



Session 5: Engagement of Fishers in the Management Process

C1

How Angler Involvement Contributed to Public Acceptance and Eventual Success of a Management Program Designed to Recover the Recreational Fishery in Lake Pend Oreille, Idaho

ANDREW DUX¹, JIM FREDERICKS¹, CHARLES CORSI¹

¹Idaho Department of Fish and Game

*Email: andy.dux@idfg.idaho.gov

Historically, Lake Pend Oreille supported the most popular recreational fishery in Idaho. Fishery declines occurred over time, and by 2000 an exponentially increasing population of non-native Lake Trout *Salvelinus namaycush* threatened to collapse the fishery. In response, we closed harvest for kokanee *Oncorhynchus nerka* and determined that suppression of the Lake Trout population was necessary. Lack of angler support often constrains management actions that seek to reduce or eliminate a popular sport fish. To help overcome this obstacle, we formed a Citizens Advisory Committee (CAC) in 2002 to define socially acceptable methods for suppressing Lake Trout. The CAC recommended the use of a commercial rod-and-reel fishery, but did not support a net fishery. We moved forward with Lake Trout suppression in 2003 using nets, but lack of public and political support forced suppression efforts to be halted. Instead, we used nets to conduct Lake Trout population dynamics research. By 2006, enough evidence was presented to move forward with a suppression program that included both incentivized angler harvest and commercial-scale netting. A focused public outreach program and development of a community stakeholder group were critical to developing and maintaining support for this program. Additionally, involving anglers using incentivized harvest was a valuable tool, both for reducing the Lake Trout population and gaining public support. At present, the Lake Trout population has been effectively suppressed, kokanee harvest has been re-opened, native Bull Trout *Salvelinus confluentus* have benefitted, and the trophy fishery for Gerrard-strain Rainbow Trout *Oncorhynchus mykiss* has markedly improved.



C2

Big Experiences in Northern Fishing Waters – Project

MARKKU VIERELÄ*¹, MIKA LAAKKONEN¹

¹Metsähallitus, Parks and Wildlife Finland

*Email: markku.vierela@metsa.fi

In 2016 a three-year project “Big Experiences in Northern Fishing Waters” was set to increase regional attraction of fishing tourism in Northern-Finland by building up five engaging and competitive, sustainable fishing destinations. Rivers and lakes selected to the project have natural stocks of Arctic Char, Brown Trout, Grayling, Perch etc., but their natural demography is biased because of high fishing pressure.

A new methodology will be developed to manage fish stocks and sustainable fishing in co-operation of Metsähallitus as a manager of state-owned waters, private water owners and research institutes. The main objective of fisheries management will be to increase the number of big fish (concept of “Big experiences, sustainable fishing” fishing destinations).

The project demonstrates beneficial methods to integrate research as a part of sustainable fisheries management and fishing regulation. The modeling of fish stocks demography with different scenarios by University of Eastern Finland will lay the basis for fisheries management. In addition, the project aims to secure and improve natural reproduction of fish stocks, to satisfy both sports fishermen and local people, and to maximize the economic benefits in regional economy generated by visiting anglers.

New internationally competitive fishing products will be developed together with local nature- and tourism companies including High Quality marketing and communication materials. The idea is to continue co-operation between travel industry, other stakeholders and research after the project and share the concept in other parts of the country.



C3

Broad Engagement in United States Saltwater Recreational Fisheries Management

TIM SARTWELL*¹, RUSSELL DUNN¹

¹NOAA Fisheries, US Department of Commerce National Oceanic and Atmospheric Administration

*Email: tim.sartwell@noaa.gov

The U.S. National Oceanic and Atmospheric Administration's Fisheries Service (NOAA Fisheries) is responsible for maintaining healthy marine and coastal ecosystems capable of supporting sustainable and productive fishery resources for the long-term use and benefit of the nation. NOAA Fisheries' commitment to develop and maintain both high quality saltwater recreational fisheries and trusting partnerships with saltwater anglers requires broad partner, collaborator, and constituent engagement, as well as coordination with other federal and state management entities. In the spring of 2017, NOAA Fisheries conducted nine roundtable meetings with recreational fishermen across the U.S. which provided an opportunity for recreational anglers to directly engage with national and regional NOAA Fisheries leadership to improve communication and enhance collaboration on the challenges recreational fishermen are facing today. The meetings were the latest in long series of engagement actions including a dedicated angler education program (Marine Resource Education Program), two national recreational fisheries summits, and dozens of additional regional conversations. During this session we will provide an overview of NOAA Fisheries recreational constituent engagement and collaboration through the National Saltwater Recreational Fisheries Initiative.



C4

Next Wave - Building Capacity in Australia's Recreational Fishing Sector

MATTHEW GILLETT¹, DR ANDREW ROWLAND¹, IAN CARTWRIGHT², JILL BRIGGS³

¹Recfishwest, Western Australia; ²TBATHalassa Consulting, Australia; ³TBARural Training Initiatives, Australia

*Email: matt@recfishwest.org.au

Like many industries the Australian recreational fishing sector is facing a shortage of people willing and able to assume positions of leadership, advocacy, representation and communication in the increasingly complex environment in which the sector operates.

Currently a small group of people are relied upon for an ever expanding range of tasks and projects. These people provide advice and help inform strategic decisions at the national, state and local levels. They cannot be expected to carry this workload indefinitely.

There are two key requirements to be met to enable young recreational fishers to assume leadership positions. Firstly, an understanding of dynamics of fisheries management and the issues facing the recreational and secondly, leadership skills.

To meet this challenge, Recfishwest has developed the 'Next Wave' program in Western Australia for people aged 18-30 who are interested in taking up leadership roles in the recreational fishing sector at a local, state or national level. Ensuring passage of information and knowledge from current leaders to the next generation is an essential part of this program.

Since 2008 the 'Next Wave' has been delivered four times, training more than 50 young leaders. Program participants undertake two comprehensive entry level workshops designed to provide a solid grounding in the theory and practice of fisheries management and contemporary leadership in the context of recreational fisheries. Ongoing support for, and communication between, participants has been another key feature of the program.

This project represents a case study on how the recreational fishing sector in Western Australia is meeting the long-term strategic challenge of generational change through targeted investment in people development.

Here, we provide details of the 'Next Wave' program, including specific examples of the succession plan implementation, training activities undertaken, stories of participant success and challenges faced.



C5

From Science to Stakeholder Engagement: Using Science to Affect Behaviour Change with User Groups

SARAH SCHREIER

Fraser River Sturgeon Conservation Society (FRSCS)

Email: sarahjschreier@gmail.com

The iconic Fraser River White Sturgeon in British Columbia is significant to communities all along the Fraser River. It holds cultural, social and economic significance for First Nations heritage, recreational enthusiasts and sport fishing professionals. The FRSCS award winning research initiative is made possible thanks to the contribution of anglers.

In order to ensure the long-term sustainability of this species, all user groups need to adopt best practices in encountering and handling White Sturgeon. The FRSCS uses its scientific research to help develop best practices and affect change in industry practices.

A successful example of science being applied to affect change in industry practices is the FRSCS' recently released "Can You Handle It? Guidelines for Angling White Sturgeon in British Columbia" online tutorial. This resource is based on the guidelines developed in partnership with the FRSCS, the Province of British Columbia, Fisheries and Oceans Canada, Fraser Valley Angling Guides Association

Employing these best handling practices in this catch and release fishery is a key part of long-term conservation strategies. However, successful conservation depends angler buy-in and change in industry practices. The "Can You Handle It?" program, in collaboration with local regulation enforcement, encourages best handling practices and affects critical change in industry practices.



C7

Ecological and Research-Based Knowledge in Norwegian Small-Scale Salmon Cultivation: A Case Study Examining Drivers of Knowledge Hybridization

HANNAH HARRISON^{*1}, STINE RYBÅTEN², SOPHIA KOCHALSKI³, ØYSTEIN AAS²

¹Norwegian University of Life Sciences; ²Norwegian Institute for Nature Research; ³Leibniz Institute of Freshwater Ecology and Inland Fisheries

*Email: hharrison.green@gmail.com

This presentation explores the drivers and process of hybridization of local ecological (LEK) and research-based knowledge (RBK) in small-scale salmon fisheries in western Norway. Using a case study from the Ørsta River in the Sunnmøre region, we examine knowledge hybridization as it is performed by salmon fishing and conservation groups as part of wild Atlantic salmon cultivation activities in both a bottom-up and top-down context. We find that fishers seek to hybridize their LEK sets with RBK for three primary reasons. First, in order to improve their hatchery and stocking practices. Second, to better adapt management practices laid out in recent regulatory changes and scientific literature to local conditions. Finally, to improve the validity of their knowledge sets in order to improve the upward mobility of their LEK to Norwegian salmon management institutions. This is in response to perceptions that LEK is not being adequately included in county and national level management and policy development processes, despite a mandate for LEK inclusion laid out in Norway's Nature Diversity Act. This exclusion is likely based in several factors, such as inadequate training among agency experts to seek and utilize LEK, lack of familiarity with and training for LEK integration, inadequate knowledge sharing mechanisms between local, county, and national levels of salmon management, and negative perceptions about the validity and rigor of LEK sets. We suggest that a more considerate and transparent, two-way system of knowledge hybridization between LEK and RBK could play an important role toward more socially and ecologically sustainable management of Atlantic salmon in Norway.



C8

Maximum Experiential Yield – A New MEY Paradigm for Recreational Fisheries

FRANK PROKOP*¹, DARYL McPHEE²

¹Agriculture and Marine Science, Curtin University; ²Faculty of Society and Design, Bond University

*Email: fprokop60@gmail.com

At the Second World Recreational Fisheries Conference in Darwin, Prokop presented a paper entitled – ‘Is science destroying recreational fisheries.’ It was a tongue in cheek look at some of the difficulties which arise from the application of biological, social and economic models developed for commercial fisheries. More than 20 years later, we still struggle with many of the same challenges. Recreational fishing is a heterogeneous activity with a variety of sub-populations whose motives, aspirations and measures of success are not typically judged by maximum efficiency. Many recreational fishers have a ‘values’ rather than ‘valuable’ driver, which often changes during the course of a fishing trip. Trying to create an ‘average fisher’ with data such as broad scale creel surveys introduces errors and often leads to inaccurate extrapolation of data, or misuse of information for philosophical or political reasons. It also ignores reality. The over-valuation of really large specimens by recreational fishers provides an opportunity for community driven conservative management. For most recreational fishers, an ideal fishery is one where they interact with fish on a regular basis, but there is an opportunity to see/hook/catch a really large specimen occasionally – personally or as a collective population. Ensuring that large specimens are available is the embodiment of the precautionary principle, because it requires careful management of small and medium sized animals to replace natural mortalities. It is proposed that moving to a system where ‘values’ of the community through Maximum Experiential Yield models and ongoing community surveys and citizen science will provide better fisheries and ones that are at much less biological or environmental risk of collapse.



C9

Social and Ecological Attributes of Marine Recreational Fisheries in the Euroregion Galicia-Northern Portugal

PABLO PITA^{*1}, PEDRO GOMES², KIERAN HYDER³, CRISTINA PITA⁴, MAFALDA RANGEL⁵, PEDRO VEIGA⁵, JOSÉ VINGADA², SEBASTIÁN VILLASANTE¹

¹University of Santiago de Compostela, Department of Applied Economics & Campus Do*Mar;

²University of Minho, CBMA-Molecular and Environmental Biology Centre; ³Centre for Environment, Fisheries & Aquaculture Science; ⁴University of Aveiro, Department of Environment and Planning & Centre for Environmental and Marine Studies; ⁵Centre of Marine Sciences (CCMAR), University of Algarve

*Email: pablo.pita@usc.es

There are growing concerns about the impact of Marine Recreational Fishing (MRF) on ecosystems and its combined effects with other human activities, such as commercial fishing, especially in the higher trophic levels. On the other hand, recreational fishers make a considerable economic contribution by their expenses in materials, boats, licenses and travel costs and accommodation. However, little research has been conducted on MRF in Europe, particularly in the South. In the Euroregion Galicia-Northern Portugal extensive research in basic features of MRF is still needed to support management decisions and to reduce growing conflicts between recreational and commercial fishers and other stakeholders. In this work, we have analysed the social, economic and ecological impact of the MRF in this Euroregion by characterizing the types of users, estimating their costs and their catches by species. In particular, we have performed on-site and on-line interviews with fishers of the different métiers to gather economic information (costs, disbursements and profitability), social (education, occupation, age, residence, sex, generation of direct and indirect jobs and complementarity with commercial fishing and tourism) and ecological (trends and factors influencing abundances, gears used, species targeted and seasonal and daily effort and catches). Management recommendations have been given to improve socio-ecological sustainability of MRF.



C10

Unexpected Outcomes of Local Governance in Recreational Fishery Social-Ecological Systems

CHRISTOPHER SOLOMON^{*1}, MARCO JANSSEN², SUNNY JARDINE³, OLAF JENSEN⁴,
STUART JONES⁵, BRETT VAN POORTEN⁶, JACOB ZIEGLER⁷

¹Cary Institute of Ecosystem Studies; ²Arizona State University; ³University of Washington;
⁴Rutgers University; ⁵University of Notre Dame; ⁶British Columbia Ministry of the Environment;
⁷McGill University

*Email: solomonc@caryinstitute.org

Interactions between ecological and social systems may create challenges and opportunities for effective management of recreational fisheries. We are studying these interactions in a landscape of many lakes where local governance organizations (lake associations) are widespread. While local and polycentric governance often improves management of social-ecological systems, it is not clear whether this is the case within the spatially networked, open-access setting of fisheries landscapes. We present ecological, social, and economic data and models from our study region (northern Wisconsin, USA), demonstrating that lake associations make significant investments in fisheries management; that these investments may be strategic and inefficiently low; and that the impacts of these investments on key aspects of fishery ecology like recruitment and catchability may not match expectations. These results suggest changes in regulations and institutions that may improve management and social welfare in recreational fishery landscapes.



8th World Recreational
Fishing Conference

C11

New Insights into Angler Participation Rates, Motivations, Trends and Lifestyle Segments

ROB SOUTHWICK

Southwick Associates, Florida, USA

Email: rob@southwickassociates.com

The future of fishing depends on an active, supportive and vocal constituency advocating for effective fisheries management, abundant populations and reasonable access to fishable waters. By marketing and promoting recreational fishing to new anglers, and keeping our current anglers active, recreational fishing can maintain an effective constituency. In the United States, where organized efforts to maintain and increase recreational fishing participation are underway, research is regularly conducted to ensure marketing and outreach efforts are effective and generate the greatest results possible. This new research examined 10 years of fishing license records from 12 states to learn more about how fishing appeals to younger people, the angling population's broad range of lifestyle choices, what motivates new and returning anglers, the turnover within the angling population from year to year, and more. The results are presented in infographic form to appeal to a wide range of fishing marketers and policy makers. Examples of results include learning only 46 percent of this year's licensed anglers will purchase a license next year, women are entering fishing at rates never seen before – and are leaving at equally high rates, and participation rates among younger Americans are at lowest levels ever, even while fishing participation is starting to grow. Reasons behind these trends, and other insights gained, will be shared.



C12

US Sport Angler Preferences for Community-Based Sport Fishing in Remote Areas of the Amazon

JAMES KAHN^{*1,2}, KATELYN DEGNAN^{1**}, BRIANNA RAKOUSKA^{1**}, EMILY ROLLO^{1**},
ALEXANDRE RIVAS²

¹Washington and Lee University ²Universidade Federal do Amazonas.

*Email: kahnj@wlu.edu **indicates undergraduate student

This study is part of a broader research program to develop community-based sport fishing in Barcelos, Amazonas, Brazil, a large (122,000 km²) sparsely populated (0.23 people/km²) county in the middle Rio Negro region. The county, which is the size of New York State, contains 99.9% of its original forest cover, and is one of the best freshwater sport fishing areas in the world, where the various species of Peacock Bass are pursued. Currently, sport-fishing services are offered by commercial firms for fees up to US\$5000 per week). Unfortunately, very little of this money makes its way to the communities. We are working to develop a program aimed at middle class tourists and based in the communities themselves. The first step was to conduct focus groups with the communities in the region to determine the type of services they could offer, and the level of tourism they thought most appropriate. These responses were then used to shape a choice-modeling survey which is being implemented to sport fishers in the US. The choice modeling questions look at fishing success, level of comfort (food, lodging, etc.), price and other factors as the attributes of the choice sets. In addition, other preferences are determined related to the factors such as the availability of non-fishing ecotourism options, English language skills of the guides, and travel times. The results will be used to determine the basic characteristics of a pilot program which will in turn inform the structure of the program to be implemented.



C13

Exceptional Angling Experiences in Crocodile Country - Engaging Recreational Fishers in the Management of the Northern Territory's Iconic Barramundi Fisheries

DAVID CIARAVOLO*¹, THOR SAUNDERS²

¹Amateur Fishermen's Association NT, Australia; ²NT Fisheries, Australia

*Email: eo@afant.com.au

The Daly and Mary River Fish Management Zones in the Northern Territory of Australia have been established as areas managed with the objective of producing high quality fishing experiences for barramundi (and threadfin salmon). Fishing regulations aim not only to ensure the sustainability of stocks, but go further so as to achieve elevated prospects of catching trophy fish. Slot size limits, smaller bag limits, promotion of best practice catch and release fishing, a community run tag and release research data program and a strong sense of community custodianship, all actively contribute to achieving the unique management values of these two fisheries.

- Following the removal of commercial fishing in these management areas, the CPUE data used to inform abundance and fishery trends were no longer available. The Amateur Fishermen's Association of the Northern Territory (AFANT) has been engaged to run a community based fish tagging program, providing data to NT Fisheries Department.
- AFANT are contracted to run the community tagging program and the recapture reporting hotline.
- AFANT has developed corporate partnerships to fund incentives for tagged fish recapture reporting (Fishers are sent a special fishing lure and certificate when they report a tagged fish).
- Fishers have also been engaged to develop a Code of Practice to promote best practice fishing. Challenges have included determining the best fish release techniques, balancing angler safety; particularly in the Mary river which has the highest concentration of saltwater crocodiles in the Southern Hemisphere.
- The next challenge is to ensure that recreational fishers can continue to provide the data required to report against objectives and inform management of these iconic fisheries into the future.