco Fish Products in Tacoma, Washington. Egg sales generated $20,000 in 2007 and have averaged approximately $8,000 per year over the last few years. Price paid recently was in the $2.00 - $4.00/lb range.

Revenue generated goes back into the hatchery budget.

Canada Department of Fish and Oceans (CDFO)

All carcasses are given to the First Nations. Previously, CDFO had a contract for selling hatchery surplus, but in the mid-1990s a policy decision was made to give the carcasses to the First Nations.

First Nations contracts with a processor for pickup, processing, egg sales, etc. All carcasses must be picked up regardless of condition. There are no sales to the general public, give-aways or donations to local food banks.

CDFO conducts a nutrient enhancement program using non- medicated, unusable carcasses. Medicated carcasses are buried on-station. No carcasses go to rendering.

Community operated hatchery facilities, of which Canada has a few, are allowed to sell returning carcasses to offset costs.

Idaho Department of Fish and Game (IDFG)

IDFG does not sell carcasses or eggs. Their first priority for hatchery surplus is to provide it to the tribes. Public food banks are the next priority and there instances of general public give-aways, mainly for spawned steelhead. Unusable carcasses are frozen and hauled to a rendering plant. Contact was not sure if IDFG had to pay for rendering or not. IDFG does not have a nutrient enhancement program.

Alaska Department of Fish and Game

Hatcheries in Alaska are private, non-profit, but can and do sell fish returning to their facilities to help offset operating costs. Throughout Alaska, pink, chum and Chinook are the predominant species sold. Hatchery returns in Alaska are in the range of 2.0-6.0 million fish annually.

Contracts vary and are on a hatchery-by-hatchery or aquaculture association basis and are generally *for fish that are harvested before they get to the hatchery*.

The Cook Inlet Aquaculture Association does not sell carcasses from its hatcheries, but they do donate them locally.

Prince William Aquaculture Association does utilize processors to handle hatchery carcasses. The carcasses are rendered into fish oil. Contact was unsure if revenue was generated or not. They do not donate them to food banks or give them to tribes.

In SE Alaska, carcasses recently sold for $0.02 – $0.04/lb

One Alaska hatchery organization sells all their carcasses to be made into dog treats. .

For the remaining hatcheries, in general, carcasses are typically given to people who request them. Some carcasses may go the tribes. Carcasses are used for bear and raptor feed, for bait and some are made into fish oil. There are no nutrient enhancement programs.

California Department of Fish and Game (CDFG)

California does not sell carcasses or eggs. All hatcheries are mitigation facilities owned by other entities, but operated under contract by CDFG. Carcasses go to tribes for ceremonial and subsistence uses and are donated to food banks. Food banks may then donate directly to tribes for needy tribal members. In some cases, processed carcasses are shipped back to the hatcheries for distribution. CDFG tries to keep the donations within the local area. Non-edible carcasses go to a render plant at a cost to CDFG. No steelhead are killed at CDFG hatcheries. They are all returned to the river. CDFG does not have a nutrient enhancement program.

Michigan Department of Natural Resources (Michigan DNR)

Michigan DNR contracts with American Canadian to dispose of their carcasses. American Canadian provides staff to man weirs and help handle and process salmon at Michigan DNR hatchery facilities. American Canadian picks up all salmon regardless of condition, approximately 200,000 fish per year. Michigan DNR pays American Canadian approximately $220,000 per year for these services. American Canadian then pays Michigan DNR $0.01/lb for carcasses received. In 2009, this was approximately $22,000.

Michigan DNR previously contracted with tribes and gave away carcasses as a means of dealing with their hatchery surplus. However, either method worked for them. Carcasses are not given to the tribes and Michigan DNR does not conduct nutrient enhancement programs with salmon carcasses. The contract encourages American Canadian to market the carcasses within the state of Michigan when possible. Some carcasses are minimally processed and given to food banks

and charitable organizations, although it appears that this is up to American Canadian and not a firm stipulation in their contract.

Oregon Department of Fish and Wildlife (ODFW)

ODFW's priorities for salmon returning to their hatchery facilities are 1) broodstock and escapement, and then 2) carcasses to the tribes. Fall Chinook, Spring Chinook and coho are sold under separate contracts from only 4 hatchery facilities. ODFW maintains a list of 40-45 fish buyers who may be interested in bidding on the contracts.

This year, Air Fresh Seafoods has the contract for fall Chinook and coho at Bonneville and Big Creek Hatcheries. Borstein Seafoods has the current contract for spring chinook at Clackamas Hatchery ($42 each this year) and American Canadian has the contract for spring Chinook at Cole River Hatchery. American Canadian picks up coho for use in Oregon's Statewide Food Bank Program. Carcasses are given to small local food banks as well. In 2009, the contractor paid $32.25 to $36.50 per carcass for spring Chinook at Clackamas and Cole River Hatcheries. Buyers are only required to pick up carcasses for sale and each hatchery has to deal with the unusable carcasses. Medicated carcasses are buried on station. Otherwise unusable carcasses are used for nutrient enhancement.

Revenue from sales ($795,900 in 2009) to the Fish Propagation Program and is distributed back to ODFW hatchery facilities. ODFW does not sell carcasses from all their facilities due to public pressure. They don't sell carcasses from any of their PUD facilities. All food quality carcasses, from other than the 4 hatcheries listed above, are donated to food banks.

There are no provisions in the contracts to provide processed products back to the state of Oregon.

There are no eggs sales.

Washington Department of Fish and Wildlife (WDFW)

WDFW disposes surplus carcasses via "competitive" bidding amongst "qualified" fish processors, canners, wholesalers or by-products manufacturers. The contract is based on a RFP/ RFQQ process which is evaluated by WDFW staff who award points per category: qualifications (30%); price per fish quote (70%) and up to 5 additional points for proposed donations to food banks. The contract is for one year, with WDFW having the option to extend it annually for an additional five years.

The successful bidder (contractor) must remove all carcasses from hatchery facilities regardless of condition. The contractor must meet specific food handling requirements for processing fish for human consumption and must make available packaged fillets or smoked fish products for purchase at a reduced rate by Department of Corrections (DOC). The amount that must be provided is determined by a sliding scale based on the pounds of fish the processor purchases form WDFW. DOC has the option of purchasing these products, or not. In addition, the contractor must comply with their commitment stated in the RFP to provide packaged fillets to food banks. In 2005, the current contractor committed to providing a minimum of 40,000 pounds of fillets to food banks. The actual number of fillets delivered to food banks is much, much higher and today represents 35% - 45% of all surplus salmon returning to State hatcheries.

As part of the contract, the contractor purchases salmon carcasses from WDFW for a nominal fee ranging from .05 to $2.00 per individual salmon carcass, including roe. The carcasses are assigned a condition factor by hatchery employees before the carcasses are transported off station by the contractor. The price paid by the contractor is based on fish species, sex and condition factor. By law, all revenue received by WDFW from the sales of carcasses from state funded hatchery facilities is divided between WDFW (20%) and the Regional Fisheries Enhancement Group Program (80%; RFEG). In the last five years, the total revenue generated from this contract ranged from $16,554 to $67,504, equating to an average of $31,616 annually which is divided equally between the 14 RFEG's.

In recent years nutrient enhancement has become a large part of the disposal process. Nutrient enhancement is based on scientific research documenting the value of salmon carcasses for increasing watershed productivity. In addition, the numbers of carcasses "donated" to food banks has increased dramatically. As a result, the number of carcasses actually purchased by the contractor has declined precipitously. However, it should be noted that 2008 saw the single highest allocation of funds to the RFEG Program from the sale of surplus carcasses since the inception of this program. This is in part due to the large chum run that year.

Once the carcasses are removed from the hatcheries and all contract conditions have been met, the contractor may dispose of the remaining carcasses and roe at their discretion. This typically means carcasses that have died in the holding ponds, medicated fish and fish unfit for human consumption are sent to landfill, at the contractor's expense, or converted into fish meal for use

in dog or cat food. *The contract as written does not require the contractor to account for the value of the roe removed from the carcasses prior to final disposition to food banks, DOC or land fill.*

It should be noted that the current contractor has had the contract since at least 1991.

Satsop Springs

CBFTF Pilot Project Summary – 2009

In 2009 the Chehalis Basin Fisheries Taskforce (CBFTF), Hood Canal Salmon Enhancement Group (HCSEG) and Ocean Gold Seafoods (OGS) entered into a partnership with the intent to document potential revenue from two hatcheries in the Chehalis basin.

Surplus salmon were removed from Satsop Springs and Bingam hatcheries and transported to the Ocean Gold facility for processing. Brood stock carcasses were returned to the stream for nutrient enhancement. Fish fit for human consumption were processed and frozen for sale. Fish unfit for human consumption were rendered into 3,000 lbs. of salmon meal for carcass analog manufacture. Roe was extracted and sold at the wholesale market value. Net proceeds from sales were split evenly between the processor and the CBFTF.

Results:

- 21,223 fish to processor
- 146,311 lbs carcass and eggs X wholesale value = $184,536 gross revenue
- $111,134 processing costs
- $184,536 - $111,134 = $73,402 net revenue
- $36,701 revenue to CBFTF
- $36,701 revenue to Ocean Gold

Contrast:

At best, assuming that ALL of these fish were females in good condition, these fish would have generated $21,223.00 if they had been included in WDFW's current contract process.

Conclusion:

This pilot project proves that alternative methods of carcass disposition can dramatically increase revenue. This project was successful because volunteers provided labor to process fish at the hatchery and the profit earned by the processor was capped at 50%.

Conclusions

For most agencies contacted the priorities for fish returning to hatchery facilities were 1) hatchery broodstock and escapement, 2) tribes, 3) food banks, sales and nutrient enhancement.

Michigan DNR does not give any carcasses to the tribes.

Sales:

Only WDFW, Satsop Springs, the Oregon Department of Fish and Wildlife ($795,900 in 2009) and private, non-profit hatcheries in Alaska (revenue unknown) sell carcasses. Nisqually Tribe ($8,000 annually) and possibly other tribes in Washington sell non-viable eggs. On the other end of the spectrum, Michigan DNR pays a contractor ($220,000 annually) to help with handling fish at their hatcheries. Michigan recoups costs from their contractor at $0.01/ lb, or approximately $22,000 annually.

Food banks:

All agencies donated carcasses to food banks (or individuals) to some degree. American Canadian is involved in these food bank programs in Oregon, Michigan, California and at USFWS hatcheries.

Nutrient Enhancement:

Of the eight agencies contacted, WDFW and Satsop Springs, six conduct nutrient enhancement programs: Nisqually Tribe, Canada Department of Fisheries and Oceans, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, WDFW and Satsop Springs.

Uses of Salmon Returning to Hatchery Facilities

	Broodstock	**Escapement**	**Tribes**	**Food Banks**	**Sales**	**Nutrient Enhancement**
USFWS	X	X	X	X		X
Nisqually Tribe	X	X	X	X		X
CDFO	X	X	X			X
IDFG	X	X	X	X		
ADFG	X	X	X	X	X	
CDFG	X	X	X	X		
Michigan DNR	X	X		X[1]	X	
ODFW	X	X	X	X	X	X
WDFW	X	X	X	X	X	X
Satsop Springs	X	X	X	X	X	X

[1] Michigan DNR sells carcasses to American Canadian. American Canadian then donates some of the carcasses to food banks in Michigan.

Appendix D.

Washington Department of Fish and Wildlife Surplus Salmon and Egg Program History

September 20, 2010

This information as gathered by talking with Bob Foster and Andy Appleby, both former WDFW employees who oversaw the Carcass and Egg Program.

Prior to the early 1970's the distribution of carcasses was on an ad-hoc basis, hatchery managers freely distributed them to jails or other programs. A large number were also placed into landfills. These practices were investigated by the Washington State Senate, primarily Senator Bob Grieve. As a result of this investigation, best business practices were adopted and codified. The sale of carcasses and viable eggs by Washington Department of Fisheries (WDF) were allowed but under fairly strict guidelines by lawmakers.

Oversight of the sale was a Commission composed of Senators and interested parties, a yearly summary was presented and a proposal for the coming year's program was presented for approval. Carcasses not needed for propagation but returning to WDF hatcheries were managed under rules of Department of General Administration (GA) governing state surplus property. Contract conditions were agreed to by WDF and GA and Requests for Bid performed. Initially, yearly contracts were developed, later multi-year contracts were the norm. The contracts specified the price per carcass based on species with adjustments for sex, in some years a separate category was the price for non-viable eggs. The carcasses, if in adequate quality, were prepared as a smoked product, as a pickled product, or as a paste product. The plant were these carcasses were prepared was an FDA approved kosher processing plant. The paste was very profitable for several years but later the product became less profitable, mainly because of net reared Atlantic Salmon. The smoked and pickled products were marginally profitable. Non-viable eggs were processed as caviar.

Also, at this time, whole unprocessed carcasses were provided to food banks or other charities. These operations provided either a whole product or a filleted/cleaned product to individuals. The processing was only rarely done in an FDA approved site.

In later years, contracts specified a portion of prepared product be provided to Department of Corrections (DOC) at a low price for use in prisoner feeding programs. This was a viable alternative to other protein in the prisoners' meals. Also, the contractor began processing carcasses that previously had been provided to Food Banks as a whole carcass and providing a flash frozen product for distribution through the Food Bank.

Also at this time many landfills refused to allow carcasses to be disposed in them and few hatcheries had adequate area for on-site disposal of carcasses. Placing large numbers of carcasses in streams were prevented by WA Department of Ecology.

The distribution of viable eggs followed established criterion. There were several priorities; use of eggs in other WDF facilities, use of eggs in cooperative projects, use of eggs in tribal projects, use of eggs by other entities that resulted in the release of fish for the citizens, and finally sale of the eggs to other US companies or foreign entities.

When eggs were deemed as not needed for propagation and release, they were made available to firms that specialized in taking the eggs, incubating them and shipping them to other countries for propagation.

The major countries receiving eggs were; Japan, Chile, and Korea. The price for these eggs was established in the 1970's and the yearly price was adjusted for changes in the value added index by WA Department of Revenue. Firms that desired to participate in viable eggs placed a performance bond with WDF. The priority for receiving viable eggs was governed by a random drawing of all firms, when eggs became available, the first chosen firm would be contacted, and they had the opportunity to accept the eggs. If they did not desire the eggs, the next firm was called, and so on. The firms had to supply a crew to spawn the adults and handle the green eggs.

WDF supplied virology sampling and provided the results to the firms. An adequate health screening was needed to meet requirements of the receiving country.

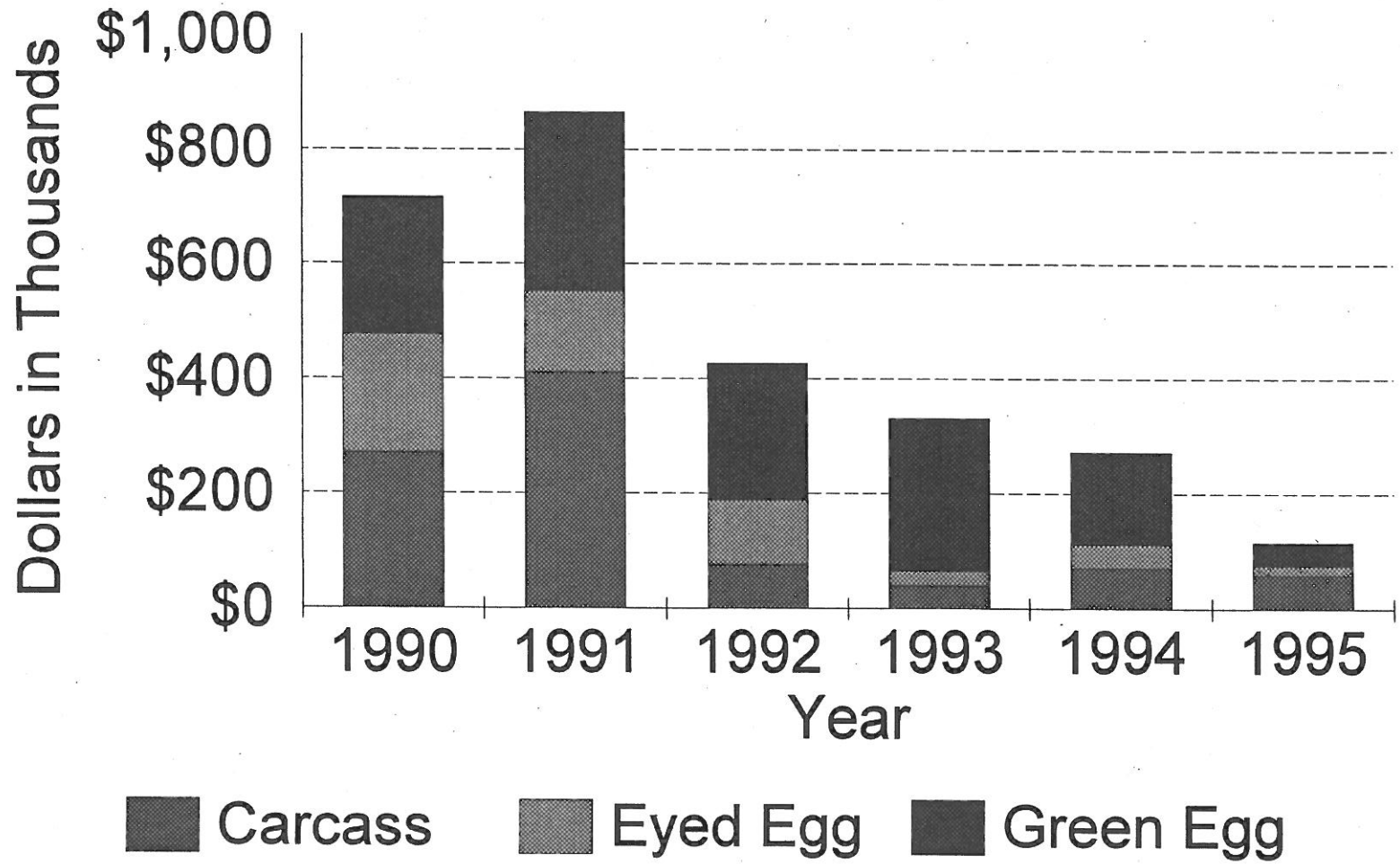
The viable egg program decreased as the other countries developed local broodstock or the aquaculture programs became unprofitable.

- In the late 1970's, the Department of General Administration started administering the Carcass and Egg contract.
- In 1991 Ocean Star Seafoods was the only company to bid on the contract.
- The economics of carcass sales decreased in 1992. Viable egg sale market decreased in 1993 and was dependent on international market conditions. Most viable eggs sold went to Japan or Chile.
- Proceeds from carcass and egg sales, less 25% for GA, were used to fund cooperative and RFEG projects.
- Department of Corrections received fish from this program at least as early as the early 1990's. They estimated the benefit at $250,000 annually at that time. (This program continues currently and DOC is interested in expanding the amount of processed fish product they receive for their inmate feeding program.)
- Carcass and Egg sales in 1991 - $864,237.62 Viable egg sales in 1991 - $453,346.41.
- 1995 legislation directed revenue from the sale of surplus salmon and eggs at state funded facilities to the RFEGs. Previously the proceeds were deposited into the state General Fund.
- In 1995 carcass and egg contracts generated $125,300. This is less than the 1990-94 average of $521,900. This downfall was attributed to the worldwide excess of salmon products and the low wholesale price of fish. (See attached graphic)
- Carcass sales in 1997: $50,844 minus 25% GA = $40,660 to RFEGs. Viable eggs sold from Glenwood and Satsop Springs only = $5,692 (759,000 eggs)

  For recent numbers by disposition, see the attached table.

Washington State

Revenue from Carcass and Egg Sales



1995 represents preliminary in-season numbers

Distribution of Salmon and Steelhead Returning to WDFW Hatcheries

16-Sep-10

Number	Year										Preliminary
Receiving	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
DISPOSAL - AMERICAN/	6,118	9,052	14,752	13,221	13,875	13,220	16,120	18,987	32,988	42,213	23,807
DISPOSAL - LANDFILL	16,627	19,873	14,053	13,171	10,008	11,603	11,387	18,165	25,006	16,951	17,693
DISPOSAL- ON STATION	34,612	27,376	34,426	28,679	24,471	18,112	20,110	21,278	17,229	14,802	13,769
DISPOSAL- RENDERING	1,342	246	1,963	1,617	1,037	1,251	650	2,048	1,189	892	870
DONATION - FOODBANK	46,202	116,652	248,912	240,960	228,029	202,439	163,616	158,174	167,260	222,348	189,426
DONATION - TRIBE	2,465	7,494	14,332	20,840	10,945	12,901	13,544	14,501	16,307	16,781	17,552
DONATION-MISC RESRCH	16,589	9,234	22,098	4,108	5,064	2,450	3,416	5,536	4,499	2,678	5,165
SOLD - AMERICAN/CANA*	186,023	171,421	339,809	261,452	288,012	135,318	110,710	80,604	101,978	56,240	104,999
WDFW - NUTR. ENHANCE	59,073	133,482	179,818	192,180	151,486	171,886	145,400	104,859	100,335	117,180	160,680
RETURNED TO STREAM	123,951	234,527	258,349	252,274	226,259	258,168	155,280	197,054	100,644	135,691	154,048
Grand Total	493,002	729,357	1,128,512	1,028,502	959,186	827,348	640,233	621,206	567,435	625,776	688,009

Notes:

Disposal- American were taken by contractor buyer for disposal
Disposal - Landfill were taken to landfill by WDFW, contract buyer, or other entity
Disposal - On station were buried on WDFW Hatchery grounds
Disposal- Rendering were taken to rendering facility
Donation- Foodbank were taken by both statewide network and local food banks
Donation - Tribe were taken by Native American Tribes for ceremonial and subsistence purposes
Donation- Misc Resrch were taken for education, wildlife, and research projects
*Sold- American/Cana were taken by contract buyer***
WDFW- Nutr. Enhance were taken for nutrient enhancement
Returned to Stream were live fish released during trapping
Tables do not include kokanee or gamefish
2008 number sold was low due to low chum salmon return
2009 information is preliminary
**Total sold in 2009 includes 18,839 fish sold to Ocean Gold*

Appendix E.

WASHINGTON STATE UNIVERSITY

THE WILLIAM D. RUCKELSHAUS CENTER

UNIVERSITY OF WASHINGTON

Surplus Hatchery Salmon Disposal Project

A Report to the Washington Department of Fish and Wildlife
by

Michael J. Gaffney, Acting Director
Washington State University
Division of Governmental Studies and Services

Funded through a contract with the
Washington Department of Fish and Wildlife
to
The William D. Ruckelshaus Center
Washington State University and
University of Washington

October 28, 2010

Introduction

The Washington State Legislature included in its 2010 State Budget a *proviso* directing the Washington State Department of Fish and Wildlife (WDFW) to "work with appropriate stakeholders to facilitate the disposition of salmon to best utilize the resource, increase revenues to regional fisheries enhancement groups, and enhance the provision of nutrients to food banks." The proviso instructs WDFW to provide, by November 1, 2010, a report to the appropriate Legislative committees summarizing the resulting discussions, outcomes and recommendations. The proviso also instructs WDFW to give due consideration to the recommendations before soliciting or awarding a new surplus salmon disposal contract.

To assist with this effort, WDFW contracted with the William D. Ruckelshaus Center. The Center is a joint effort of Washington's two research universities and was developed in response to requests from community leaders. The William D. Ruckelshaus Center acts as a neutral resource for collaborative problem solving in the region. The Center provides expertise to improve the quality and availability of voluntary collaborative approaches for policy development and multi-party dispute resolution.

WDFW and the Ruckelshaus Center agreed that the Center would provide services to support stakeholder engagement and the development of recommendations as called for in the Proviso. These services included development of an economic analysis; and an interview-based situation assessment; providing recommendations for a stakeholder involvement process; facilitation of meetings between WDFW and appropriate stakeholders; and informal advice on presenting subsequent recommendations to the public, Fish and Wildlife Commission, and/or Legislature.

Those tasks were conducted by Center faculty and staff and other WSU or UW faculty, staff and students associated with the Center.

Project highlights:

- An interview-based *Situation Assessment* Report (interviews and report by Christina Sanders, WSU) and an *Economic Analysis* Report (prepared by Daniel Huppert, UW) were presented at the first stakeholder meeting. This September 2nd meeting was facilitated and engaged stakeholders in establishing a common basis of knowledge for future discussions. A report on disposal alternatives adopted by peer agencies (states and provinces, tribes, federal, etc.) prepared by WDFW, was also presented.
- A second stakeholder meeting was facilitated on September 20th to allow stakeholders to collaboratively develop a program history, and to present and discuss options and alternatives for management of surplus hatchery return salmon.
- The third, and final, stakeholder meeting was held on October 12th. WDFW presented draft recommendations to the stakeholder group and received feedback.

FIRST STAKEHOLDER MEETING SUMMARY September 2, 2010

The purpose of this first meeting was to jointly establish a common base of information regarding surplus hatchery return salmon, so that all participants had an opportunity to contribute to a fact base that the Washington Department of Fish and Wildlife (WDFW) can take into account in addition to stakeholder comments and alternatives when generating recommendations for the Washington Legislature.

The meeting began with a presentation and discussion of three documents:

1. Situational Assessment Report (Prepared by Christina Sanders, WSU DGSS)
2. WDFW Hatchery Carcass and Egg Programs Fact Finding
3. Economics of WDFW Surplus Hatchery Salmon Disposition

Among the general comments about these reports was the concern that the documents need more information associated with the nutrient value of salmon carcasses for in-stream enhancement. There was also general agreement that a history and description of Washington's current program would be helpful to inform these discussions. There was a general request to have more information about the current contracts and the process by which they were issued. WDFW agreed to provide this information at the next meeting. A desire for more detailed information about hatchery operations, fish carcass disposal, what happens to roe, and the costs of processing was expressed by several participants.

Document-specific comments addressed the nutrient value topic, as well as several points of interest or clarification, including the role which Federal Mitchell Act funding plays, the utility of including more information on Alaska hatchery operations, and the desirability of a more detailed discussion of Oregon hatchery operations to explore their usefulness as a comparison for Washington operations.

The Economic Report received considerable attention from the group, with questions regarding specific elements of that report and a number of suggestions for additional investigation or approaches to estimating value. Included in these comments were concerns that the value of in-stream nutrient return – especially for the larger goal of salmon recovery – was not fully estimated, that not all costs of the program had been included in the analysis, and that the available costs and incomes of programs for salmon recovery were not sufficiently referenced. There were also specific questions and comments about several of the values included in tables in this Economic Report, how they were obtained or estimated, and the appropriate mechanism and rate for discounting ex-vessel prices to approximate the value of hatchery fish. There was also considerable discussion about the economic value of roe, the possible inverse relationship between carcass quality and roe value, and how that is reflected in the report.

A number of specific figures and rates pertaining to the number of carcasses allocated to different entities, the average weights of fish and roe, the cost of processing and the percentage of fish which contain roe were provided for use in preparing an amended version of the Economic Report. Dr. Huppert solicited input in this vein for his benefit as he begins work on that amendment.

Following the initial session focused on the Reports, the group moved on to a more general discussion. The general desire for more information on the history and development of the current program, the current contracting process, and the Legislative Proviso which gave rise to this stakeholder process was made clear. A suggestion was made that a flowchart for the salmon carcass disposal process might be useful to better understand the protocol and where decisions are made. Many thought it would also be useful to have more detailed information on fish return and processing at the level of individual hatcheries. WDFW agreed to work with stakeholders to provide such information if it was not readily available on their website. There was also discussion about the need for information from WDFW about the parameters of the process, and the goals and objectives that apply to the contract and contracting process.

Some members of the group continued to express concern about the failure to address volunteer efforts – particularly with regards to nutrient enhancement. There was also some concern about the lack of attention to best available science, the tax benefits realized from donations and their opinion that the current situation may be a monopoly. There was a general call for a more detailed accounting for all fish and roe involved in the process. There was additional discussion of the role of analogs in nutrient enhancement. The classification as game fish as the reason for non-inclusion of Steelhead and Trout in this process were also discussed

During this session there was considerable sharing of specific information about value, amounts of fish and roe provided to the various beneficiaries, and the range of values estimated in the Economic Report. The nutritional and social value of the fish provided to food banks and the Department of Corrections was explored, as well.

The meeting concluded with a discussion of the legislative and stakeholder processes and calendaring. There will be two more meetings, with the second meeting designed to discuss the process and what ought to be done with surplus salmon based on the reports, discussion developed today and the additional information identified. The third stakeholder meeting will provide an opportunity for WDFW disclose and obtain feedback on recommendations being drafted for the Legislature.

Attendees: Lonnie Crumley, Carl Chastain, Terry Wright, Rebecca Benjamin, Paul Shorbs, Jim Coates, Garrett Reynolds, Steve Bauck, Josh Fogt, Jay Jackson, Chuck Johnson, Paul Ancich, Dianne Ludwig, Tom Williamson, Heather Bartlett, Mark Kimbel, Pierre Marchand, Margaret Neuman, Scott Sigmon, Mark Johnson, Randy Aho, Nello Picinich, Dennis Rydman, Tony Meyer, Jim Malinowski, Tim Berge, Ed Jouper, Neil Werner, Aaron Dierks, Jacob Skeers, Michael Kern, Amanda Murphy, Christina Sanders, Michael Gaffney

SECOND STAKEHOLDER MEETING SUMMARY September 20, 2010

The purpose of this meeting was to discuss stakeholder alternatives, options and concerns regarding surplus salmon and to provide new insight/information/recommendations to WDFW.

The session began with a discussion of the history of the program, to which stakeholders contributed significantly. Among the points developed during discussion of the program history with stakeholders were:

- Pre 1970's, managers at individual hatcheries were responsible for making decisions to dispose of the fish that came back to the hatchery and carcasses. In 1971 the Legislature took an interest in what was happening to the carcasses.
- Districts and regions handled contracting for carcass disposal until approximately 1985, when the GA began to handle at the State level.
- Contracting was for both carcasses and eggs, separately. Eggs were sold overseas (Chile and Japan) and to Michigan, among other locations. State brokers set the price.
- In 1991 there was a dip in revenue as those markets reached saturation. This trend continued (1991: $860,000 to 1995: $125,000). There have also been reductions in fish production.
- WDFW made a decision based on fisherman interest to quit selling viable eggs. In 1995, the RFEGs got the legislative authority to collect the revenue from state funded hatcheries.
- About 10 years ago WDFW acquired the authority to manage the contract directly, without participation from General Administration.
- A pair of charts showing revenues from the program over time was presented and discussed.
- There was also discussion about which carcasses can be included in the program and which must be otherwise disposed of (e.g. medicated carcasses).
- The Department's current position is that the Department has an interest in salmon recovery. The Department also has a vested interest in the value of surplus salmon, but they want to make sure that these surplus fish do not remain at WDFW facilities. It was noted that there have been reductions at hatcheries, and in all likelihood hatcheries will not be supplying more fish; the numbers will probably stay as they are currently or even decline.
- The practice of hatcheries disposing of fish independently or on-site has been dropped over the years, with most fish – except notably treated fish ("meds") and very poor quality carcasses ("morts") – going to American Canadian as part of the current contracting arrangement. American Canadian has been involved at some level for approximately the last 25 years.

- American Canadian began providing processed products to the DOC under a pilot project in about 1998.

There seemed to be a general recognition that, given the possibility of static or reduced surplus quantities, one way to get the most value is to maximize quality and full utilization – which could include analogues.

From this discussion of the program genesis and history, the session transitioned to a formal process of listing stakeholder alternatives and options. All stakeholders had an opportunity to be heard. The RFEGs presented a formal proposal, previously shared in written form, for consideration as an alternative. The RFEG proposal was discussed in some detail during this session. Other stakeholders presented their own concerns, options and alternatives. From this listing exercise arose a total of 19 significant articulated options, concerns or alternatives. The stakeholders then used a "dot exercise" to identify their most important concerns from among those listed, in order to prioritize those options for discussion. The alternatives and concerns identified, as well as the "votes" received by each during the prioritization process, are as follows:

1. RFEQ proposal: (**16)**
2. More bidders, change bidder process and it will increase revenue, make more competitive. (**13)**
3. There has been an increase in the amount of fish going to the food banks. Need to maintain consistent quality and quantity of fish distributed to the food banks. Ensure food safety. HAACP approved. (**7)**
4. Maximize usage of volunteers throughout the entire process. (**7)**
5. Restore funding to hatcheries. (**5)**
6. Prefer disposal of fish within the watershed, keep them on site. If this is not possible, then analogs would be the best alternative. **(4)**
7. Have a 100% increase in hatchery production. (**4)**
8. Look at maximizing revenue by looking at best practices of Oregon Satsop and Nisqually. (**4)**
9. Retain the value of roe that are donated to food banks. **1 VOTE**
10. Improve accounting and transparency of revenue. **1 VOTE**
11. Use non-viable biomass for analogues. **1 VOTE**
12. All fish go to certified processer
13. Reduce the amount of disposed of fish.
14. Maximize byproduct usage.
15. Consider removing roe on station (fish that go to the food bank).
16. Hatcheries need to meet their needs-this means brute stock. Need to improve efficiency of hatchery practices; this includes capacity, handling practices, technical and human resources. This will require leg action (need resources to do this).
17. Search out volunteers to help in hatcheries.
18. Utilize nonviable biomass for analogs.
19. Provide complete transparency.

Following the prioritization process, the options identified as most important to the stakeholders present were re-articulated as three principal areas of discussion with the stakeholders self-selecting into smaller groups for facilitated discussions in more detail about each of the three areas. Those groups then re-convened to share summaries of those detailed discussions with the group as a whole.

TOPICS CHOSEN FOR BREAK-OUT GROUPS

1.) Change the biding process
2.) Maintain quality, quantity and safety to food banks
3.) Nutrient enhancement and increase usage of volunteers

GROUP 1 COMMENTS: MAINTAIN QUALITY, QUANTITY AND SAFETY TO FOOD BANKS

It was initially agreed that any discussion of Food Banks and most references should include the Department of Corrections

- There are programmatic elements, and differences between hatcheries that impact quantity and quality. They include:
    - Holding Time
    - Difficulty in Projecting Numbers
    - Processing standards
    - Selection/protocol for fish to the program
    - Scheduling delays with the testing lab

The discussion addressed several significant issues:

1.) Food Safety—The best way to accomplish this is with a certified commercial processor
    - This should be distinguished from "Ma and Pa" food banks
    - There are issues of Risk management/liability
    - Commercial processing is difficult with small numbers
    - All end-products should be Consumer-packaged
2.) Hatchery Production
    - Scheduling of required testing needs to be improved
    - The process of selection for various uses (food/nutrient) requires a better protocol-
3.) DOC would like to continue at the present 180,000 level
4.) Planning should include 200,000 for N.W. Harvest
5.) There is a possibility of adding volume by using weired fish, Kokanee and Steelhead

GROUP 2 COMMENTS: CHANGE THE BIDDING PROCESS

- Remove 5 year previous experience requirement
- Look at bonding requirement
- Allow bids on individual hatcheries regions
- Keep bid: Certainty vs. Competition
- Shorter contract duration (biennial)
- Weight ecological value (for ex. Nutrient enhancement) commit to analogs

- Separate bid on carcasses v. eggs
- Weigh the contribution to salmon recovery
- % revenue to hatcheries→funding
- Define expectations re: % to food banks, DOC/institutions and Tribes
- Consider moving administration back to GA
- Separate category in contract for each type of fish
- Contract should have a dollar amount associated with each category of fish (donated etc.)
- Change disease policy to allow morts to be disposed in watershed
- % age of gross margin?

GROUP 3 COMMENTS: NUTRIENT ENHANCEMENT AND INCREASED USAGE OF VOLUNTEERS

- DFW should know that NGOs and the Tribes are already working together cooperatively. There is a successful model in Region 5 (usage of volunteers).
    - This is done for both nutrient enhancement efforts and assisting hatchery operations
- Corrections crews are also being used for hatchery operations. This is inexpensive, trained labor (e.g. roe collection).
- Excess carcasses are no longer a liability-they are of value.
- Volunteer groups need to be aware of DFW liability concerns and be prepared to respond to them/
- DFW should let NGO's know about areas in need of assistance so NGO's can respond appropriately.
- DFW place a greater emphasis on utilizing nutrient enhancement events as a vehicle to expand citizen/local stakeholder participation and engagement in management of their resources (education to build community among interested parties)
- Cost reductions provided by use of volunteers.

Attendees: Lonnie Crumley, Terry Wright, Rebecca Benjamin, Paul Troka, Doug Chaney, Bob Kehol, Jim Coates, Garrett Reynolds, Steve Bauck, Josh Fogt, Jay Jackson, Chuck Johnson, Dianne Ludwig, Heather Bartlett, Mark Kimbel, Carl Burke, Scott Sigmon, Toy Meyer, Shannon Wells, Mark Johnson, Randy Aho, Nello Picinich, Gary Loomis, Margaret Neuman, Tim Berge, Patty Michak, Aaron Dierks, Jacob Skeers, Michael Kern, Amanda Murphy, Christina Sanders, Michael Gaffney

THIRD STAKEHOLDER MEETING SUMMARY October 12, 2010

The purpose of this third and final stakeholder meeting convened by the William D. Ruckelshaus Center on behalf of the Washington Department of Fish and Wildlife (WDFW) was to provide the stakeholders who had been participating in the process, and others who were interested, with an opportunity to hear and comment on WDFW's Draft Recommendations and the Rational behind them. The meeting began with a short discussion of the Proviso, a summary of the activities to date, and introductions.

WDFW then presented a summary of all of the input and factors taken into account in developing the Draft Recommendations. These factors included – but were not limited to – the previous stakeholder sessions, input from various stakeholders outside of those sessions, and four documents prepared as a part of this process: An Economic Analysis prepared by Dr. Dan Huppert (UW), an interview-based Situation Assessment prepared by Christina Sanders (WSU), and two documents prepared by WDFW, a Peer Agency Alternative Fact Finding document and a Collaboratively developed History of the program prepared by Mark Kimmel. All of these documents will be included in the WDFW report to the Washington Legislature. WDFW will accept written input to this document thru Monday, October 18th. DFW will, as a courtesy, share the final document before submission to the Legislature, however to be faithful to their deadline, will not accept input for possible inclusion after 10/18.

Heather Bartlett reviewed the legislative proviso, and indicated that working with the Ruckelshaus Center and stakeholders has allowed WDFW to take into account all of the elements of the issue of surplus salmon disposition. The economic analysis enabled them to some extent to compare "apples to apples." The situation assessment enabled them to see the stakeholders' values in black and white, increasing their understanding of the issues and, in particular, pointed out to them the importance of the value of roe. The fact finding document gave them an opportunity for comparison between what Washington has done and what other states/provinces are doing. Bartlett explained that the overall situation has been hampered by budget cuts, especially to the hatcheries. Recognized that there is lots of important work to be done but that they are limited by reduced funding, and that some of the hatchery facilities are literally falling apart.

Bartlett then reviewed the WDFW Draft Recommendations.

The second half of the meeting consisted of stakeholders asking questions and providing comment/feedback on the document. A summary of that feedback and DFW responses is as follows:

- Biennial rebidding: There was discussion of whether this would give a contractor enough time to recoup startup costs. DFW indicated that the time might be readjusted if it is deemed inappropriate.

- There was substantial discussion about how to specify an amount to be donated to Northwest Harvest. The 40% is included as a reference point but represents the percentage of total returns, minus the returns to streams, across all hatcheries. Concern was expressed regarding points #7 and #8: that there is no minimum amount that would go to the food banks. DFW discussed the need for trying to meet the intent of the fish to food banks as a priority without

- Some discussion took place regarding the food banks' need for protein and whether other sources of protein would suffice. As mentioned in Huppert's economic analysis, other sources of protein do not provide the same high quality of protein so using other protein sources is not acceptable.

- DFW clarified that they want to make a distinction between state funded hatcheries and local and federally funded hatcheries because only money that comes to the state hatchery system can be passed on to the RFEGs.

- Concern was expressed that in the future there will be less nutrients going back into the streams from the state hatcheries. DFW expressed the need to get money back to the RFEGs from these facilities, but that they will continue to see nutrient enhancement as important and will continue this activity to the best of their ability within the current guidelines and constraints. A suggestion was made that the RFEGs submit a proposal for the unusable fish to go to nutrient enhancement through the use of volunteers.

- The concern regarding accountability and transparency was raised again. Item #13 addresses accountability for all entities involved. Best case would be for tracking to be done in values that are comparable.

DFW made four specific points on how its recommendations could help meet the goal of increasing revenue to the RFEGs:

1. Donate more males from state facilities to food banks so that more females (& roe)can be sold, allowing RFEGs to gain a proportion of the income
2. The new contract will be more competitive, so will attract more bidders
3. All surplus fish from state hatcheries will be sold
4. Maximum amount of surplus fish from federal/local hatcheries will be donated to the food banks allowing the maximum amount from the state hatcheries to be sold, yielding most possible income for RFEGs

Attendees: Attendees: Dianne Ludwig, Mark Johnson, Randy Aho, Lance Winecka, Arron Dierks, Josh Fogt, Rob Zunich, Ed Jouper, Neil Werner, John Blankenship, Patty Michak, Rebecca Benjamin, Scott Sigmon, Carl Burke, Heather Bartlett, Jeremy Jording, Mark Kimbel, Terry Wright, Garrett Reynolds, Shannon Wills, Chuck Johnson, Tony Meyer, Steve Bauck, Jay Jackson, Christina Sanders, Michael Kern, Amanda Murphy, Michael Gaffney

COASTAL CONSERVATION ASSOCIATION
WASHINGTON

October 18, 2010

Heather Bartlett, Hatcheries Division Manager -Fish Program
Washington Department of Fish and Wildlife
600 Capital Way North
Olympia, WA 98501

Dear Ms. Bartlett,

CCA Washington would like to thank the Washington Department of Fish and Wildlife (WDFW) for its role in facilitating a stakeholder process concerning the surplus salmon program. Through this process WDFW has shown a willingness to engage in an open dialogue on this very important issue. This letter outlines our concerns and recommendations regarding WDFW's proposed changes to the surplus salmon program presented at the stakeholder meeting on October 12, 2010.

Volunteer led nutrient enhancement projects have blossomed across the state in response to new scientific data showing the tremendous value of returning salmon carcasses to our watersheds. We applaud WDFW for fostering this increased volunteerism over the last several years. These projects follow the best available science and support WDFW's mission of "*protecting, restoring and enhancing fish and wildlife and their habitats.*"

In light of this recent positive track record, we were surprised and very discouraged to note that WDFW's proposed changes not only fail to recognize and promote volunteer nutrient enhancement programs but also seem to disregard the best available science. While we support the WDFW's three priorities for the program: 1) generating money for RFEGs; 2) providing food for foodbanks, and; 3) enhancing salmon and other wildlife habitat, we were disheartened to hear the Department state publicly that they are "least concerned" with enhancing salmon and other wildlife habitat.

As we understand it, WDFW proposes to reduce the amount of whole carcasses available for nutrient enhancement across the state, in particular from state run hatcheries. This is a step in the wrong direction. At a minimum, the number of whole carcasses made available for nutrient enhancement should be maintained at recent levels. In fact, there may well be many currently overlooked opportunities to dramatically increase the level that should be examined. We need to find out why so many fish are "disposed" and determine how many could be made available as whole carcasses for nutrient enhancement programs. In order to benefit the resource, WDFW needs to thoroughly exhaust every opportunity that exists for returning whole carcasses to their respective watersheds.

WDFW's proposal also appears to shift priority away from the use of whole carcasses to the use of carcass analogs for nutrient enhancement. CCA supports turning otherwise non-usable carcasses, such as pond morts and medicated fish, into analogs. Nevertheless, enhancement projects should rely primarily on whole carcasses and employ analogs only when whole carcasses are not available.

We also strongly believe that WDFW should more fully recognize, appreciate and promote the value that citizen volunteers bring to numerous nutrient enhancement programs across the state. Citizen volunteers have provided assistance at many WDFW operated hatcheries for years. Now, instead of facilitating greater volunteer involvement in salmon surplus operations, WDFW seems more concerned that volunteer assistance may be in violation of a "contracting out" statute. Why are nutrient enhancement programs now seen as the tipping point for violation of this statute? If this is a real concern, CCA recommends that WDFW get an opinion from the AG in lieu of basing such a decision solely on speculation. Given the current economic situation, WDFW should be prepared to justify why participation by citizen volunteers should not be promoted.

Finally, CCA is also concerned that in recent years only about 10% of each fish donated to a foodbank is usable as boneless, skinless fillets. CCA recommends that WDFW, the agency responsible for managing this resource, determine how this process can be made more efficient. Far too much of this essential biomass is unnecessarily removed from our nutrient deficient watersheds. Much of this biomass is being used for products such as pet food which does not achieve any of WDFW's stated objectives. The true value of the biomass is realized by keeping it in the ecosystem. Remedies might include, for example, requiring on site fish processing to facilitate the immediate return of by-products to the water. Furthermore, since low to medium quality fish have a lower conversion rate of total weight to usable fillets, it might be in the best interest of the salmon surplus program to only allow donations of high quality, male fish to foodbanks and the DOC. After all, who wouldn't appreciate eating a higher quality salmon fillet?

Thank you for reviewing these concerns and recommendations. We hope to see these changes incorporated into WDFW's final recommendations and intend to continue our discussions with WDFW and the Legislature on these very important issues.

Sincerely,

Bryan Irwin, Executive Director
CCA Washington

Cc: Senator Rockefeller
Senator Zarelli
Senator Kilmer
Representative Upthegrove
Representative Finn
Representative Jacks
Director Phil Anderson
WDFW Commission

Appendix G.

REGIONAL FISHERIES ENHANCEMENT GROUP COALITION

Additional responses to Washington Department of Fish and Wildlife on the "Summary of proposed changes to salmon surplus process" document dated October 8, 2010.

The goal of this document is to share with WDFW the Regional Fisheries Enhancement Group (RFEG) Coalition's (Coalition) recommendations to manage hatchery salmon surplus and to address problems with the proposed bid contract approach.

The Coalition feels the opportunity to manage the hatchery salmon surplus program though an MOA has not been completely explored by WDFW.

- The Coalition requested the Washington Department of Fish and Wildlife (WDFW) Director's office to seek an opinion from the Attorney General's office to determine if the WDFW Director can legally enter into a Memorandum of Agreement (MOA) with a RFEG (501c3 non-profit entity) or the RFEG Coalition (501c6 non-profit entity), for management of the Excess Carcass and Roe program (request letter dated October 20, 2010 provided to WDFW).
- A revised bid process is only a small step compared to the full benefits that could be derived with the RFEGs fully operating the program in partnership with WDFW.

The Coalition believes that the RFEGs are uniquely positioned to optimize the benefits from the hatchery surplus salmon resource for each of the intended beneficiaries (food banks, RFEG Program fund and the Department of Corrections (DOC)). For this reason, fully exploring the possibility of an MOA is critical.

- In addition to optimizing the above, the RFEGs will maintain nutrient enhancement programs and enhance fish meal and analog production.
- The objective of the RFEGs, as non-profit entities, is to generate revenue that can be reinvested into salmon restoration projects for the benefit of salmonid resources and the aquatic habitat of the State, of which WDFW has a stewardship responsibility.
- Only the RFEGs have the potential to coordinate volunteers to help hatchery staff in the harvesting and logistical aspect of hatchery operations to maximize value from the returning fish.
- The RFEGs in partnership with WDFW can capitalize on revenue lost through the open bidding process and that revenue would be reinvested into the resources of the State, maximizing the benefits for the resources and citizens of the State of Washington.

Problems with the recommendations presented at the final stakeholder meeting

- WDFW needs to provide scoring criteria for the proposed bid process to the stakeholders and within the proposal package to the Legislature. This criterion is essential to allow evaluation the proposed process.
- **The RFEGs feel that the preliminary economic analysis is inadequate to give the RFEGs reasonable assurance that the outcome of the proposed recommendations will increase funds to the RFEGs. In fact, there could conceivably be a reduction, without a robust analysis the likelihood of increased revenue is unknown.** A revised economic analysis has been prepared but has not been made available to date (October 27, 2010).
- **The proposed strategy to increase revenue for the RFEG Program fund appears to be coming at the expense of the carcass nutrient enhancement program. A reduction in fish for nutrient enhancement is unacceptable to the Coalition.**

Regional Fisheries Enhancement Groups Coalition

- While WDFW is striving to assist the RFEGs and generate additional revenue, which is appreciated, the complexity of the carcass program requires that any changes are thoroughly vetted for all consequences.
- The current contract amendment (sale of all food quality fish from State funded hatcheries) has resulted in less fish being available for nutrient enhancement at both coastal and Columbia basin hatcheries, a serious unintended consequence.

Managing food bank donations

- The Coalition acknowledges the fact that the WDFW wishes to remain minimally prescriptive as to the donation quantity terms and conditions within the contracting process. However, the Department is the only entity that can (and should) articulate suitable donation quantities that ensure returns to every beneficiary are optimized.
- We urge the Department to consider a contract that sets a base level donation quantity to food banks and then utilizes a sliding scale for additional fish for donation to food banks based on hatchery returns.
- State operated hatcheries that are federally or locally funded should be the priority source to meet food donations as currently these facilities do not generate revenue for the RFEG Program fund. If an identified quantity of donations is not met from those facilities, food quality male fish from State funded hatcheries could make up the balance.

Value of excess carcass and roe products are critical to understanding the value of the contract

- WDFW needs to fully and accurately understand the value of excess carcass and roe products within the market place. The greatest value in the surplus carcass contract is realized in the value of the roe. Without understanding this value, there can be no prediction of revenue from roe (the proposed source of RFEG funding in the current recommendation).
- **When WDFW begins to recognize the excess carcass and roe from their hatcheries as a valuable State resource and not a liability requiring costly disposal, WDFW will be better positioned to allocate the resource to meet all stakeholder needs to the extent the resource allows.**
- The Coalition suggested that to account for the value of roe all surplus females in the round are bid by species. The scoring criteria for this bid element should be heavily weighted as an incentive for bidding entities to maximize the bid price for these highly valued fish and thereby increasing revenue to the RFEG program.
- Roe recovery data (e.g. average pounds of roe per female by species, and price per pound at sale) should be required to be reported annually by the contractor.
- The quantity of products and revenue generated from the sale of this excess State property is not tracked as to disposition and distribution. The Coalition believes that all products need to be accounted for, including donated food products.
- All fish covered under this contract and donated or sold must be processed by the winning bidder (with the exception of independent food banks that are approved by WDFW to receive a small number (100 or less) of male carcasses for local distribution).

Analogs

- The Coalition feels strongly that analog production and use should not preclude direct carcass placement for nutrient enhancement. The purchase of carcass analogs in completed replacement of whole carcass placement is not a viable option due to the cost of the analogs.

- The production of fish meal and analogs is not currently funded.

Source of funding

- WDFW operated hatcheries that are funded through federal and local sources do not contribute to the RFEG Program fund. The Legislature needs to enable WDFW to treat all revenue from the sale of carcasses or eggs at State run hatcheries the same, allowing revenue from State operated, federally and locally funded hatcheries to be deposited into the RFEG Program fund.
- The Coalition is ready to partner with WDFW to assist with the 2011 Legislature to revise legislation, as needed, for allowing revenue from State operated hatcheries that are federally or locally funded to be deposited into the RFEG Program fund.

Conclusions

Considering the above, the following prescriptive criteria are suggested:

1. All excess carcasses and roe must be purchased with the exceptions as noted below.
    a. Donation of excess carcasses for use by state recognized food banks, the Tribes, nutrient enhancement and for miscellaneous education/research/wildlife activities.
    b. No Females in the "round" should be donated.
    c. All carcasses conditioned as "Unusable" must be made available for nutrient enhancement by WDFW recognized entities.
    d. "Unusable" carcasses that are in excess of the nutrient enhancement programs may be made available for rendering by the contractor for fish meal production.
    e. Females in the "round" purchased by the contractor and in a condition of "Low Quality" or "Unusable" may be stripped of eggs on-site by the contractor and the carcasses directed to nutrient enhancement or fish meal/rendering.
2. The quantity of donations to food banks should be structured on a set base level with application of a sliding scale tied to the annual hatchery returns for additional donations over the base amount. The actual number of carcasses available from WDFW hatcheries may fluctuate due to variations in the annual returns.
    a. Donation to food banks of excess carcasses shall be from federally and/or locally funded state hatcheries.
        i. State funded hatcheries can donate excess male carcasses if the federally and locally funded hatcheries cannot supply the food bank set base level.
    b. Donation of steelhead to food banks should be authorized regardless of hatchery funding source, and steelhead donations will contribute to the base level.
    c. Donation of excess carcasses should be restricted to those fit for human consumption.
    d. Donation of excess carcasses should be restricted to <u>male</u> salmon.
3. The legislature should direct that funding for the RFEG program is derived from the sale of all surplus carcasses and eggs regardless of the hatchery source of the carcasses.

The Coalition believes that the RFEGs are uniquely positioned to optimize the benefits from the hatchery surplus salmon resource for each of the intended beneficiaries, and the RFEGs have a strong desire to fully utilize every fish to its greatest value. The RFEG Coalition would like to continue to work closely and constructively with WDFW to ensure that the best possible utilization of the resource is obtained; revenue is increased to the RFEGs in order to help sustain the recovery of salmon in their respective areas; and to ensure that quality salmon products are delivered to food banks.

Appendix H.

THIRD SURPLUS SALMON AND EGG STAKEHOLDER MEETING ATTENDANCE
October 12, 2010

Name	Phone	Email
Dianne Ludwig	(360) 902-2252	dianne.ludwig@dfw.wa.gov
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