

2003 International Conference

*Making Ecosystem Connections:
Partnerships for a Restored Okanagan Basin Habitat*



**June 22-24, 2003
Penticton Lakeside Resort
Penticton, British Columbia**

Welcome from the Canadian Okanagan Basin Technical Working Group

On behalf of the Canadian Okanagan Basin Technical Working Group (COBTWG), I am pleased to welcome you to Penticton for the 2003 International Conference ***Making Ecosystem Connections: Partnerships for a Restored Okanagan Basin Habitat***. Our conference goal is to facilitate increased transboundary communication and collaboration that will lead to recovery of the Okanagan ecosystem. Our conference organizers have done an excellent job of creating focus sessions with diverse presentations to give you a snapshot of the broad spectrum of activity that occurs within the basin.

The COBTWG was established in 1997 and is a tri-partite technical committee with representatives from Fisheries and Oceans Canada, the Ministry of Water, Land and Air Protection, and the Okanagan Nation Alliance. The group provides a forum to discuss and collaborate on a wide range of fisheries, habitat and water issues within the Okanagan Basin that are of common concern and interest to each of the parties.

This year's conference will build on the Okanagan Nation Fisheries Commission 2001 "Aquatic Ecosystem Health and Fisheries in the Okanagan-Similkameen Basin" Conference and the 2002 American Fisheries Society "Ecosystem Based Management of Natural Resources in the Columbia River Basin" Conference. Using watershed-based ecosystem principles, the conference will encompass local and transboundary aquatic, riparian issues, and land based issues affecting aquatic habitat and species in the Okanagan Basin.

The conference has six major themes in which participants will explore cross-border (transboundary) connections and opportunities for working together in the Okanagan Basin system:

- **Fish**- Indigenous and exotic species stocks and their management
- **Transboundary Community and Stewardship Sustainability** – Economics and community stewardship throughout the watershed
- **Habitat** - Status and updates on aquatic and riparian habitat for fish and wildlife
- **Water** - Exploration of quality and quantity issues
- **Policy** - Local community vision, provincial, state, federal policy and their interactions
- **Communications and Technical Information**- Options for sharing across the border

We hope that you enjoy the three days you will spend with us, and we encourage you to stay in the area for an extra day or two to explore some of the Okanagan's many attractions.

Sincerely,

Elmer Fast, Chairman
Canadian Okanagan Basin Technical Working Group

Making Ecosystem Connections:

June 22 - 24, 2003

Penticton Lakeside Resort

Hosted by: Canadian Okanagan Basin Technical Working Group

Sunday, June 22

8:00am - 9:00 am

Registration and Display Set-up

ROOM: Conference Foyer

2:00-5:00pm

ROOM: Salon C

TRANSBOUNDARY COMMUNITY

Session Leads: Michelle Boshard, Rural Resource Associates and Larry Bailey, Upper Columbia Group

2:00 - 2:45

Community Stewardship Initiatives on both sides of the border in the Okanagan Basin

Overview of the Canadian and US community aquatic stewardship initiatives in the Okanagan Basin

M. Boshard, Rural Resource Associates

2:45 - 3:30

Benefits to Community Based Approach—Example projects

b) Osoyoos Lake Foreshore Protection Project—L. Dallas, Osoyoos Lake Water Quality Society

3:30 - 4:15

Community Lessons Learned: Challenges Facing Volunteer Stewardship

a) Review of lessons learned from the DFO Habitat Conservation and Stewardship Program—L. DeGoes, DFO HCSP Program

b) Washington State “Regional Fisheries Enhancement Program” - L. Pelly, Washington State Fish and Wildlife Commission

4:15 - 5:00

Panel Discussion: The Role of Community in Natural Resource Management, and how to address barriers to community involvement

How to engage community in stewardship, their roles and relationship with governments. Consideration of the development of a Transboundary Community Network to bring higher funding profile to community stewardship initiatives in both Canada and US portions of the Okanagan Basin

PANEL: L. Bailey, Upper Columbia Group

M. Boshard, Rural Resource Associates

N. Warner, Nature Conservancy of Washington

R. Longanecker, US/Okanagan Community

L. DeGoes, DFO HCSP Program

L. Dallas, Osoyoos Lake Water Quality Society

Monday, June 23

8:00am - 4:00 pm Registration and Display Set-up ROOM: Conference Foyer

8:30am - 9:00 am Conference Opening ROOM: Salon C
Opening Prayer
Welcome - Chief Stewart Phillip, Penticton Indian Band
Conference Housekeeping - Elmer Fast, COBTWG Chair

9:00am - 12:00pm ROOM: Salon A

WATER

Session Lead: Eike Scheffler, Okanagan Basin Water Board

9:00-9:20 ***Recent and future climate driven variations in low flows in south central British Columbia***

P. Whitfield, A. Cannon, and J. Wang.
Meteorological Service of Canada, Environment Canada, Vancouver, BC

9:20-9:40 ***Water management and climate change in the Okanagan region***

S. Cohen and T. Neale, University of British Columbia, Vancouver, BC

9:40-10:00 ***Assessment of impact and adaptation responses of fish and fisheries to climate change in Canada***

M. Johannes, Canadian Climate Impacts and Adaptation Research Network, Nanaimo, BC

10:00-10:20 ***Climate impacts on life history events of Okanagan sockeye (O. nerka) and options for adaptive management in the face of future climate change***

K. Hyatt, Fisheries and Oceans Canada, Nanaimo, BC

10:20-10:40

BREAK

9:00am - 12:00pm ROOM: Salon C

COMMUNICATIONS AND TECHNICAL INFORMATION SHARING

9:00-9:20 ***The International Joint Commission and cooperation in transboundary basins***

T. McAuley, L. Bourget, and B. Symods, International Joint Commission, Canada

9:20-9:40 ***Transboundary communication: bridging the data gap***

C. Pearson, EcoA.I.M., Inc., Pateros, WA

9:40-10:00 ***Barriers and challenges to information management***

T. Innes, FORREX, Kamloops, BC

10:00-10:20 ***The Georgia Basin Action Plan and developing common transboundary ecosystem indicators***

G. Thornburn, Environment Canada, Vancouver, BC

10:20-10:40

BREAK

Monday, June 23 Continued

8:00am - 4:00 pm

Registration and Display Set-up

ROOM: Conference Foyer

9:00am - 12:00pm ROOM: Salon A

WATER

Session Lead: Eike Scheffler, Okanagan Basin Water Board

10:40-11:00 *Arsenic in sequestered sediments of the Similkameen and Okanogan Rivers*

D. Hurst, Fulcrum Environmental Consulting, Inc.
and P. Stone, Confederated Tribes of the Colville
Reservation, WA

11:00-11:20 *The Okanagan Fish-Water Management (OKFWM) Tool: balancing water objectives in real time*

C. Alexander, ESSA Technologies, Vancouver, BC

11:20-11:40 *Forest management effects on low flows in snowmelt dominated hydrologic regimes*

R. Scherer, FORREX, Kelowna, BC

9:00am - 12:00pm

ROOM: Salon C

COMMUNICATIONS AND TECHNICAL INFORMATION SHARING

10:40-11:00 *Defining reach structure across the Okanagan watershed*

11:00-11:20

Penticton, BC

11:20-11:40 *British Columbia / Washington Environmental Cooperation Council*

Victoria, BC

12:00-1:00

BUFFET LUNCH

ROOM: Salon D

Monday, June 23 Continued

1:00-4:30pm ROOM: Salon A
FISH

Session Lead: Kim Hyatt

2:40-3:00 ***Trends in Columbia River harvest of salmon and steelhead with emphasis on populations from the Columbia Cascade Province, and management principles that guide current and future harvest***

B. Tweit, Department of Fish and Wildlife, WA

3:00-3:20 ***Efforts to establish a local steelhead broodstock in the Okanogan River and to initiate a steelhead kelt reconditioning program***

J. Marco, C. Fisher, and J. Arterburn, Confederated Tribes of the Colville Reservation, WA

3:20-3:40 ***Experimental Reintroduction of Okanogan sockeye into Skaha Lake, BC***

D. Machin, Okanogan Nation Alliance, Westbank, B.C.

3:40-4:00 ***150 years of Columbia Basin sockeye salmon management, or how we drove a run of more than 3 million to less than 50,000 and what can be done about it***

J. Fryer, Columbia River Inter-Tribal Fish Commission, OR

1:00-4:30pm ROOM: Salon C

COMMUNITY AND STEWARDSHIP SUSTAINABILITY

Session Leads: Michelle Boshard and Larry Bailey

2:45-3:30 **Stewardship Linkages to Economic Development**

a) Current regional and transboundary economic development efforts

M. Boshard, Rural Resource Associates

b) Stewardship linkages to economic development

T. Lawhead, Washington State Office of Trade and Economic Development and L. Bailey, Upper Columbia Group

3:30-4:30 ***Facilitated group discussion of "Ecosystem Principles" and community interest in a common transboundary "Vision Statement" for watershed-based ecosystem management***

Facilitator: M. Boshard. Rural Resource Associates

Panel: L. Johnson, Katim Enterprises
L. Dallas, Osoyoos Lake Water Quality Society

R. Longanecker, US/Okanogan Community
P. Macrow, North Olympic Salmon Coalition

5:30 pm - SOCIAL

ROOM: Conference Foyer

6:30pm - BANQUET

ROOM: Salon D

Raffle and Auction

Tuesday, June 24

8:00am - 4:00 pm

Registration and Display Set-up

ROOM: Conference Foyer

9:00am-12:00pm

ROOM: Salon A

HABITAT

Session Leads: David Smith, Fisheries and Oceans Canada and Steve Matthews, Ministry of Water Land and Air Protection

9:00-9:20 *The South Okanagan Similkameen Conservation Program: a model for habitat conservation and restoration*

R. Hawes, South Okanagan-Similkameen Conservation Program, Penticton, BC

9:20-9:40 *Restoration of the Okanagan River*
C. Bull, Glenfir Resources, Naramata, BC

9:40-10:00 *Current status of knowledge regarding interactions among sockeye, mysid shrimp, kokanee and zooplankton in Osoyoos and Skaha Lakes*

H. Wright, Okanagan Nation Alliance, Westbank, BC

10:00-10:20

BREAK

9:00am-12:00pm

ROOM: Salon C

INTERGOVERNMENTAL POLICY

Session Leads: Bob Bugert, Governor's Salmon Recovery Office and Barry Rosenberger, Fisheries and Oceans Canada

9:00-9:15 *Recovery planning under the Endangered Species Act*
E. Gaar, NOAA Fisheries, Portland, Oregon

9:15-9:30 *Species at risk*
P. Kluckner, Environment Canada

9:30-9:45 *Species at risk and the Okanagan Nation*

Alliance

9:45-10:00 *Committee on the Status of Endangered Wildlife in Canada (COSEWIC)*

ON

10:00-10:15

BREAK

Tuesday, June 24 Continued

9:00am-12:00pm

**ROOM: Salon A
HABITAT**

Session Leads: Davis Smith, Fisheries and Oceans Canada and Steve Matthews, Ministry of Water Land and Air Protection

10:20-10:40 *Lake and stream sensitive habitat inventory and mapping (SHIM) in the Okanagan*

T. Cashin, Central Okanagan Regional District, Kelowna, BC

10:40-11:00 *Habitat assessment of Middle Vernon Creek*

L. Davies, Geostream Environmental Consulting, Kelowna, BC and D. Shanner, Columbia Environmental Consulting Ltd., Penticton, BC

11:00-11:20 *Adult and juvenile passage at the Columbia mainstem dams*

P. Wagner, NOAA, National Marine Fisheries Service

11:20-11:40 *An update on Okanagan Lake kokanee stock status and recovery strategies*

S. Matthews, Ministry of Water, Land and Air Protection, Penticton, BC

9:00am-12:00pm

**ROOM: Salon C
INTERGOVERNMENTAL POLICY**

Session Leads: Bob Bugert, Governor's Salmon Recovery Office and Barry Rosenberger, Fisheries and Oceans Canada

10:15-10:30 *Provincial biodiversity strategy and recovery planning*

T. Down, Manager, Ministry of Water, Land and Air Protection, Victoria BC

10:30-10:45 *Watershed Planning*

WA

10:45-11:00

R. Wysocki, Fisheries and Oceans Canada, Southern Interior BC

11:00-11:15 *Washington State Subbasin Planning*

OR

11:15-11:30

BREAK

11:30-12:20 *Panel discussion on points of collaboration*

Tuesday, June 24 Continued

12:30-1:30pm

BUFFET LUNCH

ROOM: Salon D

1:30-4:30pm

CONFERENCE CLOSING

ROOM: Salon C

Keynote Address - Dr. Tom Northcote, Professor Emeritus, University of British Columbia

Okanagan Nation Alliance and Confederated Tribes of the Colville Reservation Announcement on Watershed Planning

Session Summaries:

Transboundary Community - M. Boshard and L. Bailey

Water - E. Scheffler

Communication and Technical Information Sharing - K. Wolf

Fish - K. Hyatt and S. Smith

Habitat - D. Smith and S. Matthews

Intergovernmental Policy - B. Bugert and B. Rosenberger

Conference Closing - E. Fast

Table of Contents



Thank you to our contributors	ii
Thank you to our session Leads	iii
Sessions:	
Transboundary Community	1
Water	4
Communications and Technical Information Sharing	11
Fish	18
Community and Stewardship Sustainability	24
Habitat	27
Intergovernmental Policy	34

Thank you to our Contributors



N TY TY IX – SALMON SPONSOR (\$ 7,001-10,000)

Okanagan Nation Alliance

SPEET LUM – BITTERROOT SPONSOR (\$ 2,001-4,500)

Fisheries and Oceans Canada

Ministry Water Land and Air Protection

Pacific Salmon Foundation

SIYA – SASKATOON SPONSOR (\$ 500-2,000)

Mountain Equipment Co-op

C-CAIRN National Fisheries Sector

Habitat Conservation Stewardship Program

IN –KIND

Katim Enterprises

Print Three

Thank you to our Session Leads



Larry Bailey	Upper Columbia Regional Fisheries Enhancement Group
Michelle Boshard	Rural Resource Associates
Bob Bugert	Governor Locke's Salmon Recovery Office
Kim Hyatt	Fisheries and Oceans Canada
Steve Matthews	Ministry Water Land & Air Protection
Barry Rosenberger	Fisheries and Oceans Canada
Eike Scheffler	Okanagan Basin Water Board
David Smith	Fisheries and Oceans Canada
Stephen Smith	Stephen Smith Fisheries Consulting Inc.
Keith Wolf	KWA Ecological Sciences Inc.

The Transboundary Community

Salon C

Session Leads: Michelle Boshard & Larry Bailey

Sunday, June 22, 2003

2:00pm-4:30pm

Community Stewardship Initiatives on both sides of the border in the Okanagan Basin

Michelle Boshard, Rural Resource Associates, Tonasket, Washington.

Overview of the Canadian and US community aquatic stewardship initiatives in the Okanagan Basin

Benefits to Community Based Approach—Example projects

a) Similkameen Confluence Project

Larry Bailey, Upper Columbia Group

b) Osoyoos Lake Foreshore Protection Project

Lionel Dallas, Osoyoos Lake Water Quality Society. Osoyoos, BC

Session Leads: Michelle Boshard & Larry Bailey

Sunday, June 22, 2003

2:00pm-4:30pm

Community lessons learned: Challenges facing Volunteer Stewardship**a) Review of Lessons learned from the DFO Habitat Conservation and Stewardship program**

Lisa DeGoes, Fisheries and Oceans Canada Habitat Conservation Stewardship Program

b) Washington State “Regional Fisheries Enhancement Program”

L. Pelly, Washington State Fish and Wildlife Commission

Session Leads: Michelle Boshard & Larry Bailey

Sunday, June 22, 2003

2:00pm-4:30pm

Panel Discussion: The Role of Community in Natural Resource Management, and how to address barriers to community involvement

L. Bailey, Upper Columbia Group. **Michelle Boshard**, Rural Resource Associates. **Lisa DeGoes**, DFO HCSP Program. **L. Pelly**, Washington State Fish and Wildlife Commission. **Lionel Dallas**, Osoyoos Lake Water Quality Society. **N. Warner**, Nature Conservancy of Washington. **R. Longanecker**, US/Okanogan Community Leader

This discussion will follow through and add to previous conference community sessions (Spokane April 2002 and UCG Salmon Summit November 2002) discussing how to engage community in stewardship, their roles and relationship with governments. Consideration of the development of a Transboundary Community Network to bring higher funding profile to community stewardship initiatives in both Canada and US portions of the Okanogan Basin.

Recent and Future Climate Driven Variations in Low Flows in South Central British Columbia

Paul H. Whitfield, Alex J. Cannon, and J. Y. Wang, Meteorological Service of Canada. Environment Canada. Vancouver, BC.

Retrospective and modelling studies of climate driven variations in stream flow in three valleys within southern British Columbia have indicated a significant change in the pattern of annual low flows. Stream flows in the Similkameen, Okanagan, and Kettle River valleys have been demonstrated to be sensitive to climatic variations in part due to the large elevation variation present in this mountainous terrain. In natural streams in south-central BC, the occurrence in low flows has shifted from occurring during the late winter to late summer. This shift is considered from several different perspectives. First, we assess the measurement of low flows over the period of record, examining rating curve observations in relation to shifting channels, the impacts and effects of winter ice cover, and the generation of the record. Our intention was to quantify the uncertainty of the measurements during these periods of the record. Second, we assess the role of groundwater in the control of the magnitude of low flows by comparing the water tables at wells in the study area with the levels of low flows during different climatic conditions. Thirdly, we assess the changes in low flows with respect to frequency, duration, location and magnitude over the recent past, amongst natural and regulated rivers assessing the sensitivity and persistence of low flows to climatic variations. Finally, we use the results from these retrospective studies to generate models of potential future conditions, including projections of properties of low flows during the coming century. The impacts and possible adaptations to future low flows are discussed in relation to their ecological, social, and economic consequences

Presenter's Biographical Sketch:

Paul Whitfield joined Environment Canada in 1975 and is currently Manager, Science Division, Meteorological Service of Canada - Pacific and Yukon Region

Specific areas of expertise are applications of statistics to the analysis of water quality data, transient events, design and implementation of water quality and environmental monitoring programs, quality assurance and quality control, water quality in relation to hydrological processes, acidification of surface waters, and water quality in sub-Arctic environments. Most recently focused on climate change and changes in land use and the impacts on hydrology.

Member of a number of national and international organisations dealing with environmental monitoring and environmental education including, Arctic Climate Impact Assessment, ISO TC 147/SC 1 and SC 6 [International Standards Organization - Water Quality Technical Committees];

Communications and Technical Information Sharing

Salon C

Session Lead: Keith Wolf

Monday, June 23, 2003

9:00am-12:00pm

NATO Environmental Science committees, Project WET, Project WILD, and Project LNT – an environmental education program teaching wilderness ethics

Director of the Canadian Water Resources Association. BC Branch and National Director, for many years.

Author of more than 100 articles about environmental science and environmental education; and three books on experiential education.

Also has a long involvement in Scouts Canada, and currently Regional Commissioner for Fraser Valley Region, where he manages program delivery, volunteer training and membership servicing.

Water Management and Climate Change in the Okanagan Region

Stewart Cohen and **Tina Neale**, Environment Canada and University of British Columbia, Vancouver, BC.

A study of water management and climate change in the Okanagan region is currently underway. Participants include Environment Canada, Agriculture and Agri-Food Canada, University of British Columbia, BC Ministry of Water Land and Air Protection, and a number of local partners, including the City of Summerland. The objectives are: a) to provide scenarios of potential impacts of climate change on water supply and demand, and b) to identify adaptation options, and assess costs and institutional challenges in implementing climate-related adaptation measures.

An important aspect of this collaborative study is the role of dialogue on adaptation. A dialogue process with regional stakeholders is being developed as part of the effort to identify adaptation options. So far this year, members of the study team have conducted interviews and surveys on water management activities and early adoption of demand side management. Future plans include a series of focus group sessions in which participants will be asked to respond to the results of the climate change scenarios being produced by other study team members. Some scenario results will be presented at this conference.

Presenter's Biographical Sketch:

Tina has worked with the Adaptation & Impacts Research Group, located at UBC's Institute for Resources, Environment & Sustainability, since 2001, where she coordinates collaborative, interdisciplinary research initiatives. Since January 2002, Tina's work has focused on a project investigating the impacts of climate change on water resources in the Okanagan Basin, and the associated implications for water management in the Okanagan Basin, British Columbia, is a collaboration between the AIR Group, Pacific Agri-Food Research Centre and UBC, with participation from the MWLAP and the City of Summerland. Tina holds a BSc in Environmental Sciences from UBC and is currently a Masters Candidate at Royal Roads University in the Masters in Environment and Management Program. Tina's Masters thesis will involve creating scenarios of future water supply and demand for the Okanagan incorporating the impacts of climate change and regional development.

Adapting to climate variation and change: Okanagan fish and fisheries and fisheries communities.

Mark S. Johannes, Fisheries Sector: Canadian Climate Impacts and Adaptation Research Network, Pacific Biological Station, Nanaimo, BC.

My presentation briefly summarizes how Okanagan fish, fisheries and communities are impacted by climate change predictions of warming. To improve predictions of climate change "impacts" on future resource productivity and on communities will require more effort and greater refinement of climate scenarios.

As an immediate response, a second "adaptation" approach can be used to reduce risk and help capitalize on benefits to fisheries communities by assuming and preparing for adverse effects of climate change; this approach defines vulnerability to climate change and develops anticipatory adaptation in resource use and expectation. Adaptation to climate variability and change can be used to adjust practices, processes, management and structures of systems based on projected changes in climate. Early adaptation to climate change can assist in adjusting human expectations to sustainable use of fisheries resources.

As a final note, I introduce the Canadian Climate Impacts and Adaptation Research Network (C-CIARN) and its mission to build a network of researchers and stakeholders, facilitate research and help provide voice and visibility to climate change impact and adaptation issues in Canada for fisheries and aquatic resource sectors.

Presenter's Biographical Sketch:

Mark Johannes is the Fisheries Sector, National Coordinator of the Canadian Climate Impacts and Adaptation Research Network (C-CIARN www.fishclimate.ca). Mark is also senior fisheries research scientist at University of Victoria, Biology-Watershed Lab. (www.uvic.ca/water) and teaches at UVIC and Royal Roads University. Mark is an active Director with the Northwest Ecosystem Institute, a research based NGO based in the Pacific Northwest (www.ecosystems.bc.ca). He completed his Ph.D. in Ontario and was a NSERC postdoctoral fellow at Simon Fraser University and Pacific Biological Station. Mark is a fisheries biologist / ecologist with >15 years of experience across North America working on watersheds and ecosystems in freshwater lakes, rivers, marine estuaries and oceans habitats. His research interests include:

- Aquatic ecosystems and fisheries production, habitat and climate science of habitats.
- Watershed planning, integrated resource management, stewardship and stakeholder participation
- Natural history of coastal streams, lakes, estuaries and coastal ocean areas.
- Population, behavioural and production ecology of fishes with recent emphasis on salmonids.
- Population and community structure in aquatic foodwebs.
- Fisheries / habitat enhancement and restoration technology.

Contact: mark@fishclimate.ca, 250-756-0930

Climate impacts on life history events of Okanagan sockeye salmon (*Oncorhynchus nerka*) and options for adaptive management in the face of future climate change

Kim D. Hyatt, D.P. Rankin, M. Stockwell, and J. Cleland. Canada Department of Fisheries and Oceans; Pacific Biological Station, Nanaimo, BC

Populations of sockeye salmon on the southern end of their range in the eastern Pacific are considered to be especially vulnerable to effects of future climate warming. In this paper Okanagan sockeye are examined for historic interactions among climate change, life history events and management responses to changes in fish abundance. Both model analyses and empirical observations suggest that periods of climate warming are accompanied by (i.) increases in the frequency and magnitude of adult migration delays and mortality events, (ii.) delays in the timing of peak spawn and egg hatch, (iii.) moderate to pronounced seasonal reductions in lake rearing habitat, (iv.) annual reductions in marine survival and (v.) large decreases in stock productivity. Sustainable fisheries for sockeye salmon in the mainstem Columbia River and its tributaries have not been maintained over the past century because of long term declines in total returns of adult salmon. Recent increases in returns have provided some encouragement that Columbia River sockeye stocks may finally be rebuilding. Results reported here suggest that future climate impacts may play a significant role in determining stock rebuilding success, which will ultimately depend on the scope for adaptive responses by salmon, fisheries resource stakeholders and the institutions that form an important interface between them.

Presenter's Biographical Sketch:

Dr. Hyatt holds a BSc from the University of Windsor (1971) and a PhD (1980) from the University of British Columbia. She currently works as a research scientist in the Stock Assessment Division of Fisheries and Oceans Canada at the Pacific Biological Station in Nanaimo, BC. He has also worked throughout western Canada and Alaska as a fisheries scientist for the environmental consulting industry and as a faculty member at Okanagan University College in Kelowna BC.

Dr. Hyatt is the Head of the Salmon in Regional Ecosystems Program within the Pacific Region's Stock Assessment Division. Dr. Hyatt's research interests include: (1) assessments of the status of anadromous salmon stocks in the Pacific region, (2) investigation of mechanisms that control annual production variations of salmon populations in freshwater and marine ecosystems around the Pacific Rim and (3) development of science based models and decision support systems to improve the conservation and management of salmon populations within an ecosystem context (i.e. within watersheds or large marine ecosystems).

Between 2000 and 2001, Dr. Hyatt participated in establishing the British Columbia Regional Office of the Canadian Climate Impacts and Adaptation Research Network (C-CIARN). In 2002, Dr. Hyatt agreed to participate as a science advisor and manager for the National Fisheries Sector Office of the C-CIARN sponsored by NRCan and hosted by the Science Branch of Fisheries and Oceans Canada.

Research Scientist (1980-present) - Fisheries and Oceans Canada, Science Branch, Stock Assessment Division, Pacific Biological Station, Nanaimo.

Fisheries Scientist (1977-1980) - Beak Environmental Consultants.

Faculty Member (1975-1977) - Okanagan University College, Kelowna, B.C.

Adjunct Professor (2002-present) - University of British Columbia – Institute of Resources and Ecology

Adjunct Professor (2002-present) - University of New Brunswick – Department of Biology

Adjunct Professor (1983-86) - Simon Fraser University - School of Resource Management

Arsenic in Sequestered Sediments of the Similkameen and Okanogan Rivers, US

Don Hurst, President, Fulcrum Environmental Consulting, Inc., Spokane, WA; and Patti Stone, Environmental Planner, Confederated Tribes of the Colville Reservation, Nespelem, WA

Sampling of Okanogan River sediments in 2001 by the Colville Tribe's Environmental Trust Department (ETD) demonstrated elevated concentrations of arsenic in bed sediments and provided a strong indication that the Similkameen River was the probable source. In October 2002, ETD conducted sediment sampling to ascertain whether sequestered sediments of the Similkameen River valley have the potential to be a significant source of elevated arsenic concentrations in the Similkameen River. Bed (core) and bank (grab) samples of fine grain, seasonally inundated valley sediments were obtained and analysed for selected metals and grain size.

Six of nine core samples obtained from the riverbed below seasonal water level exceed CCT Sediment Quality Standards (TEC) for arsenic. Maximum and second highest concentrations of arsenic occurred on allotted land of the Colville Tribe and its members. One of six sediment samples obtained from the riverbank above seasonal water level exceeded CCT Sediment Quality Standards.

This study concludes:

1. No significant point sources of arsenic are evident in the U.S portion of Palmer Creek/Similkameen River valley that account for observed values in sediment.
2. Resuspension of sequestered arsenic-containing sediments in the Similkameen River valley above RM 19 are a seasonally significant non-point source for sediment contamination in Palmer Creek and the Similkameen River.
3. Resuspension of arsenic-containing sediments of Palmer Lake may also be seasonally significant as a non-point source for sediment contamination documented in Palmer Creek and the Similkameen River.

Presenter's Biographical Sketch:

Don Hurst is a Principal with Fulcrum Environmental Consulting under contract to the Environmental Trust Department of the Confederated Colville Tribes on a variety of environmental matters. Mr. Hurst worked closely with Tribal professionals in development of a comprehensive groundwater monitoring and wellhead protection plan for the Colville Reservation. Recent projects with the Colville Tribes include sampling and analysis of sediments from the Okanogan, Similkameen, and Columbia Rivers as well as interior waters of the present day Colville Reservation. Mr. Hurst holds a BS and MS in Geology from the University of Wyoming and is a professional geologist licensed to practice in Washington and Oregon.

The Okanagan Fish-Water Management (OKFWM) Tool: Balancing Water Objectives in Real-Time

Clint Alexander, David Marmorek, Colin Daniel, Calvin Peters, ESSA Technologies Ltd., Vancouver, BC; Kim Hyatt, Pacific Biological Station, Science Branch, Fisheries and Oceans Canada, Nanaimo, BC; Brian Symonds; Steve Matthews, Ministry of Water, Land and Air Protection, Penticton, BC; Dean Watts; Howie Wright, Deanna Machin, Okanagan Nation Fisheries Commission, Westbank; Brent Philips, Brian Guy, Summit Environmental, Vernon BC; Harvey Andrusak, Redfish Consulting Ltd., Nelson, BC; Chris Bull, Glenfir Resources, Naramata, BC.

Water levels on Okanagan Lake are managed to provide a balance between fisheries, flooding, and other interests. Water levels must provide sufficient water to meet target flows for Okanagan Lake kokanee and downstream sockeye salmon populations, and minimize flooding of both lakeshore and downstream properties. Owing to a variety of factors, Okanagan River sockeye are the only significant remnant stock of more than a dozen anadromous salmon stocks that historically returned to Canada through the US portions of the Columbia River. Preliminary analyses by the Okanagan Basin Technical Working Group (OBTWG) suggest improvements to Okanagan River flow management practices have the potential to increase average sockeye production by 15% or 300,000 smolts per year. To achieve these production gains, the OBTWG identified the development of OKFWM, an Internet-based software application as the central tool for defining these improved water management practices. OKFWM enables water managers and fisheries scientists to integrate real-time data to make decisions regarding Okanagan Lake water management that balance these multiple objectives. This tool is one element in an overall ecosystem based management framework advocated by the OBTWG that focuses on maintaining critical ecosystem functions and cutting across institutional borders.

Presenter's Biographical Sketch:

Mr. Alexander is a Systems Ecologist and Technical Architect at ESSA Technologies. His principal interest is the development of decision support tools that integrate expertise across disciplines to assist resource managers evaluate alternative policies in high uncertainty settings. For this reason, Mr. Alexander specializes in the use of quantitative methods that permit the credible accounting of key uncertainties (e.g. probabilistic simulation modeling, decision analysis and adaptive management).

Mr. Alexander has served as technical lead on several major projects in British Columbia, the US Columbia Basin and California that combine decision analysis, models and technical facilitation towards the development of robust management alternatives. He recently applied several of these methods to the Okanagan Fish Water Management tools project, led by the Okanagan Basin Technical Working Group. Other recent projects include a data management and catch estimation system for Fraser River First Nations fisheries (MERCII) and the Clear Creek Decision Analysis and Adaptive Management model (CCDAM) for CALFED/US Bureau of Reclamation.

Forest Management Effects on Low Flows in Snowmelt Dominated Hydrologic Regimes.

Rob Scherer, RPF, EIT, Watershed Management Extension Specialist, FORREX, Kelowna, BC

Conflicts between water withdrawals and instream uses are prominent in numerous watersheds in BC during low flow periods of late summer and early fall. Knowledge of the influence human activities may impart on water quantity is paramount in areas where streams are in a state of water shortage and/or possess high fishery values. Conflicts over water shortages often stem from public concerns of forest harvesting effects on low flows. Forest management, however, is only one of a number of human activities that can potentially affect a watershed's hydrologic regime. A common perception of many natural resource managers and the public is that timber harvesting causes streams to dry up. Uncertainty around which human activities have an appreciable influence on flow, however, can lead to ineffective and inefficient management policies. Inadequate knowledge of low flow processes further complicates the issue. An important starting point in addressing this uncertainty is the culmination of scientific information on the topic. Such a synthesis of knowledge provides a solid basis from which management tailored to local conditions can occur.

With respect to these points, this presentation will provide the following:

- Information on low flows;
- Overview of the potential effects of forest management on low flows in snowmelt dominated regions;
- Limitations of low flow science in application to management,
- Knowledge, research, extension and management needs.

This presentation is a modification of a detailed journal article (Journal of Ecosystem Management, Pike and Scherer, in press) and a report produced by Scherer and Pike (2003), and includes information gathered at a technical workshop held November 21, 2002.

Presenter's Biographical Sketch:

Rob, a registered professional forester and engineer-in-training, has over ten years of experience working in British Columbia. His background includes forestry, forest hydrology and watershed management on both the BC coast and interior. Rob's goals include the development of ecosystem-based watershed management strategies to improve the long-term care of the quality and quantity of British Columbia water supplies through information sharing and collaboration in the natural resource community. Extension projects relating to forest practices, water quality and quantity are intended to provide clear and common understanding of potential watershed management options and outcomes. Rob also provides a linkage between the recently established watershed management program at Okanagan University College and the natural resource community.

Academic Background:

- Master of Science, Oregon State University, Major: Forest Hydrology, 1995
- Bachelor of Science in Forestry, University of British Columbia, Major: Forest Resources Management, 1992

The International Joint Commission and Cooperation in Transboundary Basins**Tom McAuley**, Lisa Bourget, and Brian Symonds. International Joint Commission

The Boundary Waters Treaty of 1909 created the International Joint Commission to help prevent and resolve disputes, primarily concerning shared waters, along Canada's and the United States' 8000 kilometre common border. The Commission has been instrumental in solving and managing water resource and environmental issues between both countries for nearly a century. Much of the Commission's work is carried out through boards of experts. In the Okanagan region, the International Osoyoos Lake Board of Control oversees the management of Osoyoos Lake water levels.

As the 21st century begins, the Commission is focused on achieving better integration of its water quality and water quantity responsibilities, on considering issues within a watershed context, and on strengthening local ties. It is also conducting reviews of various "Orders" that govern how certain water control structures are operated, and expects to review the Orders for Zosel Dam at the outlet of Osoyoos Lake prior to its expiration in 2013.

This presentation discusses the foundation provided by the Treaty, the Commission, and its Boards, and highlights the challenges and opportunities ahead as the Commission carries out its responsibilities.

Presenter's Biographical Sketch:

Tom McAuley is a professional engineer licensed in both Canada and the U.S. (Michigan) who joined the Canadian Section of the International Joint Commission in 2000 as Engineering Advisor. He has lead responsibility on all issues related to transboundary water management in the Columbia and St. Mary-Milk River basins in the west, as well as being lead advisor on the Commission's three Great Lakes Boards of Control, and the International Lake Ontario-St. Lawrence River Study. He holds a bachelors of applied science from the University of Toronto and an M.Sc. in Civil Engineering - Water Resources from the University of Manitoba. Tom is also a competitive sea kayaker, and has participated in races on the Saguenay and St. Lawrence Rivers.

Transboundary communication: Bridging the data gap**Carolyn Pearson**, EcoA.I.M., Inc., Peteros, Washington

Stakeholders in the Okanogan/Okanagan watershed are interested in sharing data and staying informed about on-going environmental activities. Technological advances such as Geographic Information Systems (GIS) and the World Wide Web can facilitate data exchange and communication for ecosystem management, legislation, and watershed activities.

Geographic Information Systems enable the user to map and display environmental attributes over large geographic areas, such as the Okanogan/Okanagan watershed. The World Wide Web provides a method to effectively communicate information and ideas across political, environmental and language barriers. EcoA.I.M. personnel will discuss:

- Mapping environmental data for the transboundary watershed: feasibility, issues and solutions
- Environmental attributes that can be displayed using GIS
- GIS coverages, metadata and data dictionaries: what they are and why they are important
- Data Portal technology: providing online access to data 24 hours a day, 7 days a week.

Presenter's Biographical Sketch:

Carolyn Pearson is the president of EcoA.I.M., an environmental consulting firm specializing in Ecosystem Assessment, Inventory, and Monitoring. She has a Bachelor of Science degree in Marine Science and Biology with a Chemistry minor from the University of Miami, Florida. Her graduate experience includes a year at Oregon State University and class work at Central Washington University. Her thesis-in-progress involves using Geographic Information Systems (GIS) and Global Positioning Systems (GPS) to map and monitor ecosystems. Carolyn has extensive natural resource experience, which includes working for the Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, U. S. Forest Service, and Columbia River Inter-Tribal Fish Commission. She has given numerous presentations to government, tribal, and landowner groups to provide and exchange technical information. Her most recent presentation, entitled "Fish Habitat Assessment, Inventory and Monitoring using GIS", was given at the First Annual Upper Columbia Salmon Summit in November 2002.

Communications and Technical Information Sharing

Salon C

Session Lead: Keith Wolf

Monday, June 23, 2003

9:00am-12:00pm

Barriers and Challenges to Information Management

Trina Innes, FORREX, Kamloops, BC.

Abstract unavailable at time of printing.

The Georgia Basin Action Plan and Developing Common Transboundary Ecosystem Indicators**Geoffrey Thornburn**, Georgia Basin Action Plan, Environment Canada. Vancouver, BC

The Georgia Basin Ecosystem Initiative was established in 1998 as one of several such initiatives across Canada. Between 1998 and 2002, significant progress was made by federal and provincial partners through the GBEI on key environmental issues. Over the next five years, the new Georgia Basin Action Plan (GBAP) will build on this progress, and strengthen the collective capacity to protect and restore ecosystem health while working cooperatively to provide economic opportunities and enhance human well-being. The Action Plan will continue to link with cooperative initiatives and foster the working relationships that have been established across the Georgia Basin – Puget Sound region.

A new priority for GBAP is to support the development of and access to integrated resource and land-use data and information in the region. The implementation of the Transboundary Air Data Exchange (TRADE) project, that will assemble Canadian and US air quality data sets and information, is one example.

Another important component of the GBEI/GBAP has been the binational effort to develop ecosystem indicators for the Georgia Basin - Puget Sound transboundary region. The project began with the goal of identifying environmental trends for which compatible data are available, and six indicators were published in May, 2002. A number of important lessons were learned about building capacity to undertake this work and to get value from it, including the need to identify policy responses and target more effectively a range of decision makers. Work is proceeding on a second report in 2004 with updated data and additional indicators.

Presenter's Biographical Sketch:

Geoffrey Thornburn graduated from the University of Victoria in 1967 and has a Master's degree in Economics from the University of Kingston, both in Economics. After working several years with the Canadian Forestry Service and Environment Canada, he became Economics Adviser to the International Joint Commission, where for 22 years he assisted in the assessment and resolution of a wide range of policy issues related to environmental and resource management along the Canada-United States boundary. He has been at the forefront of the integration of science and policy, and of economic, social and environmental ("sustainability") considerations in the binational as well as national and regional contexts.

Since 1999, he has been on an extended assignment as Senior Advisor to Environment Canada's Georgia Basin Ecosystem Initiative in British Columbia, focusing on the measurement of progress towards sustainability, and federal-provincial-municipal linkages on sustainability governance and measurement. He is also Adjunct Associate Professor at the School of Public Administration and Associate of the Centre for Public Sector Studies, University of Victoria where he has led courses on Environmental Governance and on Sustainable Issues in Public Administration. He has authored a large number of papers on forest industry, transboundary environmental and sustainability governance and indicator issues. Most recently, he was part of a team of indicator specialists who put together a binational report entitled Georgia Basin – Puget Sound Ecosystem Indicators that has received positive reviews.

Currently he is also a member of the International Board of Advisors for Human Horizons, a web based international organization for bringing support to countries and their communities in development, the Community Social Planning Council of Greater Victoria's Quality of Life Challenge Steering Committee and Chair of its Measures and Indicators Working Group, the Capital Regional District's Environmental Roundtable and its State of the Environment Committee, of the Diocese of British Columbia's Environmental Commission.

Defining Reach Structure for Habitat Assessment and Subbasin Planning in the Okanogan Subbasin**Keith Wolf**, KWA Ecological Sciences, Inc. Carnation, WA

Defining the geomorphic and life history-based spatial boundaries at the reach-level is a fundamental step for conducting ecosystem-based habitat assessment. Absent anthropogenic complications, reaches can be described in terms of degree of confinement and general type: colluvial, bedrock, and alluvial-subtype. Alluvial reaches are determined primarily by gradient, secondarily by relative roughness (ratio of the largest grain size to bankfull flow depth). Specifically, individual reach structure that is affected by human activity is defined by: temperature gradients (and other water quality gradients); species-specific access limits; anthropogenic confinement (levees, roadway/railroad embankments, etc.); urban/rural interface; gross changes in riparian condition; special geomorphic features (e.g., alluvial fans, braided glacial outwash zones, deltas and distributaries); hatchery release points; dewatered reaches; and, obstructions (e.g., waterfalls, culverts, major irrigation diversions, dams). In general, we define reach structure in terms of gradient, confinement, hydraulic roughness, confluences and obstructions. Once the basic stream reach structure is defined, we then use the Qualitative Habitat Assessment and Ecosystem Diagnosis and Treatment methods to provide a disciplined and organized process to estimate variable mortality parameters at predefined life stages for Pacific Salmon. The approach provides a basis for conducting ecosystem analysis and examining both qualitative and quantitative measures. We do this by defining, characterizing and rating life-stage habitat condition attributes for current and reference conditions (i.e., spatial and temporal mortality factors) at the reach-level. This presentation focuses on the explicit protocols for defining a discrete set of stream reaches in typical Northwest stream environments as the first step in a habitat survey protocol currently being evaluated in the Okanogan River subbasin.

Presenter's Biographical Sketch:

Keith Wolf is the Principal Scientist for KWA Ecological Sciences, Inc., a firm specializing in salmon recovery planning, ecosystem assessment, fish and wildlife management and program design. Keith's clients include state, federal and local governments, tribes and private industry. He sits on several technical advisory committees for the Colville Tribes, the Northwest Power and Conservation Council and the state of Washington's Comprehensive Monitoring and Evaluation program. Keith also serves as primary staff member to the Upper Columbia Salmon Recovery Board and as an adjunct member of the Regional Technical Team. He has a degree in Marine Biology and has conducted graduate work that focused on the nocturnal sensory adaptations of nine shark species. Keith currently serves as President of the *American Fisheries Society's* North Pacific International Chapter and has worked in the Columbia Basin and Puget Sound for over 17 years.

Evaluation of Aquatic Ecosystem Health Using a Multimetric Index of Biological Integrity for Benthic Invertebrates in Okanagan Streams

E. Vic Jensen, RPBio. Environmental Protection Division, Ministry of Water Land and Air Protection, Penticton, B.C.

Biological monitoring is essential to protecting biological resources. Chemical measurements, or habitat assessments are useful to aquatic monitoring programs, but the primary sentinels and objects requiring protection are organisms living in the stream. Calibration and evaluation of a benthic invertebrate index of biological integrity (B-IBI) for 22 Okanagan streams was conducted between 1999 and 2001. Candidate streams, representing a gradient of human impact, were chosen initially through consultation with fisheries and habitat staff review of the BC Watershed Atlas data and orthophoto imagery. Sampling reach evaluation of in-stream and near stream habitat using the Alaska Stream Condition Index was an aid to ranking watershed condition for B-IBI evaluation. Ten benthic invertebrate measures were found to respond predictably to watershed disturbance and clearly distinguish urban and altered sites from relatively unimpacted sites. Water and sediment chemistry at urban streams were somewhat degraded but not beyond guidelines or probable effect levels and could not distinguish site differences at lesser levels of watershed alteration. The merits of a multimetric index of biological integrity are many. First and foremost is that the biological condition of the streams is being directly assessed. Secondly, the B-IBI ranking of stream condition is an objective measure of stream health that may be more readily understood by resource managers and the public than chemical concentrations or habitat statements, which are not direct measures of aquatic life health. Thirdly, the B-IBI can be used to track restoration efforts and report on long-term trends in aquatic ecological condition. Lastly, this process could further provide opportunities to collaborate across disciplines and integrate and strengthen aquatic ecosystem assessment in the Okanagan.

Presenter's Biographical Sketch:

1977	BSc in Biology from University of Victoria
1977-1979	Okanagan Basin Water Board -Water Quality Monitor
1980-81	Ministry of Environment - Water Quality Technician
1983-85	Agriculture Canada - Technician
1986-03	Ministry Water Land and Air Protection - Environmental Impact Assessment Biologist

British Columbia / Washington Environmental Cooperation Council

Daymon Trachsel, Ministry of Water Land and Air Protection, Victoria, BC.

The purpose, history, membership, role and organisational structure of the Environmental Cooperation Council (ECC). Name and descriptions of each of the International Task Forces established pursuant to the ECC and some of their recent initiatives and successes. Description of the efforts of the Council and its task force in the region.

The ECC website will be introduced, and some of the information on the site will be outlined.

The strengths, challenges and the future direction of the ECC will also be discussed.

Presenter's Biographical Sketch:

Daymon Trachsel joined the Ministry in 1995 and has worked in the Strategic Policy Branch on intergovernmental relations since January 17, 2002. His responsibilities include international relations, principally with the United States, and provincial – municipal relations.

Prior to this Daymon worked on aboriginal issues in the Ministry of Environment, Lands and Parks as a member of the Corporate Policy Branch. Before that he was a negotiator-analyst with the Ministry of Fisheries. Daymon holds a bachelor's degree in psychology from the University of Durban, South Africa, and a diploma in economics from the London School of Economics and Political Science in England.

Daymon's background prior to joining the Ministry includes a range of resource management and intergovernmental experience in both the public and private sectors. Before coming to Canada, he spent over six years in England and Germany on diplomatic assignment, dealing with immigration, investment and job creation. He has worked in human resources for both the private and public sector, and has managed access to public lands for utilities and municipalities.

Daymon serves as President of the Victoria Southern Africa Club and enjoys gardening, cycling, and restoring classic automobiles. He and his partner Tina have three children.

“Squeeze Play II”: the Role of Temperature, Oxygen, and Annual Climate Variations in Controlling Habitat Utilization by Juvenile Sockeye Salmon (*Oncorhynchus nerka*) in Osoyoos Lake, British Columbia**D. Paul Rankin**, Fisheries and Oceans Canada, Nanaimo, BC

Okanagan sockeye salmon spawn and then rear in Canadian portions of a small section of the Okanagan River and Osoyoos Lake respectively. Lakes and rivers of the British Columbia southern interior exhibit annual and seasonal changes in physical variables (temperature and oxygen) that are extreme enough to pose serious threats to the persistence of a cold water species such as sockeye salmon which are near the southern end of their geographic range. Multiyear results from acoustic and trawl surveys are used here to determine annual and seasonal variations in the distribution and abundance of juvenile sockeye salmon relative to “extreme” changes in temperature and oxygen conditions in Osoyoos Lake. Comparative observations of juvenile sockeye subjected to a narrower range of physical conditions in Great Central Lake B.C. serve as an “experimental control”. Intensive monitoring of Osoyoos Lake water quality during the critical late-summer/fall period in 2002 has allowed us to reassess the “Squeeze Play” hypothesis.

Presenter’s Biographical Sketch

Paul Rankin is a Research Biologist with Fisheries and Oceans, Canada (Salmon in Regional Ecosystems Program) at the Pacific Biological Station in Nanaimo, British Columbia. I've specialized in juvenile sockeye salmon ecology in coastal nursery lakes but recently I've been working on juvenile sockeye in Northern Transboundary lakes as well as Osoyoos Lake in the Okanagan. my particular interests include factors controlling production and survival of juvenile sockeye and the use of acoustics to estimate in-lake abundances of limnetic fish. I'm a graduate of the University of Victoria and the University of British Columbia.

An In Depth Review of Fifty Years of Okanagan River Sockeye Salmon Escapement Observations**Margot M. Stockwell**, Fisheries and Oceans Canada, Pacific Biological Station, Nanaimo, B.C.

Decades of decline in Okanagan River sockeye salmon production has prompted government fisheries agencies, First Nations groups, and communities on both sides of the Canada - U.S. border to set objectives aimed at protecting and restoring the Okanagan sockeye stock. Research in the past few years has identified potential barriers at each life history stage which may be limiting sockeye production. Annual abundance estimates of adult returns and of juvenile salmon are essential elements to monitoring success or failure of any restoration initiatives. Okanagan sockeye escapement records were critically examined to: i) evaluate the utility of historical records by identifying unreliable or biased entries, ii) identify potential sources for the large discrepancies between adult passage at Wells Dam on the Columbia River and subsequent counts on the spawning grounds, and iii) to reconstruct an historical record based on comparable assessment units. Fifty years of Okanagan sockeye escapement data were assembled from published documents, unpublished reports, data records, and electronic databases. Raw counts of live and dead sockeye as observed by river segment and date, as well as any notations regarding survey conditions or methods, were recovered. Original escapement data was collected by one to several groups of fisheries personnel who had employed a mixture of field survey methods, effort levels, and subsequent analytical techniques within and between years. Several studies have demonstrated that large differences in magnitude of annual escapement estimates may be attributed to variations in assessment procedures. Consequently, differences between annual summary estimates of Okanagan sockeye may represent true variability in annual spawner counts or alternately, may reflect discrepancies produced from differences in field or analytical methods.

Presenter's Biographical Sketch:

Margot Stockwell holds a B.Sc. in Marine Science from the UBC and for the past 6 years has worked as a Research Assistant for Fisheries and Oceans Canada in Nanaimo. Margot's research focus has been on analysis and reconstruction of historic catch, escapement and biological attributes for Okanagan and West Coast Vancouver Island sockeye populations. This includes the compilation and reconstruction of historic climate, river and lake variables. The results of this work have provided core information for: (i) reformation of the federal Salmon Escapement Database System (SEDS), (ii) evaluating the feasibility of potential stock restoration options, (iii) developing decision support tools for fisheries and water managers, and (iv) assessing the role of climate variation on sockeye production during fresh water life history stages.

Future Production and Harvest of Spring and Summer/Fall Chinook in the Okanogan and Columbia Rivers**Stephen Smith**, Fisheries Biologist, Fisheries Consulting, Inc. Canby, Oregon.

The Colville Tribes are developing plans for the comprehensive management of spring Chinook and summer/fall Chinook salmon in the Okanogan River and Columbia River below Chief Joseph Dam. The plans' primary objectives are restoring abundance, distribution, and diversity of spring and summer/fall Chinook in their historic habitats. Complementary harvest programs restoring tribal ceremonial and subsistence fisheries and recreational fisheries, are also proposed. Key elements of the summer/fall Chinook plan include: releasing yearling and sub-yearling juveniles from several acclimation sites along the Okanogan River, releasing juveniles below Chief Joseph Dam, and initiating propagation of later-arriving summer/fall Chinook.

The spring Chinook program would be implemented in two phases. In Phase I, non-indigenous, Carson-stock Chinook would be propagated to restore and evaluate tribal and recreational fisheries. These fish would also be used to evaluate habitat condition in the Okanogan River. In Phase II, the Tribes propose transitioning from Carson-stock to indigenous Upper Columbia River Spring Chinook when surplus to programs in the Methow River. These latter spring Chinook are listed as "endangered" under the Endangered Species Act. The Tribes propose their reintroduction only as an "experimental population". Acclimating fish in Lake Osoyoos is also an option.

Both plans include comprehensive monitoring and evaluation programs to maximize recovery and fishery benefits, and minimize genetic and ecological risks. A new hatchery below Chief Joseph Dam is proposed to rear 2.5 million spring and summer/fall Chinook. Testing and deploying live-capture, selective fishing gear to harvest primarily hatchery-origin fish is a critical element of both plans.

Presenter's Biographical Sketch:

Stephen Smith has been a fisheries biologist in the Pacific Northwest for nearly 30 years. He graduated with a B.Sc. in Wildlife and Fisheries Biology from the University of California, Davis. Currently President of his consulting firm located in Canby, Oregon.

1995-2000: Chief, Hatcheries and Inland Fisheries Branch, National Marine Fisheries Service in Portland, Oregon - developed and administered policy and procedures applying the Endangered Species Act to artificial propagation of salmon and steelhead, and to recreational fisheries throughout the Pacific Northwest; also responsible for integrating the Service's implementation of the ESA with tribal trust and sustainable fisheries responsibilities.

1983-1995: Senior Policy Analyst and Chief, Fisheries Integration Branch, Bonneville Power Administration in Portland - provided technical and policy recommendations, and supervised research on adult and juvenile fish passage at mainstem hydroelectric dams.

1975-1983; Habitat biologist, National Marine Fisheries Service - primarily evaluating effects of water resource development projects in the region.

Fish

Salon A

Session Leads: Kim Hyatt and Steven Smith
Monday, June 23, 2003

1:00pm-4:30pm

Status of anadromous fish runs in the Columbia and more specifically in the Columbia Cascade Province and Okanogan River and causes for recent increases in run sizes.

Tom Cooney, NOAA National Marine Fisheries Service

Abstract unavailable at time of printing.

Trends in Columbia River harvest of salmon and steelhead with emphasis on populations from the Columbia Cascade Province; and management principles that guide current and future harvest.

Bill Tweit, Washington Department Fish and Wildlife, Washington.

Abstract unavailable at time of printing.

Efforts to establish a local steelhead broodstock in the Okanogan River and to initiate a steelhead kelt reconditioning program.

Jerry Marco/, Chris Fisher, John Arterburn, Confederated Tribes of the Colville Reservation, Washington.

Abstract unavailable at time of printing.

Experimental Re-introduction of Okanagan Sockeye into Skaha Lake, BC.**Deana Machin**, Okanagan Nation Alliance, Westbank, BC.

Access to native habitats in the Okanagan watershed by sockeye and other indigenous salmon has been limited by the operation of flood control and irrigation dating back to at least 1915. It is the goal of the Okanagan Nation to restore salmonid populations to their historical range, beginning with sockeye salmon in the Okanagan River. Okanagan sockeye are one of only two remaining viable sockeye populations in the Columbia River and without intervention may become extinct within the next twenty years.

A 1997 workshop involving Okanagan, provincial, and federal fisheries branches was held to look at options to reintroduce sockeye back into Okanagan Lake. It was agreed by the aforementioned fish management agencies that Skaha Lake could be used an experimental approach to evaluate salmon recovery in the Okanagan ecosystem.

A grant proposal was submitted to and funded by Bonneville Power Administration to evaluate an experimental reintroduction into Skaha Lake. The study consisted of six tasks:

1. Disease Risk Assessment;
2. Exotic Fish Species Risk Assessment;
3. Habitat Assessment;
4. Development of a life-cycle model;
5. Options for Experimental Design and Monitoring program, and,
6. Development of an implementation plan.

Tasks 1-5 are complete and we are in the process of developing a draft implementation and monitoring experimental design. Three years of data has identified relevant potential risks and enabled for a well-informed experimental implementation and monitoring plan.

Our presentation will look at the process and principles for the three-year evaluation, risks identified in the past three years, options for implementation and a recommended implementation workplan and next steps.

Presenter's Biographical Sketch:

Deana Machin is the Program Manager for the Okanagan Nation Alliance Fisheries Department. After earning her Bachelor of Science, in Ecology and Environmental Biology from the University of British Columbia, she returned to the Okanagan to work for her community. As the program manager Ms. Machin delivers on the goal and mandate of the ONAFD to conserve, protect, restore, and enhance indigenous fisheries and aquatic resources within the Okanagan Nation territory. Working with the ONAFD has allowed Deana to work with Okanagan Bands, community groups and all levels of provincial and federal government agencies to provide education and information on Okanagan fisheries issues, undertake technical projects and to assist in fisheries management activities. She has delivered presentations regarding Okanagan salmon recovery to a variety of stakeholders and agencies ranging from concerned community groups, the American Fisheries Society (Spokane 2002), the International Joint Commission Osoyoos Lake Board of Control, and Provincial and Federal Cabinet Ministers.

150 years Columbia Basin Sockeye Salmon Management: How we drove a run of more than three million to less than fifty thousand and what can be done about it

Dr. Jeffrey Fryer, Columbia River Inter-Tribal Fish Commission, Portland,

Columbia Basin sockeye salmon runs, which may have once numbered three million fish annually, have been reduced to a remnant run which averages less than 50,000 fish. These runs have suffered from a combination of neglect and mismanagement. While habitat has been destroyed by irrigation, flood control, mining, and hydroelectric dams, fish managers have rarely done anything to prevent this damage, or done anything to mitigate for it. In some cases, it has been fish managers who have destroyed sockeye salmon runs. This presentation will present a history of Columbia Basin sockeye management and what changes could be made to increase sockeye runs, with a particular focus on restoration in the Okanagan Basin.

Presenter's Biographical Sketch:

Jeff Fryer earned Bachelor's and Master's Degrees in Computer Science at the University of New Brunswick followed by a PhD in Fisheries from the University of Washington. His dissertation was on Columbia Basin sockeye salmon. He has have been employed as a fisheries scientist at the Columbia River Inter-Tribal Fish Commission for the past 13 years working primarily on stock identification and escapement estimation projects.

Stewardship linkages to Economic Development**a) Current regional and transboundary economic development efforts**

R. Hobson, Chair of the Central Okanagan Regional District (unconfirmed)
(**alternate discussions proposed**: around Highway 97 corridor or green economy, example from Vernon economic development)

b) Stewardship Linkages to economic development

T. Lawhead, Washington State Office of Trade and Economic Development,
and **L. Bailey**, Upper Columbia Group

Facilitated group discussion of “Ecosystem Principles” and community interest in a common transboundary “Vision Statement” for watershed-based ecosystem management

L. Johnson, Katim Enterprises. **L. Dallas**, Osoyoos Lake Water Quality Society. **N. Warner**, Nature Conservancy of Washington. **L. Bailey**, Upper Columbia Group. **S. Black**, SOSCP Stewardship Coordinator. **R. Longanecker**, US/Okanogan Community Leader. **P. Macrow**, North Olympic Salmon Coalition. **S. Strieby**, Pacific Watershed Institute (unconfirmed). **C. Branch**, City of Oroville (unconfirmed).

This discussion will present the “Ecosystem Principles” backdrop document currently being considered by Canadian and US agencies in governmental ecosystem planning management in the Okanagan. This discussion will focus on the community thoughts and perceptions of ecosystem principles, what links to other community issues need to be considered or linked to.

The South Okanagan Similkameen Conservation Program: A Model for Habitat Conservation and Restoration**Robert Hawes**, Ph.D., Manager, SOSCP, Penticton, BC.

The dry climate, geography and soils create a unique combination of habitat types in the South Okanagan and Similkameen valleys in Canada. This results in high biodiversity values of national as well as regional significance.

The South Okanagan-Similkameen Conservation Program (SOSCP) was formed in July 2002 to conserve critical habitat and the north south migration corridor for plants and animals. From an initial 19 organizations that signed a statement of cooperation, there are now 32 non government and government organizations cooperating to achieve common conservation goals. This presentation discusses the objectives of SOSCP, conservation strategies, the delivery of services and the benefits that the Partners receive from a cooperative, coordinated approach. Projects are discussed as examples of habitat conservation and restoration activities in the South Okanagan watersheds. The projects involve stewardship on private lands, securement and management of lands for conservation, supporting local government with technical information for decision making and outreach to increase public awareness of environmental values.

Presenter's Biographical Sketch:

Robert Hawes, Ph.D., is the Program Manager of the South Okanagan-Similkameen Conservation Program, a collaborate effort of 32 non government and government organizations working together for conservation in the South Okanagan-Similkameen. As Program Manager, Rob is working with the 32 Partner organizations to implement the strategic plan for land conservation and the protection of species at risk in one of Canada's four most endangered habitats. Rob is a senior professional in the field of environmental planning, management and impact assessments. He has 30 years of experience as an environmental consultant on projects in Canada, the U.S.A., South and Central America, the Caribbean and in Asia.

Restoration of the Okanagan River

Chris Bull, Glenfir Resources, Naramata, BC; and Robert W. Newbury PEng., Newbury Hydraulics, Okanagan Centre, BC.

The vast destruction of natural habitat along the Okanagan River has resulted in it being labelled the most endangered river in British Columbia. It has been straightened, shortened and confined between narrow dykes. Eighty five percent of the river and its wetlands have been lost, placing a host of animals and plants at risk.

Plans have recently been developed for restoring portions of the river. The approach calls for purchasing wetlands adjacent to the river and moving the dykes back beyond these areas. This would allow the river to resume its original meandering path and would re-establish native plant communities and the animals that use them. As well, the gradient controls along the channel could be naturalized by replacing the existing concrete drop structures with a rounded rock riffles.

The costs of restoring the river are not insignificant but risks are minimal and benefits are of national and international importance. Accordingly there are some exciting possibilities for funding.

Presenter's Biographical Sketch

Chris Bull is a Professional Biologist with 40 years experience. Most of his career has been spent in British Columbia but he has also worked as an advisor on habitat protection and restoration projects in, Alberta, the US, Russia, New Zealand, Panama, Bolivia and Peru.

He has been involved with planning restoration of the Okanagan River for several years working at various times for Douglas County Public Utility District in Washington, the Okanagan Nation Alliance Fisheries Department, the Ministry of Water Land and Air Protection, and the South Okanagan Similkameen Conservation Program.

Robert W. Newbury PEng. (BSc., MSc. Civil Engineering (Manitoba), PhD (Johns Hopkins) is the principal of Newbury Hydraulics, Okanagan Centre, BC. Dr. Newbury has a 40 year record of stream surveying, river hydraulic studies and fisheries-related research in Canada. Bob reviews project designs and teaches restoration field courses in streams with different habitats across Canada. Professional design workshops are held from time to time Europe, the USA and Australia as well. (see www.newbury-hydraulics.com).

Current status of knowledge regarding interactions among sockeye, mysid shrimp, kokanee and zooplankton in Osoyoos and Skaha lakes.**Howie Wright**, Okanagan Nation Alliance, Westbank, BC.

Mysis relicta (Mysid) shrimp were intentionally introduced into the Okanagan in 1966 as a food source for kokanee and has coincided with the decrease in the kokanee population. Problems with mysid introductions include predation on zooplankton, direct and indirect effects on phytoplankton, effects on fish, upper trophic level implications, eutrophication implications, pollution implications, and parasite implications. It is generally agreed that once mysid shrimp is established in a lake system, it is virtually impossible to completely remove them. Mysid interactions with *O. nerka* and zooplankton are often regulated by thermal barriers, entrainment factors, control of lake trophic status, and biological controls such as an efficient predator on mysids. In addition, it has been suggested that dissolved oxygen concentrations in the hypolimnion may influence mysid impacts by inhibiting vertical migration. Mysids have now established populations in Skaha Lake and Osoyoos Lake due to downstream migration. Kokanee in Skaha Lake and Okanagan sockeye, that use Osoyoos Lake for rearing is one of the last two remaining viable populations of sockeye in the Columbia River, are considered depressed. Mysids could potentially affect sockeye populations, as has happened in Okanagan Lake (the coinciding downward trend of nerkids with the increase of mysid population). In addition, the long-term goal of the Okanagan Nation is to restore historical salmon access to Okanagan Lake. An experimental approach taken is to use Skaha Lake to evaluate prior to full re-introduction. Literature shows that mysids impact *O. nerka* but it is still relatively unknown of the exact impact of the mysid/*O. nerka*/zooplankton interactions in Osoyoos and Skaha Lakes. This presentation will summarize what is the status and knowledge regarding interactions among sockeye, mysid shrimp, kokanee and zooplankton in Osoyoos and Skaha Lakes.

Presenter's Biographical Sketch:

Howie Wright, R.P.Bio, is a member of the Gitksan Nation and has been the Lead Fisheries Biologist for the Okanagan Nation Alliance Fisheries Department since 1999. Howie's main focus has been in developing and implementing projects for fisheries recovery and restoration of critical habitat, and in advancing the role of Aboriginals in Fisheries Management. Mr. Wright earned his BSc. in Ecology and Environmental Biology from the University of British Columbia in 1995 and will shortly be completing his thesis for a Masters of Science in Fisheries Management. His thesis work has involved investigating salmonid/mysis/zooplankton competitive interactions and their effects on juvenile nerkids in Osoyoos and Skaha Lakes. He is also a member of the Okanagan Basin Technical Working Group, a tri-agency body involving the Okanagan Nation, Federal and Provincial fisheries.

Lake and Stream Sensitive Habitat Inventory and Mapping (SHIM) in the Okanagan**Todd Cashin**, Central Okanagan Regional District, Kelowna, BC.

Sensitive Habitat Inventory Mapping (SHIM) is the collection and mapping of reliable, high quality, current and spatially accurate information about local riparian habitats and watercourses. These surveying and mapping techniques allow information to be incorporated into geographical information systems (GIS) using global positioning systems (GPS) for field collection.

In general, the objective of SHIM is to map and inventory streams, wetlands and watercourses not accurately delineated on maps to improve current land-use practices, and to restore and protect fish habitat. More specifically, the Regional District of Central Okanagan (RDCO) objectives are:

- To determine precise stream and feature locations.
- To collect stream and riparian habitat information.
- To determine the nature of streamflows (i.e. permanent or seasonal).
- To identify and locate fish sensitive zones.
- To identify sensitive and critical riparian habitats.
- To identify and locate historical human related impacts to water quality and fish habitat.
- To identify restoration and rehabilitation opportunities.
- To compile information for easy user access.
- To summarize and present the results of the assessment.
- To prioritize key issues and concerns within each basin.

The importance of downstream water, fisheries, recreational and tourism resources requires that urban planning, agriculture and forestry operations in all local watersheds be conducted with due regard for water quality, streamside protection and the sustainability of all resources within the Okanagan. In accordance with these goals, the Regional District is working to inventory and map riparian corridors so that areas, which require protection, can be identified. Once defined, the inventory will be used in developing policy within Official Community Plans; in establishing Development Permit Areas, and in setting regulations and standards in Zoning and Subdivision Bylaws. In addition, other departments and agencies can utilize this information for planning and applying best management practices.

Presenter's Biographical Sketch:

Todd Cashin obtained his education from Lethbridge Community College with a Renewable Resource Management Diploma and a Fish and Wildlife Technology Certificate. He began his career with Silvatech Consulting Ltd. in 1994 where he gained experience in fish and fish habitat assessments, hydrological and hillslope assessments and restoration and rehabilitation works. The last two years, Todd has been working with the Habitat Conservation and Stewardship Program as the Central Okanagan Habitat Steward and is currently the Environmental Technologist with the RDCO Planning Services Department.

Habitat Assessment of Middle Vernon Creek

Lorne Davies, P. Geo., Geostream Environmental Consulting, **Dwight Shanner**, Columbia Environmental Consulting Ltd.

Middle Vernon Creek is located in one of the upper reaches of the Okanagan River watershed. The Ocoela Fish and Game Club (OFGC) has been working with consultants and watershed stakeholders (government – municipal, regional district, provincial; private landowners; industry; water licensees) over the last four years to protect, restore, and enhance Middle Vernon Creek, the principal creek used by the Wood Lake kokanee population for spawning.

Our presentation will focus on the results of the Habitat Conservation Trust Fund (HCTF) funded project completed in 2002/03 – Biological and Hydrological Assessment of the Middle Vernon Creek Watershed. The objectives of the report were to identify and prioritize actions that can be taken to increase flows for fish, assess the resident fisheries population in Middle Vernon Creek and to develop a framework for working with all water users in the watershed. This report is part of an on going iterative watershed-based planning process initiated by the OFGC.

Detailed habitat attribute data was collected on 5.7 km of Middle Vernon Creek using Sensitive Habitat Inventory Mapping (SHIM). Twenty-four distinct stream segments were identified: 47% of the creek was classified as natural, 30% as modified and 23% as channelized. In general the creek was in good shape but there is a need to reduce the amount of bank erosion, increase the number of pools and add more large woody debris.

This information was augmented with more detailed hydrological and biological assessments.

Presenters' Biographical Sketch:

Lorne Davies is a registered professional geoscientist with over 15 years of consulting experience. Over the last four years Lorne has been providing hydrology, geomorphology and watershed-related consulting services for community-based fisheries-related projects in the Okanagan. Lorne has a Bachelor of Science degree (University of British Columbia, 1983), a Diploma of Technology in Natural Resource Management (British Columbia Institute of Technology, 1988) and a Diploma in Forest Engineering (University of British Columbia, 2000). Lorne has made a number of presentations to local watershed roundtables and NGOs over the last few years.

Dwight Shanner is a registered professional biologist with over 14 years of consulting experience as a Biologist. Dwight has a Bachelor of Science degree (University of Saskatchewan, 1987), a Diploma in Aquaculture and Fisheries Management (Malaspina University/College, 1989) and a Bachelor of Education (University of British Columbia, 1994). Dwight has taught at the high school level, post secondary technical level, and made multiple presentations to clients and provincial agencies over the last 9 years.

Fish Passage Improvements at Mainstem Dams**Paul Wagner**, NOAA, National Marine Fisheries Service.

Major improvements have been made at Federally owned Columbia and Snake River mainstem dams to improve the passage survival of both juvenile and adult salmonids. The major emphasis in the past decade has been to improve juvenile passage survival. The steps taken to improve juvenile survival include flow management, spill at the dams, installation of state-of-the-art fish screening and bypass systems, barge transport, and surface bypass. A brief description of each of these management measures is provided. Survival estimates of juveniles with the current management measures in place have shown marked improvement. Adult passage at the dams consists primarily of fish ladders, which have been a proven method of passing fish at the mainstem projects. An extensive operations and maintenance program has been developed for the fish passage systems. The numbers of adults returning to the Columbia and Snake Rivers has increased dramatically in the past five years. The size of the runs passing mainstem dams during the past few years are close to what they were when the dams were first constructed.

Presenters' Biographical Sketch:

Paul Wagner is currently employed by NOAA Fisheries and works in the Hydro Division. Mr. Wagner is responsible for the ongoing flow, spill, and fish transportation programs called for by NOAA fisheries biological opinion on the Columbia River Power System. Mr. Wagner is a graduate of Humboldt State University and has worked in various aspects of the fisheries field since 1976.

An update on Okanagan Lake kokanee stock status and recovery strategies.**Steve Matthews**, Ministry Water Land and Air Protection, Penticton, BC.

Okanagan Lake, located at the headwaters of the Okanagan Basin, is a large oligotrophic lake supporting a wide variety of fish species, including wild indigenous stocks of rainbow trout and kokanee. This lake's huge recreational value, in conjunction with the local climate and rich soils has attracted extensive development activities on the surrounding lands. Agriculture, logging, urbanization and tourism related development have all had a major impact on Okanagan Lake fish populations. An estimated 90% of tributary spawning and rearing habitat for rainbow trout and kokanee has been lost as a result of these land development activities. In addition, in-lake habitat conditions have been severely degraded due to nutrient modification, lake level manipulations and introduction of *Mysis relicta* or Opossum Shrimp. Significant declines in some indigenous fish populations have been attributed to these impacts. This is most evident in the kokanee population with recent escapements dropping below 1% of historical levels. In an attempt to restore these important fish populations, a major initiative known as the Okanagan Lake Action Plan (OLAP) was launched in 1996. This plan provides a long term recovery strategy with a primary focus on determining the primary causes for the population declines, providing baseline information on fish stock and habitat status through annual monitoring, and finally, developing/implementing appropriate restoration techniques. OLAP is proceeding on schedule and several of the identified restoration strategies have been successfully implemented with positive results.

Presenter's Biographical Sketch:

Steve Matthews is the Senior Fisheries Biologist for the Okanagan Region of Min of Water, Land and Air Protection and is a Registered Professional Biologist. He completed his BSc. at UBC in 1977 and has worked in fisheries management in various capacities since graduation. Steve began work in the Okanagan in 1979 and has over 22 years experience managing lake and river systems throughout the region. He is responsible for delivery of the Okanagan Lake kokanee recovery plan as well as providing a leadership role for all Okanagan Region fisheries management activities. Based on progress to date on the Okanagan Lake kokanee recovery plan, Steve is confident the Ministry will be successful in restoring this important wild fish stock and the associated recreational fishery.

Intergovernmental Policy

Salon C

Session Leads: Bob Bugert and Barry Rosenberger
Tuesday, June 24, 2003

9:00am-12:00pm

Recovery Planning under the Endangered Species Act

Elizabeth Gaar, NOAA Fisheries, Portland Oregon.

Abstract unavailable at time of printing.

Species at Risk

Paul Kluckner, Environment Canada

Abstract unavailable at time of printing.

Species at Risk and the Okanagan Nation

Byron Louis, Policy Advisor to the Chiefs, Okanagan Nation Alliance.

Abstract unavailable at time of printing.

Intergovernmental Policy

Salon C

Session Leads: Bob Bugert and Barry Rosenberger
Tuesday, June 24, 2003

9:00am-12:00pm

Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

Mart Gross, Co-chair of marine fishes for COSEWIC

COSEWIC (Committee on the Status of Endangered Wildlife in Canada) is the legal entity in Canada for the assessment of the status of wildlife at risk under SARA (Species at Risk Act). COSEWIC's assessments have led to the listing of several species within the Okanagan region. In this presentation I review how COSEWIC operates, the current state of listed Okanagan species, and the assessment situation for salmon.

Presenter's Biographical Sketch:

Mart Gross is Co-chair of Marine Fishes for COSEWIC and Professor of Conservation Biology at the University of Toronto. His responsibilities for COSEWIC include the Pacific and western Arctic marine fishes. His laboratory conducts ecological, behavioural, evolutionary and genetic studies on salmonid fishes throughout Canada (e.g., BC, Ontario, Atlantic Canada) and internationally (e.g., US, Norway, Chile).

Intergovernmental Policy

Salon C

Session Leads: Bob Bugert and Barry Rosenberger
Tuesday, June 24, 2003

9:00am-12:00pm

Provincial Biodiversity Strategy and Recovery Planning

Ted Down, Manager Aquatic Ecosystem Sciences Section, Ministry of Water, Land and Air Protection, BC

Abstract unavailable at time of printing.

Watershed Planning

Dick Wallace, Washington Department of Ecology, Olympia, Washington.

Abstract unavailable at time of printing.

Intergovernmental Policy

Salon C

Session Leads: Bob Bugert and Barry Rosenberger
Tuesday, June 24, 2003

9:00am-12:00pm

Watershed Based Fish Sustainability Planning

Roger Wysocki, Fisheries and Oceans Canada, Habitat Enhancement Branch, Kamloops, BC

This presentation will provide an overview of the Watershed Fish Sustainability Plan (WFSP) process and identify key elements and participants required to effectively implement this planning process in candidate watersheds. Examples of watersheds where this process has been effectively employed will be provided and some new watershed 'candidates' will be identified. Approaches used to effectively coordinate and integrate federal and provincial interests in 'working' WFSP planning processes will be discussed. This presentation will also describe how the WFSP planning process will integrate with the federal Species at Risk Act (SARA) as well as ties to restoring salmon populations and fish habitat in association with the Pacific Salmon Foundation (PSF).

Presenter's Biographical Sketch:

Biographical information about Roger Wysocki was unavailable at time of printing.

Washington State Subbasin Planning To Be Announced.

Abstract unavailable at time of printing.