

RMA

Founded in the early 1980s, the Resource Modeling Association (RMA) is a group of applied mathematicians, applied population biologists, fisheries scientists and resource economists, primarily from the west coast of North America, who organize annual meetings to discuss the application of models to resource management.



Salmon on a Steady Decline in the Columbia River

by Rollie Lamberson

At the time of Lewis and Clark's descent of the Columbia River it was home to immense fish and wildlife populations including the world's largest Chinook salmon run. Twentieth century development in the Columbia Basin has turned it into a machine which produces cheap electricity for the

Pacific Northwest, irrigation water for farms and ranches in the basin, industrial development opportunities along the river, and flood control for occupants of the river's floodplain. As an engineering project this transformation has been a great success. However, that change has come at a high cost in aquatic and wildlife resources in the region.

The Columbia Basin covers more than a quarter of a million square miles, including most of Oregon, Washington, and Idaho, a large portion of Montana and British Columbia, and small parts of Nevada, Wyoming, and Utah. The hydrosystem is made up of more than 200 major projects (dams) and many smaller ones.

In the early nineteenth century more than 10 million salmon (salmon and steelhead) returned to the basin each year. Early European settlers took full advantage of this bounty. By 1883 the commercial salmon harvest had developed to the point that more than 40 million pounds of salmon were taken, and it remained in the 20 to 40 million pound range into the 1920's. The decline in salmon harvest began about 1930 and was at first a result of overfishing, but then exacerbated by the development of the hydrosystem. The first dam on the mainstem Columbia, Rock Island, was completed in 1933. Further development of the hydrosystem began to block salmon passage. Grand Coulee Dam blocked the upper Columbia to migrating salmon with its completion in 1941 and Hells Canyon

continued on page 4



2010 World Conference on Natural Resource Modeling in Helsinki, Finland June 16-19, 2010... see p.2

Inside:

2010 Conference Highlights	2
President's Column	5
Letter from the Editor	6



Harbor, Helsinki

Take in the Views and Talk Sustainability in Helsinki

by Bob Fray

The 2010 World Conference on Natural Resource Modeling will be held in Helsinki, Finland, from June 16 to June 19. "Integrating biology, economics and mathematics for sustainable use of natural resources" is the theme of this year's conference. Highlighting these ideas will



Banquet Hall, Helsinki

be talks by three invited speakers, Professor Ilkka Hanski of the University of Helsinki, Professor James N. Sanchirico of the University of California, Davis and Professor

Annikki Mäkelä of the University of Helsinki. The venue for the conference is the Swedish-Finnish Cultural Centre, Hanasaari, located on a lovely headland in an archipelago adjacent to the city of Helsinki. This modern conference centre, which is filled with inspiring contemporary art from Finland and Sweden, contains an excellent restaurant and hotel with sea views.

In addition to all conference sessions, registration, accommodations, the introductory reception on June 16 and the dinner on June 17 will be located at Hanasaari. The deadline for registration for the conference is May 15, 2010. For further details about registering, obtaining accommodations,

transportation and the scientific program, go to the RMA website (www.resource modeling.org/conferences/2010).

Helsinki, the capital of the Republic of Finland, is situated on the Baltic Sea, the second-most northern capital city in the world. Eastern and Western influences from the past 460 years can be seen everywhere, especially in its architecture and its culinary culture. The blending of its natural surroundings, the nearby forests and the sea, with its prominence in technology and contemporary design create an intriguing modern city which attracts many visitors.

An outstanding attraction of Helsinki is one of the world's largest historical maritime fortresses, Suomenlinna, built in the 1700's on six islands. In addition to the fortress itself there are museums, shops, restaurants and homes. Suomenlinna will be the site of the conference banquet on June 18.

Resource Modeling conferences are characterized by the many opportunities available to the participants to interact both professionally and socially. As is customary, an outing combining natural resources and local points of interest will be a part of the conference.



Conference Center, Helsinki



Keynote speakers

Natural Resource Modeling Conference

Professor Ilkka Hanski
University of Helsinki

Habitat fragmentation: theory of biological consequences and management applications

Professor James N. Sanchirico
University of California, Davis

The role of bioeconomic modeling in the design and analysis of ecosystem based management policies

Professor Annikki Mäkelä
University of Helsinki

An ecological approach to management-oriented forest growth models

2011 World Conference in Ottawa, Canada

by Rick Moll

The 2011 World Conference on Natural Resource Modeling will be held June 14-18 in Ottawa, Canada. The Telfer School of Management at the University of Ottawa will serve as the venue for the conference which will be hosted by Dan Lane of the Telfer School, assisted by the RMA secretary, Rick Moll, of Statistics Canada. Using quantitative methods to address issues in natural resource management will be the focus of this meeting. Participants will have many chances to interact professionally and socially, including a barbeque at the home of the host Rick Moll on the banks of the Rideau River.

The Telfer School of Management is located in downtown Ottawa, within walking distance of the recommended hotels and the popular Byward Market area, where there are many fine restaurants.

Ottawa, the capital city of Canada, lies on the southern banks of the Ottawa River, a major waterway forming the local boundary between the Provinces of Ontario and Quebec. The Rideau River and the Rideau Canal (World Heritage Site) also flow through the city providing residents and visitors many recreational opportunities. With over 250 miles of bike paths, the city is a mecca for cyclists and hikers. Summer weather is very pleasant; the average high temperature in June is 75 degrees F, the average low is 55 degrees F. Ottawa has been ranked the 4th cleanest city in the world and the 18th most livable city in the world.

So mark June 14-18, 2011, on your calendar for participating in the Resource Modeling Association's annual conference. You will find it a most rewarding experience.



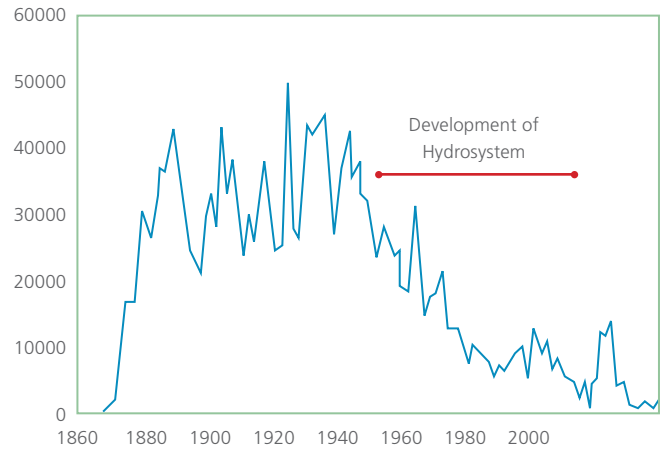
Rideau Canal, Ottawa

Salmon on a Steady Decline in the Columbia River

(continued from page 1)



Some of the major dams in the Columbia River Basin.



Commercial salmon catches in the Columbia Basin.

Dam blocked the Snake River in 1967. There are currently 13 dams on the Columbia and Snake Rivers that are passable by salmon, but a large fraction of what was once spawning habitat is now not accessible because of impenetrable dams. The abundant salmonid population occupying the Columbia Basin during the nineteenth century is estimated to have been composed of more than 200 stocks. According to *Return to the River*, today 69 of these are extinct including most chum, pink, and wild coho stocks. Seventy-five others are at risk, while only nine stocks are classified as healthy.

It should come as no surprise that the response to the salmon collapse in an engineered river was a plan to engineer their return. The program primarily involved the development of fish hatcheries and attempts to improve juvenile passage

downriver through or around the hydrosystem using trucks and barges.

With annual expenditures of hundreds of millions of dollars seemingly producing few positive results for the salmon, the Independent Scientific Group was formed to take a fresh look at the problem (the ISG later evolved to become the Independent Science Advisory Board or ISAB). Their recommendations are compiled in the book *Return to the River*, and are basically that, to save the salmon, the Columbia needs to be more like a river and less like a machine.

The 21st century has seen some modest progress. The sockeye returns in 2009 were much higher than in the recent past. There appears to be some success in redeveloping an extinct mid-Columbia run of coho using lower river fish. The spring/summer Chinook salmon run for 2010 is

predicted to be the best in recent years. It is an open question as to whether this is a result of court ordered spill of water through spillways rather than turbines, modifications made to some of the dams, or improved ocean conditions.

As I write this I am preparing for a trip to Portland for briefings on flow management at the dams for this spring, since this is predicted to be a low water year. NOAA and the Fish Passage Center have analyzed similar data and come to opposite conclusions regarding whether to maximize transport of salmon downriver from the collector dams in Idaho or provide spill. Spill provides more, colder, and faster moving water for the migration, and spreads the risk for Chinook and steelhead, but species like sockeye may suffer some from the spill.

There are currently many challenges involved in managing salmon in the Columbia Basin and the future will provide even more. We are already seeing the impacts of global climate change with more rain and less snow and earlier peak flows. We will have ongoing battles to keep out or control exotic species. There is also rapid human population growth which applies pressure for development in sensitive areas along with other water quality issues. On the bright side the Columbia Basin enjoys substantial economic resources to address these issues and a considerable number of people currently in place whose interest or job it is to return the Columbia to a river.



RMA is Growing Strong

Make it official; New partnership with Wiley-Blackwell creates need for financial responsibility through policy making

For the past two years it has been my distinct pleasure and honor to serve as your president. The RMA is strong financially and intellectually and I am pleased that Keith Criddle will succeed me in this office. The future of our association looks bright.

The scholarly and intellectual foundations of the RMA are moving forward with the excellent work of Catherine Roberts, editor of our journal, Olli Tahvonen, the host of our 2010 meetings in Helsinki, and Dan Lane, ably assisted by Rick Moll, our host for the upcoming 2011 meetings in Ottawa. In this column I want to ask for your help in some leadership and bureaucratic changes facing the RMA brought about by the upcoming retirement of our treasurer Ken Lyon and new financial requirements facing our organization.

The biggest long-term change in the RMA over the past two years has been our new partnership with Wiley-Blackwell in the production and administration of our journal, *Natural Resource Modeling*. This change vastly increases our visibility and will facilitate growth in both membership and prestige.

Before we could formally enter into this contractual relationship with Wiley-Blackwell, the RMA needed to legally incorporate itself. Through the excellent work of many former RMA officials, led by former president Bob Fray, we were incorporated under the laws of South Carolina and achieved non-profit 501(c)3 status under federal tax law. These actions require us, for the first time, to annually file reports with revenue departments at both the state and federal level.

As our legal status becomes more formal, we need to change the way the RMA carries out its financial business. In particular, it is time for the RMA to adopt a set of financial policy guidelines. Under these guidelines the board of directors will create a budget and specify financial responsibility and authority of the various RMA officers and board members. Such a policy will assist future RMA officers in the inevitable event of questions or audits coming from the revenue departments of the South Carolina and federal governments.

At the board meeting to be held this summer in Helsinki I will propose a set of financial guidelines. In the meantime, I seek the wisdom of the RMA membership in helping me craft these guidelines. If you have ideas about or experience with such undertakings, I would love to hear from you.

RMA Treasurer to Resign:

I am saddened to report that Ken Lyons, the long-serving treasurer of the RMA has announced his intention to retire from this office as of the Helsinki meeting. Ken has done an excellent job setting up systems for the preparation of the few reports that must be filed each year. Our society is indebted to Ken for his hard work in helping the RMA through the transition into a formally recognized legal entity. Future treasurers will benefit from the sound financial and reporting structure Ken has created.

If you are interested in learning more about the responsibilities of this important RMA position, please contact me (mckelvey@stolaf.edu) or Ken himself (klyon@econ.usu.edu).

—Steve McKelvey

RMA Online

For additional information about the Resource Modeling Association we invite you to visit our website at www.resourcemodeling.org or contact the President, Steve McKelvey, at mckelvey@stolaf.edu or the Executive Secretary, Rollie Lamberson, at Roland.Lamberson@humboldt.edu.

Discounts for RMA Members

Members of the Resource Modeling Association are eligible for a 25% discount on all Wiley and Wiley-Blackwell product lines. To receive your membership discount, visit Wiley.com. Browse the titles, and when you are ready to check out, enter the code 'SDP17' to receive your discount.



*The official newsletter of the
Resource Modeling Association*

Bob Fray, editor
<bob.fray@furman.edu>

Mathematics Department
Furman University
3300 Poinsett Highway
Greenville
South Carolina 29613



Letter from the Editor *NRM Needs Your Research;* *Announcing Changes to our Office Staff and Editorial Board* by Catherine Roberts, Editor *Natural Resource Modeling*

To date, Natural Resource Modeling has received 13 submissions since the first of the year. Over the past 12 months, we're averaging about 5 submissions per month. I'd like to see this number increase, and you can help by submitting your research to the journal and encouraging your students and colleagues to do the same. Our acceptance rate is about 23%, but for papers that are an appropriate fit for our journal it is higher.

You may recall that although we've been publishing our journal for over two decades, we only just earned our first impact factor in 2008 at 0.3. In 2009, it doubled to 0.6. This is an encouraging sign. The new impact factor is expected to be assigned to us in June 2010.

We have had a few changes to our office staff and editorial board. Our office operations have professionalized to the point where a work-study undergraduate

student could no longer provide the level of support required. Jenn Read assisted me ably for two years in this capacity, and I thank her. We now welcome Donna Roberts as our Editorial Assistant. Donna has years of experience as a business owner. She began her association with NRM by providing editorial assistance on papers written by non-native English speakers. She is now our resident expert on the Manuscript Central system and can be reached at nrm@resourcemodeling.org.

Erwin Bulte is a Professor of development economics at Wageningen University and a Professor of environmental and natural resource economics at Tilburg University. He has served as an associate editor at NRM since 2006. His research interest for many years was natural resource economics, but more recently his focus has become the economics of institutional change, social capital, development, conflict, and post-conflict recovery. Erwin felt that this would

be an appropriate time for him to step off of our editorial board in order to focus on these new interests. Thank you very much, Erwin, for your four years of reliable work as editor of NRM.

We welcome Maja Schlüter to our editorial board. Maja is at the Leibniz Institute of Freshwater Ecology and Inlands Fisheries in Germany. For over a decade, she has worked on water management issues, primarily using agent-based modeling. She will be handling resource economics papers and agent-based modeling papers for NRM. Welcome!

I hope to see you in Helsinki in June. At that time, I'll make a more detailed report to the RMA board and to the conference attendees.

Resource Modeling Association Officers

Steve McKelvey, President
Department of Math, Stats
and Computer Science
St. Olaf College
Northfield, MN 55067
USA
mckelvey@stolaf.edu

Keith Criddle, President-elect
UAF Fisheries Division
Juneau, AK 99801
USA
kcriddle@uaf.edu

Ken Lyon, Treasurer
Department of Economics
Utah State University
Logan, UT 84322
USA
klyon@econ.usu.edu

Rick Moll, Secretary
7 R.H. Coats Building
Tunney's Pasture
Ottawa, Ontario
Canada K1A 0T6
rick.moll@statcan.gc.ca

Rollie Lamberson, Executive Secretary
Department of Mathematics
Humboldt State University
Arcata, CA 29921-4957
USA
Roland.Lamberson@humboldt.edu

Mike Strub, Director
Weyerhaeuser Company
PO Box 1060
Hot Spring, AR 71902
USA
mike.strub@weyerhaeuser.com

John Hearne, Director
School of Mathematics and Geospatial Sciences
RMIT University
GPO Box 2476
Melbourne, Victoria 3001
Australia
john.hearne@rmit.edu.au

Olli Tahvonen, Director
Finnish Forest Research Institute
Unioninkatu 40 A
Helsinki 00170
Finland
olli.tahvonen@metla.fi

Catherine Roberts, Editor
Natural Resource Modeling
Department of Mathematics
and Computer Science
College of the Holy Cross
Worcester, MA 01610
USA
croberts@holycross.edu

Bill Chivers, Webmaster
Faculty of Science and
Information Technology
University of Newcastle-
Ourimbah Campus
PO Box 127
Ourimbah, NSW 2259
Australia
William.Chivers@Newcastle.edu.au

Bob Fray, Newsletter Editor
Mathematics Department
Furman University
Greenville, SC 29613
USA
bob.fray@furman.edu