8th World Recreational Fishing Conference

Symposium III: Recreational Anglers Driving Fish Habitat Outcomes

K1

Harnessing the Passion of Recreational Anglers to Conserve Fish Habitat: Lessons from the Western United States

ROBERT MASONIS

Trout Unlimited, Inc., Seattle Washington

Email: rmasonis@tu.org

High quality fish habitat is the foundation of sustainable recreational fisheries targeting naturally reproducing populations. The causes of fish habitat degradation are legion: commercial resource extraction; residential, commercial and industrial development; agricultural and municipal water withdrawals and climate change to name a few. Government agencies responsible for managing recreational fisheries often lack the resources, authority and political support to adequately protect intact habitat and restore degraded habitat. Recreational anglers can help fill that void. In the United States, Trout Unlimited has successfully engaged recreational anglers and recreational angling businesses to protect large areas of high quality trout and salmon habitat using federal and state policy tools, and to open blocked habitat and restore degraded habitat by securing funding and supplying necessary labor. In addition, we are educating and organizing anglers to conduct citizen science projects, including population sampling and water temperature monitoring, designed to fill policy and management-relevant data gaps. Last but not least, we are communicating both the need for habitat conservation and celebrating conservation victories through angler voices. Doing so links habitat directly to people, communities, and local economies, which makes the case for habitat conservation more compelling to decision-makers. It also builds a conservation ethic among anglers, which is essential if we are to have sustainable recreational fisheries in the 21st Century.

K2

Recreational Fisher Action on Habitat Issues in Australia

CRAIG COPELAND

NSW Department of Primary Industries -Fisheries, Bruxner Hwy, Wollongbar, Australia

Email: craig.copeland@dpi.nsw.gov.au

The extent of damage to fish habitat throughout Australia has been widespread and substantial with the resultant effects on fish populations and fishing outcomes almost catastrophic in many places. Efforts to redress this loss by Government agencies have been underway since the 1980's, particularly in regard to improving water quality. More recently fish passage remediation and wetland rehabilitation has become more common but the level of degradation remains high and the potential improvement of fish stocks remains high. Our understanding in the mid-2000's was that the role of recreational fishers assisting in this task was at a very small scale. A decision in 2009 to build the capacity of the recreational fishing community around fish habitat issues is now leading to continued and enhanced delivery of habitat and fishery improvements. This presentation will outline the reasons for success of the DPI Fisheries programs; Fishers for Fish Habitat and the Fish Habitat Network; their expansion nationally and why there is now a rapidly increasing investment of time and money by recreational fishers in habitat restoration. Enhanced funding programs are now in place in most states supporting fish habitat projects and importantly involving recreational fishers directly. The direction of future work in this area will be based on recent research outcomes on the motivations of recreational fishers to engage on habitat issues.

K3

Recreational Fishers Leading Fish Habitat Rehabilitation in the Macquarie River, NSW

MATT HANSEN

Inland Waters (OzFish Unlimited Chapter) Dubbo, Australia

Email: matt@reddenhansen.com.au

The understanding and opinions that recreational fishers have about issues affecting fish populations and river health problems can vary greatly from community to community. With greater understanding recreational fishers have the potential to play a crucial role in the rehabilitation and conservation of aquatic ecosystems and the improvements in fish numbers. The role of recreational fishing groups undertaking projects to enhance native fish populations across New South Wales has been limited, until recently, to restocking. Our group, Inland Waterways started off stocking fish but we now focus purely on enhancing fish stocks by rehabilitating aquatic habitats. We run one of the country's largest catch and release fishing competitions; "The Burrendong Classic" for the purpose of raising funds for habitat work and to celebrate the enjoyment of fishing. We are also now part of Australia's national fishing conservation organisation, OzFish Unlimited, and have used that relationship to convince other groups across NSW to begin leading into fish habitat rehabilitation. This talk will outline how the transformation of our group has taken place, what projects and community driven activities have been achieved, and what our group and our community feel about the work that we do. I will also outline what I think have been the key factors underpinning our success and what the future might hold if we continue on our path. The talk tells a story of a changing culture among recreational fishers.

K4

Successful Angler Engagement in Conservation Projects and Partnerships – The UK Experience

MARTIN SALTER

The Angling Trust, Leominster, Herefordshire, United Kingdom

Email: martinreadingwest@googlemail.com

With 65 million people crammed onto a small and heavily developed landmass how do the UK's three million recreational fishers protect and enhance their precious waterways on which their sport and livelihoods depend? We look at the political advocacy and practical support delivered through the national Angling Trust; the 60 years of angler led legal battles against polluters; the partnerships with environmental, wildlife and rivers trusts; the transfer of rod licence revenue into angling and habitat improvement funds; the new river catchment partnerships; the legislative drivers for improved conservation outcomes; the moves to reform agricultural practices and subsidies following Brexit. The expectations are high - 80% of the worlds chalk streams are in England - and the challenges are massive with the pressures of climate change and population growth and EU legislation requiring that all rivers achieve 'good ecological status' by 2027. At the local level we highlight projects that are restoring rivers and improving habitat; attracting private sector funding; accessing monies from Civil Sanctions imposed on water companies; using research on the value of installing woody debris: creating fish by passes and off channel refuges; and pressing the case for 'habitat over hatchery' as part of a local solution. Our Wild Trout Trust alone has, in the past four years, delivered 27 major projects involving 6000 volunteers restoring 1,100 kms of river and stream habitat. Lastly, we feature rivers that anglers have helped bring back from the dead where now salmon and seatrout can be found.

K5

The Role of Recreational Fishers and Other Community Interests in the Successful Implementation of Ireland's National Strategy for Angling Development

CIARAN BYRNE*[1], SUZANNE CAMPION[1], SHONA ROCHE[1]

[1]Inland Fisheries Ireland, 3044 Lake Drive Citywest, Dublin 24, Ireland

*Email: ciaran.byrne@fisheriesireland.ie

The angling sector in Ireland contributes €836 million to the Irish economy every year and over 11,000 Irish jobs are supported in rural communities where job opportunities are scarce. In 2015, Ireland attracted 163,000 overseas anglers and a further 273,000 domestic anglers fished in the country.

A primary driver for participation in recreational angling is the relative ease with which anglers can catch their target fish species. Underpinning this ability to catch fish is the quality of the fisheries habitat. Inland Fisheries Ireland (IFI) the Irish fisheries development agency has recognised the importance of quality fish habitat in increasing angling participation and correspondingly economic activity in rural areas.

In response, IFI developed the National Strategy for Angling Development (NSAD), the first comprehensive national framework for the development of Ireland's angling resource. The NSAD aims to engage angling and environmental stakeholders and maximise the use of volunteerism where it is of benefit to habitat and fisheries development. In particular in the ideation, design and delivery of sustainable development projects aimed at improving fisheries habitat; improving angling access and infrastructure; managing biosecurity; and increasing fisheries awareness and promotion.

In November 2016 IFI launched a €500,000 NSAD grant programme with a focus on volunteers and recreational fishing organisations engaging directly in the development and restoration of recreational angling access. Critically the NSAD can only be delivered successfully by changing the habitat development paradigm in Ireland and upskilling recreational fishers, angling organisations and other community groups in the restoration of fisheries habitats.

K6

Fish Habitat Restorations Accomplished Throughout the Recreational Fisheries Conservation Partnerships Program

MANON MORRISSETTE*[1], MICHELLE BOUCHARD[2], RON LYEN[3]

[1,2] Fisheries Protection Program, Ecosystem Management Branch, Fisheries and Oceans Canada, [1]Quebec Region, [2]Pacific Region, Government of Canada; [3]Policy and Program, Fisheries Protection Program, Fisheries and Oceans Canada.

*Email: manon.morrissette@dfo-mpo.gc.ca

The Recreational Fisheries Conservation Partnerships Program (RFCPP) was established in June 2013 to support multi-partner projects led by recreational fishing/angling groups, conservation organizations and Indigenous groups aimed at restoring recreational fisheries habitat in order to enhance the sustainability and productivity of Canada's recreational fisheries. Since the establishment of the program, these groups have been working together to restore, rebuild and rehabilitate recreational fisheries habitat. Over the past four years, more than 700 projects across Canada have been found by the RFCPP for a total of $23,411,677 million dollar. RFCPP has supported many different types of restoration projects, including: the enhancement of spawning ground, construction of fish bypass channels around obstructions to fish passage, restoration of abandoned stream crossings that limit fish passage and bioengineering and the planting of native species to reinforce or stabilize stream banks. These projects allowed rehabilitating and restoring fish habitat structure and functioning for many different species such as: Brook Trout, Walleyes, Chinook and Coho salmon, Atlantic salmon and Yellow Perch. We will present the results of the different works accomplished by recreational fishers throughout the RFCPP and give examples of successful habitat restoration across Canada.

K7

Opportunities to Advance Habitat Conservation Through Collaboration to Strengthen Recreational Fisheries

CHRISTOPHER MEANEY

Office of Habitat Conservation, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, United States of America

Presenter: Emily Greene Email: emily.greene@noaa.gov

The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), a U.S. Federal Agency responsible for the stewardship of the nation's ocean resources and habitat, recognizes a wide range of approaches to protect, restore, maintain, and build diverse healthy marine ecosystems that are foundational to high quality recreational fisheries. Habitat conservation, both protection and restoration, is a tool in the fisheries management toolbox that is an integral part of achieving fishery conservation and management goals. NOAA Fisheries actively supports restoration and conservation of habitats that benefit recreational and other fish stocks, science-based habitat enhancement activities including artificial reefs and natural habitats, and conservation of abundant and resilient forage fish stocks. While fishery management decisions are sometimes contentious, habitat conservation can serve as a "common ground" between fishermen and fishery managers. Collaboration on identification of habitat limited species and priority habitats for conservation, coordinated investments to protect and restore essential fish habitat, and the development of tools that link habitats to fishery productivity are some of the areas where advancements are possible. Increased collaboration will help habitat managers determine the quality and quantity of habitat necessary to support fisheries, help focus habitat protection and restoration efforts, help managers provide specific and effective conservation recommendations for development projects, and ultimately improve conservation of nearshore and offshore habitat areas and ecosystem function for the benefit of recreational fishing. This presentation will highlight examples of this work and will present opportunities to strengthen management efforts.

K8

Penticton Creek Restoration Initiative

PAUL ASKEY

Research, Evaluation & Development, Freshwater Fisheries Society of BC, 13405 Lakeshore Dr S., Summerland, BC

Email: paul.askey@gofishbc.com

The Penticton Creek Restoration Initiative seeks to restore and protect an important fish-bearing tributary to Okanagan Lake (a high profile recreational fishery) that flows through the urban core of the City of Penticton in southern British Columbia. Penticton Creek has been severely altered and degraded due to flood control works, and the lower 1 km of stream was confined to a concrete flume in the 1950s. However, Penticton Creek offers exceptional potential for increased fish production based on water availability and historical fish use. In the summer of 2015, a highly visible section of Penticton Creek was restored in order to showcase restoration values, with the goal of building support and momentum for future restoration efforts. The completed restoration works substantially improved migration, spawning and rearing habitat for several important fish species in the 83m restoration section. Another 80m section is planned for restoration in 2017, and partial funding has been secured for potential restoration in future years. To date, the primary funders of the restoration work have been associated with recreational fishing: Habitat Conservation Trust Fund (an angling license surcharge) and the Recreational Fisheries Partnership Program. In addition, Penticton Creek benefits from stewardship from a local club (Penticton Flyfishers), with guidance from the Freshwater Fisheries Society of BC. Other conservation organizations, local First Nations, and local government are all members of the restoration committee. Restoration initiatives such as Penticton Creek ultimately, contribute to enhanced environmental, economic and social values for local communities.

K9

Conservation NGOs as the Link Between Management and Stakeholders for a Recreational Fishery: A Case Study in the Bahamas

JUSTIN LEWIS*[1], AARON ADAMS[1], ERIC CAREY[2], KRISTIN WILLIAMS[3], CINDY PINDER[4], JASON FRANKLIN[5], GREG VINCENT[5], KAREN MURCHIE[6]

[1]Bonefish & Tarpon Trust, Freeport Bahamas and Miami, Florida USA; [2]Bahamas National Trust, Nassau Bahamas; [3] Friends of the Environment, Marsh Harbour Bahamas; [4]Abaco Fly Fishing Guides Association, Marsh Harbour Bahamas; [5]H_2O Bonefishing, Freeport Bahamas; [6]Shedd Aquarium, Chicago USA

*Email: justin@bonefishtarpontrust.org

The bonefish (*Albula vulpes*) is an economically important sport fish throughout its geographical range. In The Bahamas, the recreational catch and release bonefish fishery has an annual economic impact exceeding $141 million, and the fishery has high cultural value. Despite the fishery's importance, the sustainability of the fishery is threatened by habitat loss and degradation, and to a lesser extent illegal harvest. Until recently, data to inform conservation in response to these threats were sparse. Beginning in 2008, we have been collaborating with fishing guides, fishing lodges, and fishers to obtain data on bonefish habitat use and movements. Data from this collaborative work – from scientific research as well as traditional ecological knowledge – has led to identification of bonefish home ranges, migratory pathways, and pre-spawning aggregation locations. The partnership with these stakeholders has fostered advocacy for habitat conservation. In fact, fishing guides have played leading roles in habitat conservation efforts. Concurrently, we work with resource management agencies to incorporate these data into conservation strategies. These parallel partnerships and increased involvement of stakeholders have led to improved relationships between stakeholders and resource management agencies. Evidence is the recent creation of six new National Parks to protect bonefish habitats, and ongoing work toward additional habitat protections.

K10

Angler-Inspired Shellfish Reef Restoration Work in Australia

ROSS WINSTANLEY

Winstanley Fisheries Management Services, Geelong, Victoria, Australia

Email: ross.winstanley@bigpond.com

Australian recreational fishers have long advocated and conducted freshwater fish habitat recovery work but, in the marine environment, they have been more preoccupied with the creation of artificial reefs to directly benefit fishing. In 2012, members of one of Australia's oldest angling clubs teamed up with their State fisheries agency and launched what has become a wave of shellfish reef restoration programs around the country. During 180 years of commercial harvesting, inshore shellfish beds around Australia had been worked to functional and commercial extinction. From their club rooms, members of the Albert Park Yachting and Angling Club overlook Port Phillip Bay which once featured a shellfish-dominated ecosystem. Older members recalled the prolific fish stocks associated with expanses of oysters *Ostrea angasi* and blue mussels *Mytilus edulis planulatus* which covered 25% or more of the 1930 km2 Bay-floor. In 2012, the Club convened a workshop of older fishers, researchers and others who shared their goal of improving the Bay environment. Together, they mapped the former distribution of shellfish beds and commissioned a pilot reef restoration project. The resulting partnership between fishers, government agencies and NGOs is a model, variations of which have seen similar projects since become active in every other Australian state. A feature of the Victorian project has been the ready buy-in by community volunteers, researchers, commercial shellfish growers and other businesses, emphasising the need for effective coordination to keep all the moving parts working together.

K11

The Development of Habitat Enhancement Structures in Western Australia – Outcomes for the World

ANDREW ROWLAND[1], LEYLAND CAMPBELL[1], JAMES FLORISSON*[1]

[1]Recfishwest Western Australia

*Email: James@recfishwest.org.au

Following the installation of an artificial reef in the South West of Western Australia (WA) in 2013, a project was initiated investigating the development of Habitat Enhancement Structures (HES) in WA 2014-2017. The project looked at the application, needs, costs and benefits of HES and cost effective monitoring methods. The HES studied included artificial reefs composed of various different materials, Fish Aggregation Devices (FADs), living reefs (restoration, shellfish reefs and woody debris) and materials of opportunity. Global HES designs were identified as well the benefits these structures provided to recreational fisheries, the community and the environment. Cost effective monitoring methods were also determined including biological/ecological, environmental and structural monitoring. Methods were determined by desktop reviews and physical trials by industry and the community. The project also investigated cost effective reefs, site selection, approvals, construction, deployment and monitoring strategies for various benefactors and stakeholders such as community groups, businesses and industry. The project undertook twelve months of community monitoring on developed artificial reefs in the state and produced a guide to HES development following the results of the research, various literature reviews and capabilities built in the project. The majority of outcomes from the project are applicable to organisations worldwide aiming to efficiently and effectively design, construct, install and monitor different HES in an array of different aquatic environments.

K12

The Millstone River Coho Salmon Restoration Project

KEVIN ESSELTINE*[1], JOHN MORGAN[1]

[1]Department of Resource Management and Protection, Vancouver Island University

*Email: Kevin.Esseltine@viu.ca

The Millstone River, in Nanaimo B.C., has a waterfall that is impassible by anadromous fish species, including Coho Salmon (*Oncorhynchus kisutch*). In 2007, an 800-m bypass channel around the falls was constructed through a partnership that included Department of Fisheries and Oceans (DFO), City of Nanaimo, Nanaimo River Hatchery, Nanaimo Fish and Game Protective Association (NFGPA), Island Water Fly Fishers (IWFF), Timberwest, Pacific Salmon Foundation (PSF), and many others. Since that time the Resource Management and Protection (RMAP) program at Vancouver Island University (VIU) has been using the bypass channel as an outdoor classroom, and as an opportunity to promote community fisheries stewardship. In 2009, a motion-capture camera was installed in the upper fish-way by DFO to enumerate migrating Coho, and a radio-tagging project was initiated by VIU-RMAP to track Coho to their upstream spawning grounds. The long-term goal of the tracking project is to identify existing Coho spawning habitat, and to determine areas for habitat restoration and enhancement activities in the Millstone. Recently, the NFGPA has provided funding to upgrade stock assessment infrastructure, and provide volunteers to monitor and enumerate spawning Coho. In addition, funding proposals are currently in place between the IWFF and PSF to enhance Coho spawning habitat based upon VIU-RMAP studies. These partnerships are examples of university, government, and angler collaboration to perpetuate a local salmonid enhancement project. The Millstone Coho restoration project is also a salmon recovery story and a valuable fisheries stewardship opportunity for local angling groups.

K13

Restoring Shellfish Reefs in Pumicestone Passage – Anglers and Community Working Together for Fish Habitat

BEN DIGGLES*[1], JOEL BOLZENIUS[2], SUSIE CHAPMAN[2], JOHN DALEY[3], MARK HIGHAM[3], KERRY JONES[4], PHILIP KRAUS[4], JACQUI KING[5], ROB KING[6], FRED PALIN[7], CARLO SAIN[8], NEIL TINDALE[9]

[1]DigsFish Services Pty Ltd, Banksia Beach, QLD 4507; [2]Healthy Waterways and Catchments; [3]Pumicestone Passage Fish Restocking Association Inc, Toorbul; [4]Kabi Kabi First Nation; [5]Banksia Beach State School; [6]Sunfish North Moreton Branch; [7]Marine Ecology Education Indigenous Corporation; [8]Sebastiani Oyster Farms; [9]University of the Sunshine Coast

*Email: ben@digsfish.com

Shellfish reefs were once dominant biological features of estuaries worldwide, including Australia, but today around 85% of shellfish reefs globally are lost or considered functionally extinct. In Moreton Bay shellfish resources were sustainably utilized for thousands of years by indigenous groups. However, since European settlement shellfish were exploited for food and Aboriginal middens were also raided to make lime to build Brisbane's first roads and buildings. The Moreton Bay oyster industry was based mainly on Sydney Rock oysters (*Saccostrea glomerata*), which were exploited on intertidal banks as well as by dredging subtidal shellfish reefs. Industry production peaked in 1891, however, after that time the reefs declined due to damage from dredging, sedimentation and declining water quality bought about by development in the catchment. In Pumicestone Passage historical records show abundant subtidal shellfish reefs occurred in the mid to late 1800's, but today around 96% of zonation suitable for natural *S. glomerata* recruitment has been lost and subtidal shellfish reefs are functionally extinct. Recreational fishers and community groups in northern Moreton Bay are now engaged with the Australian Shellfish Reef Restoration Network and are working on several projects focussed on educating the local community regarding lost baselines and re-establishing shellfish reefs in Pumicestone Passage in order to realise the many benefits (environmental, fisheries, social, cultural and economic) provided by these valuable ecosystem engineers.

K14

Sustainability Initiatives of Fly Fishing Lodges

DAVID FENNELL*[1], DANUTA DE GROSBOIS[1]

[1]Department of Geography and Tourism Studies, Brock University, Canada

*Email: dfennell@brocku.ca

Recreational fly-fishing is an extremely popular activity that attracts an affluent market (Bauer & Herr, 2004; Fedler, 2010). A big part of the experience is a comparatively remote setting with access to undeveloped natural environments (Perry, 2015), often facilitated by fly-fishing lodges. Despite its growing popularity, there are few studies on fly-fishing's environmental and social impacts. Usually fly anglers are viewed as less consumptive and more ethically grounded than other groups (Øian (2013), although there are concerns regarding social and cultural conflicts (Fife, 2014) or environmental impacts (Hoogendoorn, 2014). The present study is the first large-scale investigation of the fly-fishing lodge sector and its sustainability practices. A sampling frame of global fly-fishing lodges was created by including lodges featured by several major fly-fishing outfitters (e.g., Orvis), fly-fishing travel companies (e.g., Yellow Dog Fly Fishing), and publications (e.g., Chris Santella's books). A sample of 196 lodges was drawn and their websites analyzed with respect to sustainability communications. The analysis indicated that although the web presence of fly-fishing lodges is high (only 16.3% of the sample did not have a website), reporting on sustainability initiatives is low. The most popular initiatives included catch and release practices, renewable energy use, restoration of habitats, support for local community, and growing organic food. While many lodges explicitly promoted access to remote areas, they rarely addressed their own impacts and sustainability performance.