



Fisheries and Oceans
Canada

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Salmonid Enhancement Program

A Presentation to the Cohen Commission

March 2011





Salmonid Enhancement Program

Outline

1. Program Objectives, Overview and Activities
2. Fraser Sockeye Projects
3. Summary





Salmonid Enhancement Program

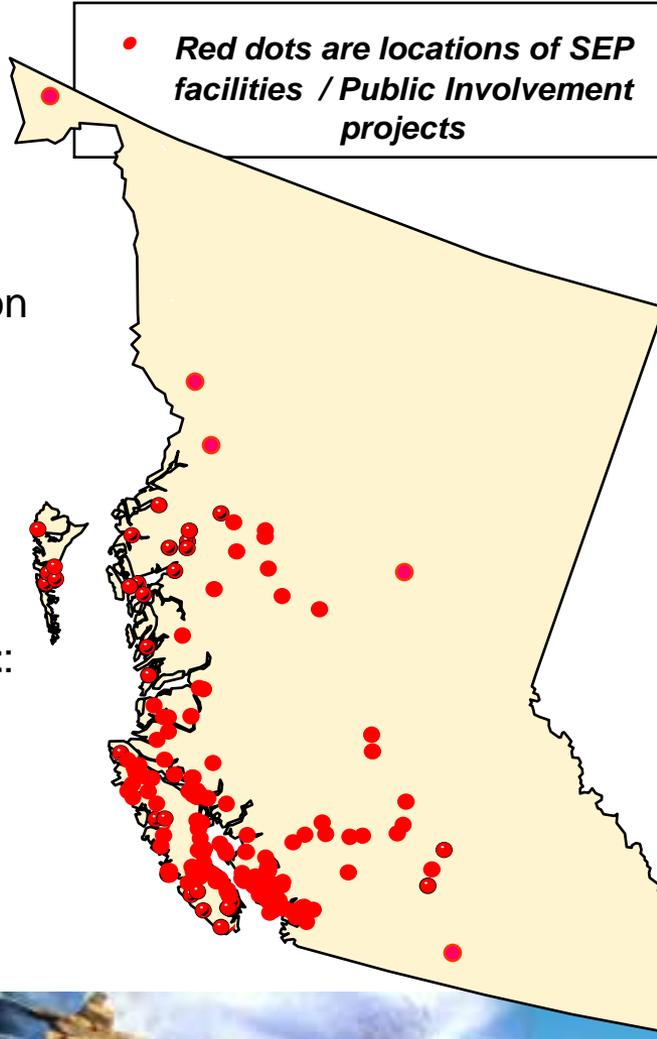
- Produces salmon to:
 - Support vulnerable salmon populations
 - Provide harvest opportunities
- Supports participation of First Nations, local communities and external parties in cooperative fisheries and watershed stewardship activities.
- Achieves these objectives through:
 - Production of salmon from enhancement facilities (hatcheries and spawning channels)
 - Restoration and enhancement of habitat
 - Provision of salmon stock assessment information
 - Public awareness and education programs
 - Partnerships with First Nations, communities and external parties





SEP Program Components

- q **Salmon Production:**
23 major SEP operated hatcheries and spawning channels, 21 contracted community and First Nation hatcheries: \$19.8M
- q **Resource Restoration:**
50+ projects annually, leveraging ~ \$3M/year from partnerships: \$3M
- q **Community Involvement:**
18 Community Advisors support ~ 350 volunteer projects: \$ 3.2M
- q Total Budget: \$26 M



- q SEP hatcheries and spawning channels produce 10-15 % of BC First Nation, recreational and commercial harvest
- q Over 10,000 volunteers assist restoration and enhancement activities
- q Employment, capacity development in rural and aboriginal communities
- q A generation of school children educated about salmon and environment
- q SEP assessment supports Science and Pacific Salmon Treaty





Community Involvement

- Ø Education and awareness activities:
 - Ø *Salmonids in the Classroom*, Stream to Sea Strategy and other educational packages
- Ø Public involvement, stewardship and partnering activities – supports:
 - Ø Partnering with the Pacific Salmon Foundation and community programs
 - Ø Streamkeepers and Shorekeepers Program which fosters stewardship
 - Ø Salmonid Enhancement and Habitat Advisory Board (SEHAB) which represents volunteers and stewards
- Ø Increasing focus on conservation, stewardship and integrated management





Resource Restoration

- Ø Restoration activities:
 - Ø restore and improve fish habitats (side channels, fishways, ponds)
 - Ø support threatened salmon populations
 - Ø improve watershed health
 - Ø leveraging contributions of up to \$3M from community/corporate partners and other agencies





Salmon Production

- Ø Increasing emphasis
 - Ø Conservation and rebuilding vulnerable stocks, while providing harvest opportunities
 - Ø Support to Pacific Salmon Treaty commitments for stock assessment and production
 - Ø Chinook and coho harvest management highly dependent on stock assessment data from SEP facilities

- Ø SEP fish culture is guided by standard practices and processes that consider genetics and natural selection, fish health, fisheries and ecosystem requirements

- Ø DFO production facilities are licenced under the Pacific Aquaculture Regulations (PAR). Licencing of community operated facilities is underway

- Ø SEP production plans and objectives are included in Integrated Fisheries Management Plans (IFMP);
 - Ø consultation through IFMP processes and Integrated Harvest Planning Committee (IHPC)
 - Ø integrated planning processes are utilized to incorporate external interests and harvest management and stock assessment priorities





Strategic Context

- Fisheries Renewal (economic prosperity within a sustainable ecosystem based approach)
- Policy/Legislation (WSP, SARA, Oceans Act, PAR)
- Environmental Considerations (climate change, ecosystem health, ocean productivity, water management)
- Funding (fixed costs, inflation, new pressures, infrastructure, OSH)
- Demographics (aging workforce, knowledge/ experience loss)





Salmonid Enhancement Program

Climate Change

- Increased env't uncertainty / variability in fish production
- Increased water flow / temp. issues
- pressure on southern salmon populations / habitat
- Ability to provide FN FSC

Wild Salmon Policy

- Fish production set within an integrated planning process (strategic plan)
- Priority on strategic enhancement to preserve / rebuild populations at risk
- Secondary priority to support harvest opportunities providing part of integrated strategic plan and wild populations not compromised

SARA & Recovery Planning

- Increasing harvest restrictions
- Recovery planning for At Risk populations
- Ecosystem Vs. single species

Oceans Act

- Ecosystem based approaches
- Collaboration
- Integrated Management

Habitat

- EPMP
- Proactive measures
- Restoration

Fisheries Reform

- PICFI implementation
- Shared accountability
- Changes to harvesting / allocation practices
- FN economic access
- Can/US PST obligations (marking/production)
- Eco-certification

Partners / Clients

- New demands e.g. pink net pens / increased production
- Capacity to support expanding community partner base / funding
- Integrated planning processes & linkages to RM & Science
- Partnering Issues, Provincial interests

Alignment of Programs to Funding

- Difficulty to adjust programs given traditional constraints
- continuing inflation etc.
- Cost recovery uncertainty

Program Accountability and Evaluation

- Ongoing need to clarify objectives / evaluate program
- Performance Measurement
- Knowledge gaps
- Risk Management

Science & Biological Assessment

- Increasing needs to inform planning/ decision-making processes and evaluate program
- New PST assessment requirements

Aging Infrastructure

- Facilities, vehicles & equipment
- Significant future long-term investments required (~\$200m)

Knowledge Loss

- Demographics / retirements – succession planning
- Specialized knowledge transfer

OSH issues

- Major facilities
- PIP
- CEDP

Governance

- Fish production planning
- Internal organizational issues



Responding to Challenges – SEP Revitalization

Review and update SEP to ensure it is relevant, effective and adapts to a changing context.
Revitalization elements:

- **Strategic funding approaches** (improved business planning, infrastructure strategy, review RR, CIP and CEDP, enhanced partnering arrangements, update production planning prioritization plans)
- **Production Planning** (improved and transparent decision making, linked to regional priorities, WSP Implementation guidelines)
- **SEP Evaluation** (completed 2009)
- **Biological Assessment** (update current assessment framework, augment current capacity)
- **HR Strategies & Planning** (succession planning/knowledge transfer, staff key positions, review area organizational structure)





Sockeye Enhancement Techniques

Spawning Channels

- Provide optimal spawning/incubation environment (gravel and water flow)
- Most applicable to stocks which are spawning ground limited or prone to losses during incubation (i.e. flooding and/or freezing).
- Results in increased survival during incubation and survival to fry

Lake Enrichment

- Application of fertilizer - most applicable to situations where nursery lake is nutrient limited.
- Results in increased growth and survival to smolt

Hatchery – fry/smolt release

- Most applicable to situations where stocks are limited by the number of spawners
- Sockeye hatchery culture is carefully managed due to risk of IHN, a naturally occurring disease in sockeye populations
 - any sockeye culture must be isolated and self contained
 - costly as it requires special infrastructure capacity
- Results in increased freshwater survivals, extended rearing has higher potential post release survivals

Hatchery – captive broodstock

- Most applicable to situation where persistence of stock of conservation concern is in question.
- Captive adults give rise to a second generation, which can then be released back to wild as fry and/or smolts





Fraser Sockeye Projects

- Enhancement of Fraser Sockeye has been relatively minor as both spawning and lake rearing habitat are generally abundant
- Spawning channels have improved stability of production in a few systems
- Some lake enrichment in past years to support rebuilding
- **Channels**
 - Production channels: Weaver, Gates, Horsefly and Nadina
- **Lake Enrichment**
 - Chilko in the 1980's
 - Adams Lake (1997, 2001)
- **Hatcheries**
 - Upper Adams in 1988, '92, '96, '00, and '01
 - Upper Pitt River – initiated in the 1960's – ongoing
 - Cultus – initiated in 2002 as part of conservation strategy
 - Sakinaw – initiated in 2000 as part of conservation strategy





Fraser Sockeye Projects (2)

- Enhancement of Fraser sockeye is relatively limited
 - Average number of sockeye spawners in channels is 73,000 adults
 - Hatchery broodstock = 1,200 (U.Pitt) and 950 (U.Adams, every 4th year)
- Enhanced stocks are not significant contributors to any of the stock timing groups, except for Weaver.
 - Enhanced Weaver sockeye have historically been a relatively significant contributor to the Late run timing Group in two of the four cycle years (cycle lines 2008 and 2009).
- Enhancement programs for Cultus and Sakinaw sockeye influence harvest opportunities
 - captive brood and enhancement program is an integral part of the conservation strategy
 - support the recovery of at risk population which are constraining fisheries.
 - Sakinaw not in Fraser drainage but affects/influences fisheries on Fraser stocks





Summary - General

- SEP is a successful longstanding program that has positively contributed to fisheries and ecosystem management
- SEP is integrated with other Departmental interests in Fisheries Management, Science and habitat.
 - Support of chinook and coho stock assessment programs that are key to harvest management
 - Provides targeted harvest opportunities and supports the rebuilding of vulnerable stocks that can constrain harvest opportunities
 - Habitat restoration
- The Program supports participation of First Nations, local communities and external parties in cooperative fisheries and watershed stewardship activities.
 - Habitat restoration, education, public awareness

