



REQUEST FOR PROPOSAL

Pacific States Marine Fisheries Commission (PSMFC)
DJ Warren & Associates Inc.

Socioeconomics
Mitchell Act Hatchery EIS

Actual Issue Date: November 3, 2006
Deadline for Submission: December 4, 2006

PROPOSAL SCHEDULE

November 3, 2006 Request for Proposal (RFP) issued and distributed

December 4, 2006 Deadline for Submission of Proposals
Emailed proposals will be accepted.
Email to: frontoffice@psmfc.org

Faxed proposals WILL NOT be accepted

Mailed proposals **MUST BE** received at Pacific States Marine Fisheries Commission (PSMFC) on the deadline (**December 4, 2006**), NOT postmarked on the deadline.

Send or Email ONE (1) Original proposal to:

Pacific States Marine Fisheries Commission
Attention: Randy Fisher
205 SE Spokane Street, Suite 100
Portland, Oregon 97202
Telephone: 503-595-3100

December 6, 2006 Proposal Review Committee Meeting

December 8, 2006 Project Finalist Selected

SCOPE OF WORK:

The Contractor will assist in the development of the socioeconomic subsections of the Mitchell Act Hatchery Environmental Impact Statement (EIS).

The socioeconomics contractor will:

- Develop the Affected Environment subsection.
- Develop the Environmental Consequences subsection.
- Develop a comprehensive list of laws, policies, and plans that affect the socioeconomic resource in the project area (this is for the cumulative effects section).
- Respond to DEIS public comments on socioeconomics.

The Mitchell Act EIS will analyze the impacts of NOAA Fisheries Service’s allocation and distribution of Mitchell Act funds for hatchery operations.

The EIS will also analyze environmental effects associated with NOAA Fisheries Service’s Endangered Species Act determinations on hatchery programs supported through the Mitchell Act. The socioeconomics work will begin in Mid-December, 2006.

PROJECT AREA:

The project area includes the Columbia and Snake River basins that are accessible to anadromous fish.

PROVINCE	SUBBASINS
COLUMBIA ESTUARY	Grays River (WA) Elochoman River (WA) Youngs River (OR)
LOWER COLUMBIA	Cowlitz River (WA) Kalama River (WA) Lewis River (WA) Washougal River (WA) Willamette River (OR) Sandy River (OR)

COLUMBIA GORGE	<p>Wind River (WA) Little White Salmon River (WA) Big White Salmon River (WA) Klickitat River (WA) Hood River (OR) Fifteen Mile Creek (OR)</p>
COLUMBIA PLATEAU	<p>Yakima River (WA) Crab Creek (WA) Palouse River (WA) Tucannon River (WA) Walla Walla River (WA/OR) Deschutes River (OR) John Day River (OR) Umatilla River (OR) Lower Middle Columbia River (WA/OR) Lower Snake River (WA)</p>
COLUMBIA CASCADE	<p>Wenatchee River (WA) Entiat River (WA) Lake Chelan (WA) Methow River (WA) Okanogan River (WA/BC) Upper Middle Columbia River (WA)</p>
BLUE MOUNTAIN	<p>Asotin Creek (WA) Grande Ronde River (WA/OR) Imnaha River (OR) Snake Hell's Canyon</p>
MOUNTAIN SNAKE	<p>Clearwater River (ID) Salmon River (ID)</p>

INFORMATION TO INCLUDE:

- Contribution of commercial and recreational fisheries to the regional (i.e., multi-county) economy.
- Economic value of salmon and steelhead harvest for commercial and recreational fisheries, including breakout of treaty and non-treaty.
- Information on recreation and tourism.
- Economic impacts associated with changes in the distribution of fisheries under the EIS alternatives.
- Changes in economic value based on where the fish are caught, i.e., quality of product and cost/pound in marine v. terminal fisheries.

- Assess economic impacts to tribal communities, as distinct from impacts to regional economy (this will provide information for assessment of “environmental justice,” which will be completed by Parametrix).
- Predict economic impact (income and employment) of total revenues received as direct result of commercial fishing activities (landed value associated with hatcheries), and indirect value associated with support of fishing industry (vessels, maintenance, gear) and processing, wholesale, and retail sectors with each alternative.
- Net economic value of commercial salmon fishery.
- Evaluate direct and indirect economic impact (income and employment) of salmon sport effort associated with each alternative.
- Estimates of net economic impact of recreational fisheries—“willingness to pay”.
- Regional distribution of commercial and recreational fisheries.
- Jobs associated with hatchery operations.

INFORMATION TO EXCLUDE:

- Economic conditions of each local community .
- Do not try to quantify non-use values (e.g., those associated with recovery). Only mention that these non-values exist and, if needed, make a brief qualitative comparison.

ASSUMPTIONS:

- Data on harvest contribution for baseline and under alternatives (for Chinook and Coho) will be provided to the socioeconomic contractor (see attached proposal by December 31, 2006).
- The socioeconomic contractor will provide a NEPA-ready document (not a technical report). Consequently, the socioeconomics contractor will need to develop sections consistent with an outline approved by NOAA Fisheries Service .
- Anticipate two reviews/revisions of each subsection before NOAA Fisheries Service incorporates them into the DEIS. The EIS will not analyze impacts from any project construction.
- Assume there will be 5 meetings between NOAA Fisheries and the socioeconomics contractors.
- Assume that all meetings will be held in Portland, Oregon; Lacey, Washington, or via conference call. All literature that is cited within the socioeconomics subsection needs to be provided in its entirety for the administrative record.

ATTACHMENTS:

- Proposed Chinook and Coho Salmon Fishery Analysis Approach for Application to the Mitchell Act EIS.
- Text of the Mitchell Act.
- Brief history of the Mitchell Act.
- Description of current hatchery production funded through the Mitchell Act.

PROPOSED EVALUATION CRITERIA:

The following criteria and evaluation weightings will be used for evaluating proposals:

1. **Staff experienced in working with West Coast and/or Alaska Financial Fishery data.** The party must demonstrate knowledge of West Coast and/or Alaska fisheries, and have worked with financial fisheries data in the past two years. Please provide a listing of work experience in West Coast and/or Alaska Fisheries.
2. **Staff experience in working with NEPA.** It would be helpful for the contractor to have a working knowledge of NEPA. Please provide relevant experience.
3. **Cost and time proposed to complete.** Provide total cost per hour that you would bill. Identify position titles, their hourly wage and tasks each position would be involved with.
4. **Project Plan:** Overall completeness and responsiveness of the project management plan. Special consideration will be given to bidders who propose a detailed project plan with sufficient breakdown of tasks and steps to demonstrate a complete understanding of the project
- 5.

PROPOSAL SELECTION PROCEDURES:

All proposals will be evaluated based on the above criteria by a coordinated review panel.

Submitters may be asked to supply supplemental information prior to the award.

INSTRUCTIONS, CONDITIONS, AND NOTICES OF OFFERORS:

Definitions:

As used in this provision—

“Discussions” are negotiations that occur after establishment of the competitive range that may, at the Contracting Officer’s discretion, result in the offeror being allowed to revise the proposal.

“Proposal modification” is a change made to a proposal before the solicitation’s closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

“Proposal revision” is a change to a proposal made after the solicitation closing date, at the request of or as allowed by a Contracting Officer as the result of negotiations.

“Time”, if stated as a number of days, is calculated using calendar days, unless otherwise specified, and will include Saturdays, Sundays, and legal holidays. However, if the last day falls on a Saturday, Sunday, or legal holiday, then the period shall include the next working day.

Program Officer:

The following Program Officer is designated for receipt of and approval of billing questions regarding this solicitation:

Dan Warren
D.J. Warren & Associates, Inc.
Post Office Box 1511
Philomath, OR 97370
Telephone: 541-929-4639
warrenasc@comcast.net

Amendments to Solicitations:

If this solicitation is amended, all terms and conditions that are not amended remain unchanged.

Extension of Solicitation:

D.J. Warren & Associates, Inc., reserves the right to extend the submission times specified in this solicitation. Potential offerors desiring an extension must submit a written request to the Contracting Officer prior to the time specified in this solicitation for receipt of proposals that includes the amount of additional time requested and an explanation of why such an extension is required. If an extension is granted, PSMFC will notify all know offerors and will post a notice of such extension on its Internet website at <http://www.psmfc.org/rfp>.

Submission, Modification, Revision, and Withdrawal of Proposals:

- a. Proposals and modifications to proposals may be submitted in paper media or electronic commerce.
- b. The proposal must show:
 - 1. The name of the solicitation;
 - 2. The name, address, and telephone, and facsimile numbers of the offeror (and electronic address if available);
 - 3. Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the offeror’s behalf with the Pacific States Marine Fisheries Commission (PSMFC) in connection with this solicitation; and

4. Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.
5. References, to include the following information on all similar contracts performed in the last two years, or the last five (5) similar contract performed:

Name of Customer:
Addresses of Customer:
Point of contact at Customer Organization:
Telephone Number of Point of Contact:
Brief Description of the Project:
Contract Value:

D. J. Warren & Associates Inc. reserves the right to consult with and to consider information from its own sources, including information from state and federal agencies regarding the offeror's prior performance or the status of outstanding investigations or warrants involving the offeror.

6. A cost proposal that includes the following information:

Final hourly rate that you would bill to conduct the work, position titles with their hourly wages, and tasks each position title would perform.

Offeror shall include any of the following information as needed to support the proposed pricing:

- a. Breakdown of labor cost by position title including current actual or average hourly rates. Indicate whether current rates or escalated rates are used. If escalation is included, state the degree (percent) and methodology. Direct labor or levels of effort can be a percentage of an individual's time. Indicate fringe benefit rate, if separate from indirect cost rate.
- b. Cost breakdown of materials, and other direct costs including duplication/reproduction, meetings and conferences, postage, communication, and any other applicable items. Costs must be supported by specific methodology utilized.
- c. Any amounts included for indirect cost, fees, and/or profit, supported by specific methodology utilized. Profit or management fees shall not exceed seven (7) percent of total estimated direct costs.

7. Offerors are responsible for submitting proposals, and any modifications or revisions, so as to reach PSMFC by 4:30 pm, local time, on December 4, 2006.
8. Late proposals:
 - a. Any proposal, modification, or revision received at the PSMFC office in Portland, Oregon, designated in the solicitation after the exact time specified for receipt of offers is :late: and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and
 - b. If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the PSMFC infrastructure not later than 5:00 pm on the date specific for receipt of proposals; or
 - c. There is acceptable evidence to establish that it was received at the PSMFC installation designated for receipt of offers and was under the PSMFC's control prior to the time set for receipt of offers; or
 - d. It is the only proposal received.
 - e. However, a late modification of an otherwise successful proposal that makes its terms more favorable to the PSMFC, will be considered at any time it is received and may be accepted.
 - f. Acceptable evidence to establish the time of receipt at the PSMFC installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained PSMFC, or oral testimony or statements of PSMFC personnel.
 - g. If an emergency or unanticipated event interrupts normal PSMFC processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent PSMFC requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal PSMFC processes resume.
 - h. Proposals may be withdrawn by written notice received at any time before award. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.
9. Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.
10. Offerors shall submit proposals in response to this solicitation in English and in U.S. dollars.

11. Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time before award.
12. Offerors may submit revised proposals only if requested or allowed by the Contracting Officer.
13. Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.
14. Offerors may submit proposals that depart from stated requirements (e.g., to include provision of sampling or communications equipment, alternate compensation or insurance strategies, etc.).
15. Such proposals shall clearly identify why the acceptance of the proposal would be advantageous to the PSMFC. Any deviations from the terms and conditions of the solicitation, as well as the comparative advantage to the PSMFC, shall be clearly identified and explicitly defined.

Offer Expiration Date:

Proposals in response to this solicitation will be valid for ninety (90) days following the time specified for solicitation of offers (unless a different period is proposed by the offeror).

Restriction on Disclosure and Use of Data:

Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by D.J. Warren & Associates Inc, except for evaluation purposes, shall:

- a. Mark the title page with the following legend:

“This proposal includes data that shall not be disclosed outside the D.J. Warren & Associates, Inc. and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of—or in connection with—the submission of this data, the PSMFC shall have the right to duplicate, use or disclose the data to the extent provided in the resulting contract. This restriction does not limit D.J. Warren & Associates Inc.. right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets (insert Numbers or other identification of sheets)”; and

- b. Mark each sheet of data it wishes to restrict with the following legend:

“Use of disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.”

Contract Award:

- a. D.J. Warren & Associates, Inc. intends to award a contract or contracts resulting from this solicitation to the responsible offeror(s) whose proposal(s) represents the best value after evaluation in accordance with the factors and subfactors in the solicitation.
- b. The D.J. Warren & Associates, Inc. may reject any or all proposals if such action is in D.J. Warren & Associates Inc. interest.
- c. The D.J. Warren & Associates Inc. may waive informalities and minor irregularities in proposals received.
- d. The D.J. Warren & Associates Inc. intends to evaluate proposals and award a contract without discussions with offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror’s initial proposal should contain the offeror’s best terms from a cost or price and technical standpoint. D.J. Warren & Associates Inc. reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.
- e. The D.J. Warren & Associates Inc. reserves the right to make an award on any item for the quantity less than the quantity offered, at the unit cost or prices offered, unless the offeror specifies otherwise in the proposal.
- f. The D.J. Warren & Associates Inc. reserves the right to make multiple awards if, after considering the additional administrative costs, it is in D.J. Warren & Associates Inc. best interest to do so.
- g. Exchanges with offerors after receipt of a proposal do not constitute a rejection or counteroffer by D.J. Warren & Associates Inc.
- h. The D.J. Warren & Associates Inc. may determine that a proposal is unacceptable if the prices proposed are materially unbalanced between line items or subline items. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly overstated or understated as indicated by the application of cost or price analysis techniques. A proposal maybe rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to D.J. Warren & Associates Inc.

- i. If a cost realism analysis is performed, cost realism may be considered by the source selection authority in evaluating performance or schedule risk.
- j. A written award or acceptance of proposal mailed or otherwise furnished to the successful offeror within the time specified in the proposal shall result in a binding contract without further action by either party.
- k. The PSMFC may disclose the following information in postaward debriefings to other offerors:
 - 1. The overall evaluated cost or price and technical rating of the successful offeror;
 - 2. The overall ranking of all offerors, when any ranking was developed by the agency during source selection; and
 - 3. A summary of the rationale for the award.

Attachment 1

Proposed Chinook and Coho Salmon Fishery Analysis Approach for Application to the Mitchell Act EIS

Draft

August 22, 2006

A proposed modeling approach for assessing fishery impacts for the Mitchell Act EIS is outlined below. The approach would be used in conjunction with the All H Analyzer Model (AHA). The approach would utilize a relatively simple, steady-state model to inform the public and decision-makers of potential implications for fisheries harvesting chinook and coho salmon in response to production changes in the Columbia River Basin.

Constraints:

1. Consolidate analyses of fishery impacts to evaluate alternative scenarios for Columbia River Hatchery Reform and reprogramming artificial propagation supported through funding provided under the Mitchell Act authority.
2. Ready transparency of methods employed for analysis.
3. Completion within budget and timeframe available for NEPA analysis.

Overall Approach:

Develop a simple harvest component that can be integrated with results of the AHA Model. The harvest component would consist of: (a) an exploitation rate model employing an annual time step for ocean fisheries; (b) a gauntlet-type model for fisheries in the Columbia River.

Structure of harvest component: Chinook (fig 1).

The Chinook harvest component would rely heavily on the PSC Chinook Model. This Model serves as the basis for implementing abundance-based management under the 1999 PSC Chinook Agreement. The following types of input data for the PSC Chinook Model would be utilized: (1) stock-age-fishery specific exploitation rates; (2) stock-age specific maturation rates; (3) assumed age-specific survival rates; (4) fishery-age-specific release and drop off mortality rates; (5) initial stock-age specific cohort sizes.

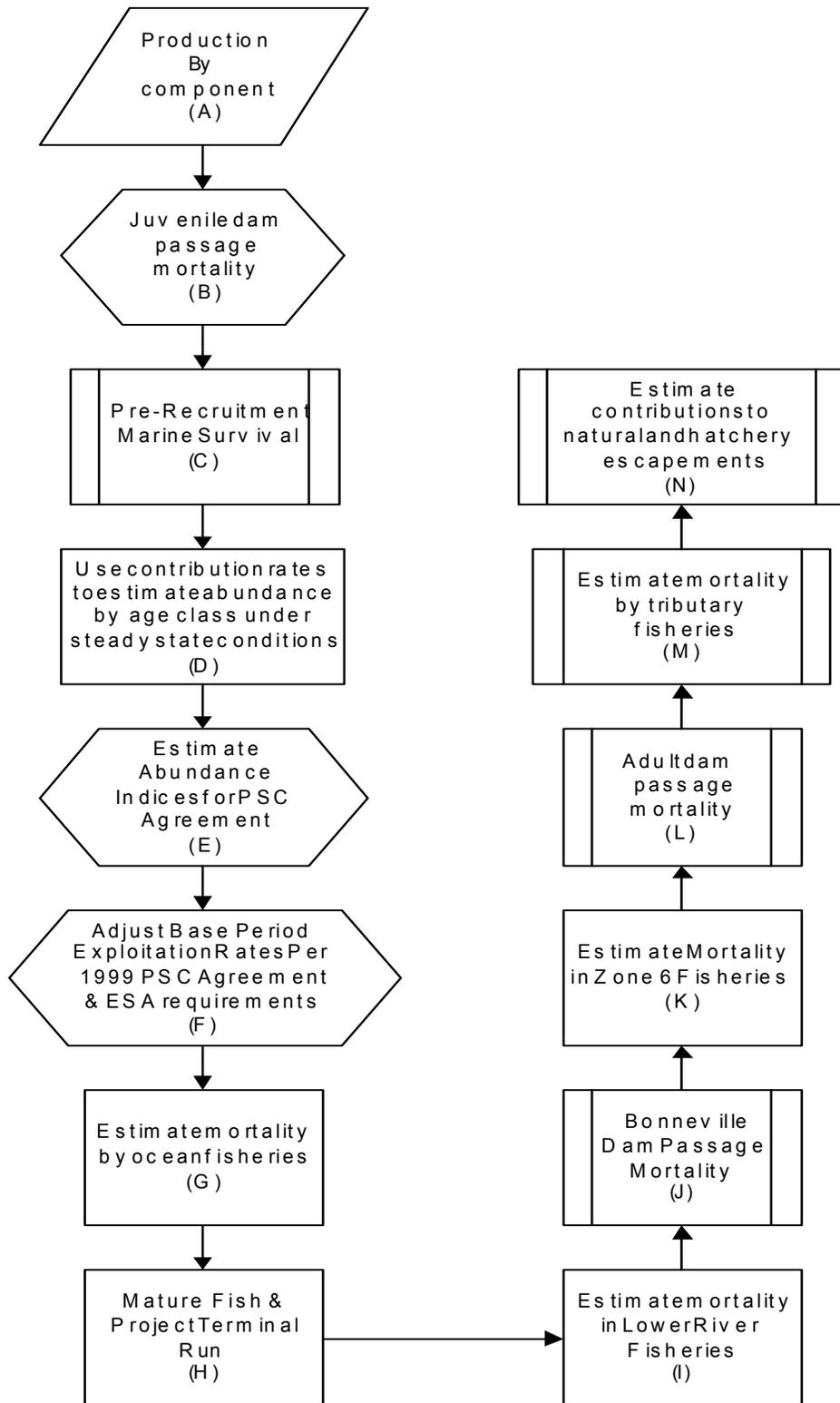


Fig 1. Harveset Model for Chinook

Item	Description	Lead Responsibility
(A)	Projections of juvenile production for each component of interest (P_c)	Mobrand
(B)	Juvenile survival past Columbia River dams (J_c)	AHA
(D)	Estimate contribution rates	Model parameterization – Lestelle, in consultation with Morishima
(E)	Estimate production by age	Model – Lestelle, in consultation with Morishima
(F)	Adjust exploitation rates for PSC chinook agreement and ESA jeopardy standards	Model – Lestelle, in consultation with Morishima
(G)	Estimate mortalities and exploitation rates in ocean fisheries	Model – Lestelle, in consultation with Morishima
(H)	Project terminal runs	Model – Lestelle, in consultation with Morishima
(I-M)	Terminal Gauntlet fisheries	Model – Lestelle, in consultation with Morishima. Dam passage mortality - AHA
(N)	Escapements	Model – Lestelle, in consultation with Morishima. Implications for production and recovery – Mobrand.

Notation: (see next page)

$R_{c,a}$	Contribution rate for component c at age a
$BPER_{c,f,a-1}$	Base Period Exploitation Rate for component c age a-1 in fishery f. <i>Note: The BPERs contained in input files for the PSC Model represent exploitation rates for the vulnerable component of the fish and would need to be converted to an exploitation rate on the entire population. This is easily accomplished by simply multiplying the Model BPER by the proportion of the population that is vulnerable to the fishery.</i>
$RM_{f,a-1}$	Release mortality rate for fishery f age a-1 fish
$DO_{f,a-1}$	Drop Off mortality rate for fishery f age a-1 fish
$MR_{c,a-1}$	Maturation rate for component c at age a-1
$S_{c,a}$	Pre-fishery survival rate for component c age a
$N_{g,a}$	Initial population size of group g age a fish input into the PSC Chinook Model
$AR_{c,a}$	Adjusted Contribution rate for component c at age a
$SN_{c,a}$	Initial population size of age a fish estimated from Projected Production of population component c
BP_c	Estimated average production level for component c during the PSC Model Base Period

(D) In the PSC Chinook Model, initial abundance of stock-age complexes are specified through input data. Since the PSC Model operates on a calendar year basis, these initial stock-age abundances do not represent expectations under steady state conditions. In order to determine impacts under alternative production scenarios for Columbia River stocks, a method to estimate initial stock-age abundance for individual production components is required.

The first step is to assign each Columbia River production component to a particular stock group represented in the PSC Model. This will establish fishery exploitation patterns, maturation rates, and relationships between initial specifications of population size by age; this step includes allocating the total production represented by the PSC Model stock groups into its component parts.

The second step is to estimate contribution rates presuming base period exploitation rates ($BPER_{c,f,a}$) and steady state conditions

$$R_{e,a} = R_{e,a-1} * (1 - \sum_f BPER_{e,f,a-1}) * (1 - MR_{e,a-1}) * s_{e,a}$$

Under steady-state conditions, initial abundance could be determined by simply multiplying production projects by these contribution rates. However, the initial abundance for the PSC Model does not assume steady state conditions. Initial population sizes reflect estimates of abundance in 1979. Therefore, estimated contribution rates using the above procedure would need to be revised to mimic the relative age-specific abundance represented in the PSC Model inputs.

These adjusted contribution rates (AR) can be approximated by multiplying contribution rates by the ratios between the initial population sizes specified by the input data for the PSC Model:

$$AR_{c,a} = R_{c,a} * \frac{N_{g,a}}{N_{g,2}}$$

Now the initial population sizes resulting for each component can be established by multiplying the projected production for a given production component by the adjusted contribution rates and the ratio between the projected production level and the average production level corresponding to the PSC Model base period.

$$SN_{e,a} = AR_{e,a} * N_e * \frac{P_e}{BP_e}$$

Mark-Selective Fishing (MSF). The project calls for assessing implications of mark selective fisheries. The base period data employed for the PSC model does not reflect exploitation rates for mark-selective fisheries. For each production component, an

¹ Alternatively, the Model could incorporate a simple brood cohort model. This would be a more correct way to simulate steady-state conditions because of the influence of 1999 PSC Chinook agreement and ESA on estimated exploitation rates. however, incorporating a brood cohort model would introduce significant complications into the determination of harvest rate indices.

additional component would need to be created to represent the effects of MSFs. Assuming the simplest form of MSF where all marked fish encountered are to be retained, the contribution rates for unmarked fish would be:

$$R_{c,a} = R_{c,a-1} * (1 - \sum_f BPER_{c,f,a-1} * (RM_{f,a-1} + DO_{f,a-1})) * (1 - MR_{c,a-1}) * s_{c,a}$$

(E) Estimate production level at age. Since all ocean fisheries operate on a single pool, only the pre-fishing recruitment size need be computed:

$$P_{c,a} = P_c * J_c * R_{c,a}$$

(F) Adjust Base Period Exploitation Rates (1) Estimate abundance indices (AI) for SEAK, NBC, and WCVI – assume that production for all non-Columbia components is fixed at base period levels. Under the 1999 PSC Chinook Agreement, the total allowable catches in certain highly mixed stock fisheries regulated under aggregate abundance-based management regimes is determined through the use of abundance indices. The abundance index is tied to a harvest rate index (HRI) to indicate the change in fishery impacts relative to the levels observed during the PSC Model base period. An analogue to the abundance index can be generated using the following formula:

$$AI_f = \frac{\sum_{c,a} P_{c,a} * BPER_{c,f,a}}{\sum_{c,a} BP_{c,a} * BPER_{c,f,a}}$$

AI_f	Abundance Index for fishery f
$BPER_{c,f,a}$	Base Period Exploitation Rate for component c age a in fishery f (troll component only)
$BP_{c,a}$	Base Period Abundance for component c age a fish
$P_{c,a}$	Projected Abundance for component c age a fish

Note that this abundance index would be analogous, but not identical to that employed in the 1999 PSC Chinook Agreement. The abundance index described above is for only the single year represented by the PSC Chinook Model's input data; in contrast, the abundance index employed to implement the 1999 PSC Chinook agreement is based on an average of 4 years from 1979-1982. Nonetheless, the relative change in a single year's abundance index would be informative as a means to indicate the potential magnitude of change anticipated under alternative production scenarios for Columbia River stocks.

(2) For the WA/OR fisheries, compute the HRI based on ESA jeopardy standards (ESA) for the Snake River fall and Lower River (Coweeman) fall stocks.

Under non-selective fishing, the allowable exploitation rate is:

$$AER_c = ESA_c - \sum_{f \in SEAK, NBC, WCVI} BPER_{c,f} * HRI_f - \sum_{f \in SEAK, NBC, WCVI, WA-OR} BPER_{c,f}$$

Mark-Selective Fishing

Under mark-selective fishing, assuming that MSF would only occur in Washington and Oregon fisheries, the allowable exploitation rate on unmarked fish is:

$$AER_c = ESA_c - \sum_{a,f \in SEAK, NBC, WCVI} BPER_{c,f,a} * HRI_f - \sum_{a,f \in SEAK, NBC, WCVI, WA-OR} BPER_{c,f,a} * (RM_{f,a} + DO_{f,a})$$

The maximum allowable HRI for each component would be the smaller of the following ratios computed for the Snake and Lower River components. NOTE: subscripts need to be adjusted to reflect metrics employed in ESA jeopardy standards.

$$HRI_f = \frac{AER_{c,f,a}}{BPER_{c,f,a}}$$

If MSFs are to be considered, the allowable exploitation rates on marked fish would need to be modified for the WA-OR fishery:

$$ER_{c,f,a} = \frac{HRI_f * BPER_{c,f,a}}{(RM_{f,a} + DO_{f,a})}$$

At this step, the allowable exploitation rates (ER) have been determined for each Columbia River production component, so catches and total ocean exploitation rates can be easily computed.

$$C_{c,f,a} = ER_{c,f,a} * P_{c,a}$$

$$TotER_{c,a} = \sum_f ER_{c,f,a}$$

If necessary for presentation of impacts, the allowable harvest resulting from the adjusted exploitation rates would be allocated among troll and sport sectors in accordance with the provisions of the PFMC's Salmon Framework Plan.

(H) Terminal Runs can be projected as:

$$TR_{e,a} = P_{e,a} * (1 - TotER_{e,a}) * MR_{e,a}$$

(I-M) In-river impacts of fisheries and dam passage losses would be simulated as a sequential gauntlet of mortalities: Lower River fisheries → Bonneville Dam passage → Zone 6 fisheries → upper river dam passage mortalities → tributary fisheries → escapement. Fishery regimes will be driven principally by projected terminal run sizes of the production components that constrain harvest impacts in accordance with the provisions of the Columbia River Interim Agreement that is in effect through 2007.

(N) The model would generate projections of escapements for each component past fisheries. Mobrand would be responsible for determining the implications of various hatchery and recovery strategies.

Structure of harvest component: Coho (fig 2) .

The Coho harvest component would rely heavily on the PSC Coho (FRAM). FRAM serves as the basis for implementing abundance-based management under the 2002 PSC Southern Coho Agreement and for domestic fishery planning in the annual planning processes undertaken by the Pacific Fishery Management Council. The following types of input data for FRAM would be utilized: (1) stock-age-fishery specific exploitation rates; (2) fishery-age-specific release and drop off mortality rates; (3) initial stock-age specific cohort sizes.

The Coho harvest component is simpler than the Chinook Harvest Component. Because coho are harvested predominantly as a single brood, there is no need to consider multiple age-year effects.

For convenience and consistency, the same step identifiers are employed for descriptions of both the Chinook and coho components. The steps (D) & (F) require the most elaboration as the methods to evaluate potential impacts of alternative production scenarios on ocean fisheries would differ substantially from those used for chinook.

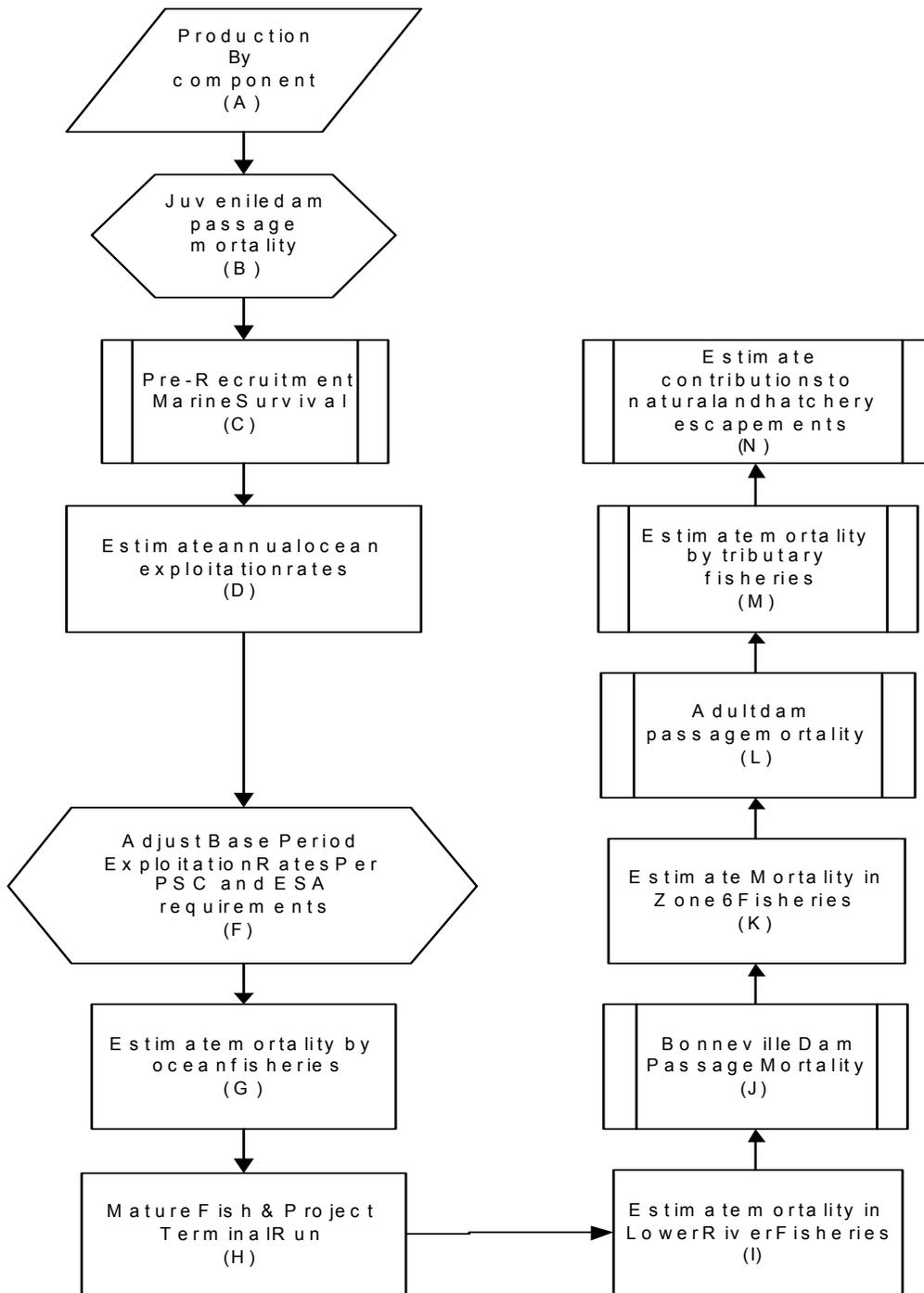


Fig 2. Harvest Model for Coho

(D) FRAM simulates fishery impacts on a complex set of fisheries over multiple time steps covering the period from January through December on a single calendar year. It is proposed to consolidate these multiple time steps into single annual steps for purposes of the Coho harvest component. FRAM base period harvest rates (HR) by period can be

converted to monthly annual exploitation rates (ER) using the following iterative equation (starting with the first time period, $ER_1=0$):

$$ER_{s,f,m} = \prod_{t=1}^m s_t * \prod_{t=1}^{m-1} (1 - ER_t) * HR_m$$

The total annual exploitation rate (AER) is just the sum of the monthly exploitation rates.

$$AER_{s,f} = \sum_{m=1}^M ER_{s,f,m}$$

The Coho Harvest component would revise these Base Period annual exploitation rates only for ocean fisheries in the area from Oregon through WCVI, since these are the only ocean fisheries with significant impacts on Columbia River coho.

(F) Impact of PSC Coho Agreement. The PSC Coho Agreement is designed to establish exploitation rate constraints on a specified set of naturally spawning coho management units, none of which originate in the Columbia River. Consequently, alternative production for Columbia River coho per se would not affect PSC coho management regimes. However, the impacts of WCVI fisheries on Columbia River coho can be expected to be reduced as a consequence of constraints placed on exploitation rates on Puget Sound and Washington Coastal coho management units. For purposes of the Coho Harvest Component, an analog to the harvest rate index incorporated into the PSC Chinook Agreement would be employed. The HRI for WCVI fisheries would represent the minimum of these ratios:

$$HRI_s = \min \left[\frac{Limit_s * \frac{AER_{s,WCVI}}{\sum_f AER_{s,f}}}{AER_{s,WCVI}} \right]$$

Where the values of *Limit* would be 0.17 and 0.15 for Puget Sound and Washington Coastal Coho Management Units, respectively. These values correspond to the mid-point of the exploitation rate ceilings specified under the PSC Coho Agreement for *moderate* abundance levels.

For Washington and Oregon ocean fisheries, harvest rate indices would be developed to be consistent with the ESA jeopardy standard established for listed Lower Columbia River coho. Allocate this constraint between ocean fisheries north and south of Cape Falcon, Oregon in proportion to the ratios reflected in the FRAM base period data.

Ocean fisheries South of Cape Falcon, Oregon.

Troll - the Coho Harvest Component would evaluate impacts in aggregate for all areas South of Cape Falcon under the assumption that the troll fishery would continue to operate under coho-non-retention restrictions. The HRI for both marked and unmarked fish from the Columbia River would be set at the ratio between the recent average troll exploitation rate and the base period exploitation rate.

Sport – the Coho Harvest Component would evaluate impacts in aggregate for all areas South of Cape Falcon under the assumption that the sport fishery would operate under

HRIs for ocean fisheries in the area north of Cape Falcon would be determined in accordance with the following procedure:

(1) Aggregate exploitation rates for non-treaty troll and sport fisheries on Columbia River Coho, and for the treaty troll fishery separately.

(2) Allocate the allowable north of Cape Falcon ESA impact between the treaty troll and non-treaty troll/sport aggregates in proportion to the proportional distribution indicated in the final pre-season FRAM runs.

For the treaty troll fishery, the HRI would be computed assuming that no mark retention restrictions would be employed:

$$HRI_{TTNF} = \min \left[\frac{ESA_{s,TTNF}}{AER_{s,TTNF}} \right]$$

For the non-treaty fishery aggregate, assume that Mark Retention restrictions would be in effect. Compute the HRI in an analogous way – this will represent the allowable exploitation rates for unmarked fish.

Then compute the total mortality of unmarked and marked fish:

$$Mort_{U,NTNF} = HRI_{U,NTNF} * \left[\sum_{c \in U} AER_{c,NTNF} * P_c \right]$$

$$Catch_{M,NTNF} = \frac{HRI_{U,NTNF}}{(RM + DO)} * \left[\sum_{c \in M} AER_{c,NTNF} * P_c \right]$$

Apportion the catch between sectors and ports according to the provisions of the PFMC Framework Plan. HRIs for the non-treaty troll and sport fisheries by port can then be computed as the ratio between the sector-port allowable exploitation rate and base period exploitation rates. Estimated catches by sector and port can now be computed for use in economic impact analyses.

Other species (fig 3).

For species other than chinook or coho, only the terminal portions of the harvest component are relevant (see steps I-M in chinook discussion).

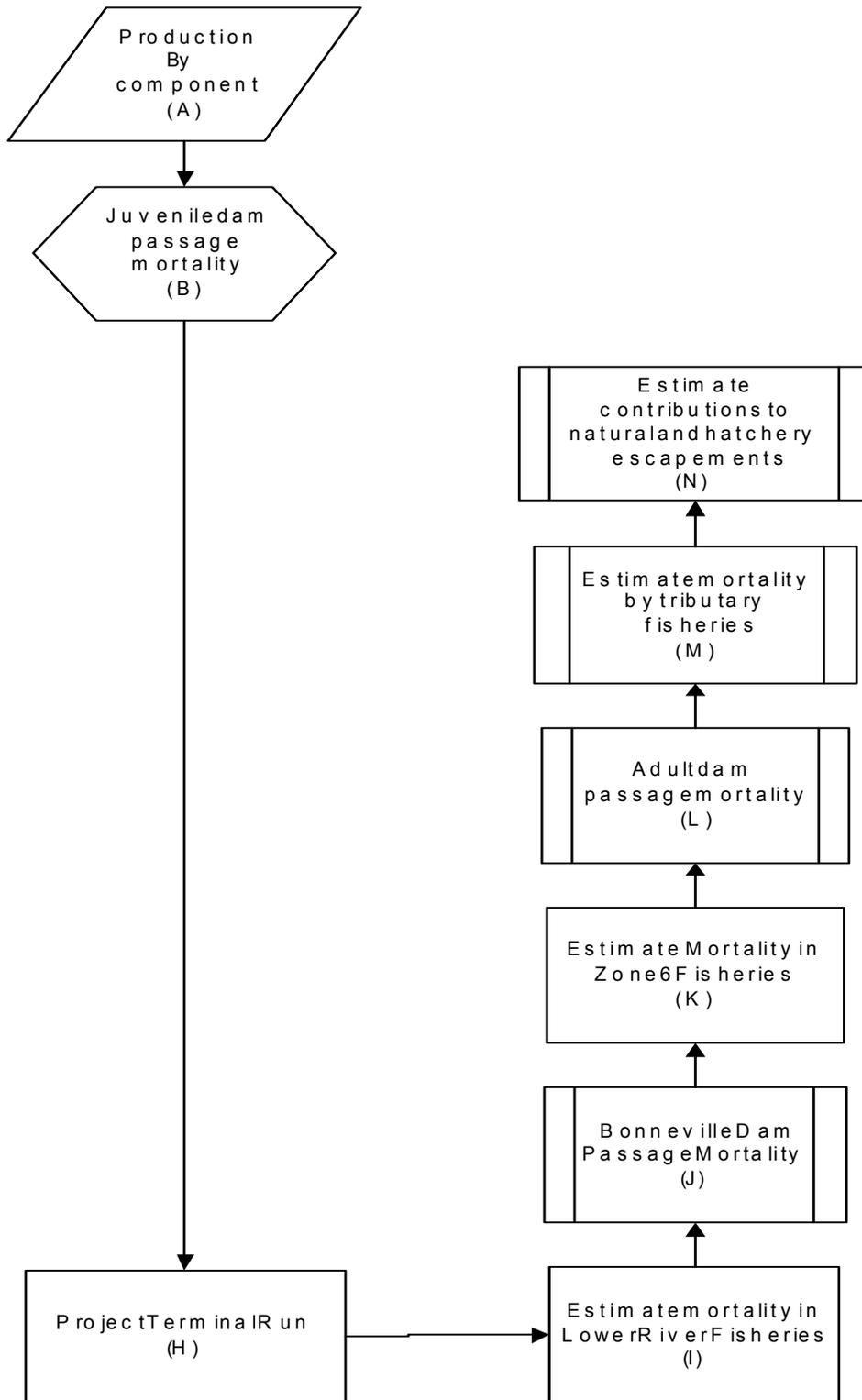


Fig 3. Harvest Model for Species Other than Chinook and coho.

Attachment 2

Mitchell Act

To provide for the conservation of the fishery resources of the Columbia River, establishment, operation, and maintenance of one or more stations in Oregon, Washington, and Idaho, and for the conduct of necessary investigations, surveys, stream improvements, and stocking operations for these purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior is authorized and directed to establish one or more salmon-cultural stations in the Columbia River Basin in each of the States of Oregon, Washington, and Idaho. Any sums appropriated for the purpose of establishment of such stations may be expended, and such stations shall be established, operated, and maintained, in accordance with the provision of the Act entitled "An Act to provide for a five-year construction and maintenance program for the United States Bureau of Fisheries:", approved May 21, 1930, insofar as the provisions of such Act are not inconsistent with the provisions of this Act.

Sec. 2. The Secretary of the Interior is further authorized and directed (1) to conduct such investigations, and such engineering and biological surveys and experiments, as may be necessary to direct and facilitate conservation of the fishery resources of the Columbia River and its tributaries; (2) to construct and install devices in the Columbia River Basin for the improvement of feeding and spawning conditions for fish, for the protection of migratory fish from irrigation projects, and for facilitating free migration of fish over obstructions; and (3) to preform all other activities necessary for the conservation of fish in the Columbia River Basin in accordance with law.

Sec. 3. In carrying out the authorizations and duties imposed by section 2 of this Act, the Secretary of the Interior is authorized to utilize the facilities and services of the agencies of the States of Oregon, Washington, and Idaho responsible for the conservation of the fish and wildlife resources in such States, under the terms of agreements entered into between the United States and these States, without regard to the provisions of section 3709 of the Revised Statutes, and funds appropriated to carry out the purposes of this Act may be expended for the construction of facilities on and the improvement of lands not owned or controlled by the United States; Provided, That the appropriate agency of the State wherein such construction or improvement is to be carried on first shall have obtained without cost to the United States the necessary title to, interest therein, right-of-way over, or licenses covering the use of such lands.

Approved May 11, 1938, amended August 8, 1946
(52 Stat. 345) (60 Stat. 932)

Attachment 3

Mitchell Act Program Summary

With the passage of the “Mitchell Act” (Public Law 75-502), in 1938, the Congress of the United States recognized that the salmon populations in the Columbia River were in a serious and progressive decline and that this was impacting the salmon fisheries in the region. Factors leading to this decline were listed as habitat destruction and alteration due to deforestation, pollution, and water diversions. Although not specifically mentioned in the text of the Mitchell Act, water diversions included the constructed and planned Federal hydropower project on the mainstem Columbia River. The original act authorized funding for surveys and improvements in the Columbia River Basin for the benefit of salmon and other anadromous fish.

In 1946, President Truman signed a Congressional amendment to the Mitchell Act (Public Law 79-676) (Attachment 1) which removed funding limitations and which authorized the Federal government to use the facilities and services of the conservation agencies of Oregon, Washington, and Idaho in developing the salmon resources of the Region.

In 1947, the Columbia River Fisheries Development Program (CRFDP) was established to carry out the mandates of the Mitchell Act. Originally it was administered by the Bureau of Sport Fisheries and Wildlife under the Department of the Interior. In 1970, with the reorganization of the Federal fisheries responsibilities, the oversight of the CRFDP was transferred to the National Marine Fisheries Service (also known as NOAA Fisheries) under the Department of Commerce. It is administered out of the Salmon Recovery Division office in Portland, Oregon. Cooperating agencies include the U.S. Fish and Wildlife Service (USFWS), Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW), Idaho Department of Fish and Game, and the Confederated Tribes and Bands of the Yakama Nation (Yakama).

The CRFDP has used all practical means to increase the abundance of salmonids in the Columbia River Basin. The most significant of these, both in effort and funds expended, has been the artificial culture of fish in hatcheries. Section I of the revised Mitchell Act, authorized the construction of fish hatcheries in Oregon, Washington, and Idaho. The Act further authorized the facilities and services of the state agencies to be used for construction and operation of these hatcheries. Starting in 1950, a total of 25 hatcheries and major rearing ponds as well as smaller satellite facilities were constructed under the CRFDP. Due to funding constraints, there are now 18 CRFDP hatcheries in Oregon and Washington.

All of the current Mitchell Act hatcheries except for the Ringold Hatchery (Figure 1) are located on the mainstem Columbia River or its tributaries below The Dalles Dam (Figure 2 and Table 1). While peak production was in the neighborhood of 110 million fish release per year, hatchery closures and production program changes related to funding constraints have reduced annual production to approximately 65 million fish per year (Table 2). Species/races of salmon produced include fall chinook, spring chinook, and coho salmon and winter and summer steelhead. These fish contribute significantly to the ocean and Columbia River commercial, sports, and Tribal fisheries.

Section II of the revised Mitchell Act authorized the construction and installation of devices for the protection of migratory fish from irrigation diversion projects. The loss of fish at these irrigation diversions was identified as a significant problem within the Columbia River Basin and the CRFDP initiated watershed surveys of the mid-Columbia and Snake River Basins to determine the extent of the problem. The resulting sub-basin reports located and enumerated most unscreened diversions and this led to a screen construction program that began in the mid-1950's and extends to today. Under this portion of the CRFDP, over 700 irrigation diversion screens were built and are maintained.

The irrigation diversion screening program is especially important in light of the listing of many populations of Columbia River salmon as either threatened or endangered under the Endangered Species Act (ESA). The screen constructed and maintained under the CRFDP provide critical protection to these listed populations.

Another means that has been used by the CRFDP to increase the abundance of salmonids in the Columbia River Basin has been the construction of over 40 formal fish ladders and nearly 50 rock-cut fishways at barriers to upstream migration as well as the removal or modification of both natural and man-made barriers effecting fish migration. These two activities opened nearly 2,000 miles of prime rearing and spawning habitat formerly either inaccessible or only partially accessible to returning adult fish.

With the severely depressed wild anadromous fish populations in the Pacific Northwest and the accompanying Federal actions to protect many of the stocks by listing them under the ESA, there is an emerging need to examine and evaluate the focus of the Mitchell Act hatcheries. Goals of Mitchell Act hatchery reform are to maintain the previous Mitchell Act base goals of producing anadromous salmonids to maintain sustainable fisheries and improving and maintaining irrigation diversion screens and fishways while conserving indigenous genetic resources, assisting with the recovery of naturally spawning populations, and improving the quality and cost-effectiveness of the facilities.

The programs developed for the individual hatcheries will depend upon their locations, water supplies, facilities designs, rearing conditions, and other factors relating to their capabilities. Regional fishery plans being developed by the management entities, federal, state, and tribal, address a broad range of issues including habitat, fisheries and hatcheries that incorporate reform. Use of adaptive management is critically needed within the Mitchell Act hatchery system at this time. The need to coordinate and implement existing and new information is essential for the success of salmon and steelhead hatcheries. Structural changes within the hatcheries will be required to implement new strategies for rearing, separation of hatchery and wild fish, and to allow accessibility of hatchery juveniles for mass marking. Tracking hatchery reform and recovery of wild salmon and fisheries is essential for monitoring the progress toward the eventual recovery of salmonid populations.

Attachment 4

Table 2- Mitchell Act Production Program (by species/race)

Agency	Facilities	Fall Chinook	Spring Chinook	Coho	Winter Steelhead	Summer Steelhead
ODFW	Big Creek	5,700,000		535,000	200,000	
	Cascade			1,700,000		
	OxBow			1,100,000		
	Sandy			1,000,000		
	Bonneville			2,000,000	276,000	215,000
	Clackamas			1,577,000		15,000
USFWS	Carson		1,420,000			
	Little White ¹ Salmon/Willard		1,000,000	2,000,000		
	Eagle Creek			2,050,000	150,000	
	Spring Creek	15,300,000				
WDFW	Kalama Falls	5,000,000	500,000	800,000	180,000	
	North Toutle	2,500,000	100,000	800,000	25,000	
	Washougal	4,000,000		3,300,000		
	Elochoman	2,000,000		1,000,000	160,000	
	Ringold ²					225,000
	Klickitat	4,000,000	800,000	1,000,000		
	Skamania				190,000	330,000
Species Totals		38,500,000	5,397,000	17,285,000	1,196,000	770,000
Grand Total		63,148,000				

¹ A portion of the MA funded coho and the non-MA funded up-river bright fall chinook are acclimated in the Yakima Basin by the Yakama Tribe with MA funds.

² In addition, Ringold provides short-term acclimation for over 3,200,000 up-river bright fall chinook reared with U.S. Army Corps of Engineers funding at Bonneville.