Individual reports from the Helsinki, Arendal and Jönköping workshops

2014–2016

Table of content

Nordic way forward in recreational fishing

Report from Helsinki, Finland 2014

Europe House, Helsinki, April 2014

House of Culture, Helsinki, April 2014

Attending the workshop

Organizer and moderator: Otso Valta

The workshop participants represented:

Carleton University	Canada
Secretary General of European Anglers Alliance (EAA) and worker of European Fishing Tackle Trade Association (EFTTA) - BRUSSELS	Denmark
DTU Aqua - Danmarks Tekniske Universitet	Denmark
Danmarks Sportfiskerforbund	Denmark
Fishing Zealand	Denmark
Estonian Sport Fishing Federation	Estonia
VisitFaroeIslands	Faroe Islands
Member of the European Parliament 2008-today, EPP	Finland
Finnish Game and Fisheries Research Institute	Finland
Finnish Natural Heritage Service	Finland
Nordic Council of Ministers Working group for Fisheries Collaboration, AG-Fisk	Finland
FishingInFinland	Finland
WWF, Baltic Sea and Fisheries Program	Finland
Member of parliament	Finland
Professor of fisheries economics, University of Helsinki	Finland
Varzina River Fishing Company & Finnish Russian Chamber of Commerce	Finland
Fisherman and environmentalist	Finland
Finnish association for nature conservation	Finland
Vice President of Finnish Small Business Association	Finland
MTT Agrifood Research Finland	Finland
FishBase International Consortium, Gesellschaft für Marine Aquakultur	Germany
ICES Working Group for Recreational Fishing Surveys	Great Britain
North Atlantic Salmon Fund, NASF	Iceland
Institute of Freshwater Fisheries	Iceland
Latvian Anglers Association	Latvia
Sportvisserij Nederland, Head of Communication	Netherlands
Norwegian Institute for Nature Research - NINA	Norway
Nofima Fiskeriforskning, Tromsø	Norway
Institute of Marine Research	Norway
Norges miljø- og biovitenskapelige universitet	Norway
Scanatura	Norway
Norges Jeger- og Fiskerforbund (NJFF)	Norway
Angler, National Geographic King Fishers TV-episode	Norway
Swedish Agency for Marine and Water Management	Sweden
Swedish University of Agricultural Sciences	Sweden
Swedish Anglers Association	Sweden
Sweden Fishing	Sweden
Swedish Board of Agriculture	Sweden
Fishbrain	Sweden
County Administrative Board of Norrbotten	Sweden
President of American Fisheries Society, AFS	USA
Fisheries Economist, National Oceanic and Atmospheric Administration, NOAA	USA

Summary

One main finding from the workshop was that there is a great expertise and devoted professionals in all Nordic countries as well as in Russia, Estonia and Latvia. North American speakers were impressed by the Nordic knowledgebase and encouraged us to apply socioeconomic research models from USA and especially argument the value of recreational fisheries and proper management of them better to public and politicians.

We learned that recreational fisheries management (restoration, stock enhancement and regulations) is most functional in Denmark. We had lively discussion about socioeconomics led by Robert Hughes (American Fisheries Society) and Sabrina Lovell (NOAA) as well as Jan Kappel (European Anglers Alliance) and Kieran Hyder (ICES). All Nordic delegates had their say on the topic and the conclusion was that we need not only increased knowledge and sharing it amongst each other but also to build joint Nordic socioeconomic research. North Atlantic Salmon Fund and Baltic Salmon Center addressed sensitive topics as management of shared fish stocks in North Atlantic and Norwegian Sea. Discussion on shared fish stocks was constructive and all could agree that there is a lot to improve and work on.

Important take-home messages from the workshop was:

- Recreational fishing is one of the world's most popular hobbies. According to some estimates, anglers globally spend around $200-billion a year on traveling, boating and gear. For comparison, that is more than ten times global recorded music sales of $15-billion in 2013, music industry body IFPI estimates.
- Nordic countries are recreational fishing hot spots. The popularity of the hobby has not been measured to be as high almost anywhere else on the planet (Economic value of recreational fisheries in the Nordic countries, TemaNord 2000:604).
- The ecological status of Nordic surface water bodies is only moderate (European Environmental Agency, Surface Water Viewer) and state of fisheries in Nordic countries and Baltic Sea Region is in historical minimum.

During the workshop, it became evident that there is an urgent need for socioeconomic research on Nordic recreational fishing. Nordic countries have an economic, social and environmental responsibility to stop the degradation of water ecosystems for the sake of invaluable nature itself, to comply EU Water Framework Directive, and as a prerequisite for sustainable growth of ecotourism. We believe that Nordic countries should sharpen their leading role in EU level to speak pro the sustainable use of ecosystem services overtaking the tragedy of commons.

Workshop participants agreed to be proactive on collaborating with socioeconomic and catch/effort research frameworks and communicating the socioeconomic value and catches from recreational fisheries to decision makers.

The 2014 workshop also had a policy impact by helping the Russian Salmon Association to communicate the value of conserving the Baltic salmon to the Russian Ministry of Agriculture:

"Dear participants of the Nordic recreational fishing conference. I would like to inform you about very good result of the activity of the Russian Salmon Association in respect to the potential start of the Baltic salmon commercial fishing from the Russian side. We managed to influence in the decision of the Russian Ministry of Agriculture NOT TO START the commercial fishing for Baltic salmon again. So the salmon will be saved for the recreational fishing and we hope to have the same activity from the other Baltic basin countries where such a commercial fishing still takes place. Please transfer this information to the other participants of the Conference to let them know about such a good step for conservation for the Baltic salmon." 23.5.2014. With best regards, Gennady Zharkov, President, Russian Salmon Association.

Table of content

Introduction

With funding from the Nordic Council of Ministers Working Group for Fisheries Collaboration, AG-Fisk, Nordic recreational fisheries institutions gathered to share best practices and establish relationships for building the future of recreational fisheries together. Keynote speakers included fisheries professionals from North America, Brussels EU and beloved neighbors United Kingdom, Germany and Russia.

The workshop had a proactive approach addressing not only the problems but also going through the case examples of successful solutions for recreational fisheries management and ecotourism in a local, national and even international level.

A pre-workshop was held on the 23 of April where the keynotes presented and discussed different relevant topics in Helsinki Europe House. Key learnings and success stories from that workshop are presented in this report.

The main workshop was held on 24–25 of April in Helsinki House of Culture. Some of the presentations held in the workshops are highlighted in this report. The ones that are not are no less important and available at the same address as the others.

Presentations from the Helsinki workshops are available at:

http://en.calameo.com/accounts/3567570

Videos from the Helsinki workshops are available at:

https://goo.gl/mdKxUm

Pre-workshop - New tools & Nordic recreational fisheries in the EU

Big Data for Sport Fishing

Johan Attby
CEO & Founder of FishBrain

Key learnings: FishBrain is a Swedish start-up company, facilitating the first Nordic Way Forward in recreational fishing Workshop, is connecting anglers worldwide.

FishBrain is a social network & app for the world's biggest hobby - sport Fishing. It took 3+ years of development to release first version of FishBrain app in Appstore and Google Play. Anglers all over the world love the app and growth has been amazing: 265,000 registered users and 90,000 logged catches in 23.4.2014 (650 000 reg. users and 230 000 catches in 17.12.2014).

FishBrain's three goals:

- Connect all anglers worldwide!
- Increase the interest for sport fishing!
- Benefit to sustainable fishing!

Link to video: http://youtu.be/lOfWRQYP6zo

Link to presentation: http://en.calameo.com/read/00356757ofoad2bab3581

Mobile Applications for the Angling Community

Bernd Überschär
FishBrain International Consortium

Key learnings: The angler community holds a wealth of data.

FishBase.org is all that you ever wanted to know about fish: 32,700 Species, 302,900 Common names, 53,600 Pictures, 49,700 References, 2100 Collaborators, and 700,000 Visits/Month (Feb 2014). The angler community holds a wealth of data, which has hardly been used for monitoring and management purposes. Anglers explore most water bodies and coastal areas, even the unproductive and those inaccessible to commercial fisheries, to an extent that is beyond the reach of scientific projects. This data is rarely used outside the angling community, since the respective data have a very diverse format and are often not processed and analyzed, digitized and typically not accessible outside angler clubs and associations. Recreational angling has adopted a high-tech attitude, involving fishing equipment as well as the use of the modern communication technology.

More Information: www.ifishwatcher.org www.anglersbase.org

Link to video: http://youtu.be/DztFxNpF-1U

Link to presentation: http://en.calameo.com/read/00356757089l0a010428f

ICES Working Goup
For Recreational Fishing Surveys, WGRFS

Kieran Hyder
Cefas

Key learnings: Need for joint recreational fisheries survey efforts.

ICES Working Group on Recreational Fishing Surveys (WGRFS) is sharing expertise across Europe, but they face several challenges:

1. Surveys are difficult & expensive. There are many different survey methods, which makes comparability & maintaining quality difficult sometimes (bias, precision).
2. Evidence remains limited in terms of number of anglers, activity, catch, value, social benefits, post-release survival and extent (mode, time and space).
3. Co-management for recreational & commercial fishing (compare e.g. USA, Australia).

WGRFS is important in order to understand what is collected in Europe and how it can be used, find the latest national estimates (catch, value and survival), maximize value and utility of data collected (precision and bias), understand terminology and share experiences of working with stakeholders.

Link to video: http://youtu.be/PQmte1OwekU

Link to presentation: http://en.calameo.com/read/003567570522d75ed1fa6

The recreational fishing sector and the EU

Jan Kappel
EEA & EFTTA

Key learnings: How Nordic anglers can have an impact together and why EU Common Fisheries Policy Reform was a disaster for recreational fishing again.

EAA, the European Anglers Alliance (HQ in Brussels), is 14 members in 13 European countries and 4 affiliated members. EAA is representing ca. 3 million individual anglers towards EU and beyond.

Nordic members: Danmarks Sportfiskerforbund, Finnish Federation for Recreational Fishing, Norges Jeger- og Fiskerforbund and Sportfiskarna.

EFTTA, the European Fishing Tackle Trade Association, is over 250 members (manufacturers, wholesalers, agents, press and related organization in the tackle industry).

EUs Common Fisheries Policy (CFP) reform resulted in the poorest possible outcome for angling, meaning no recognition at all. The European Parliament had accepted this text: "The Common Fisheries Policy shall ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, of contributing to the availability of food supplies and recreational fishing opportunities, and of allowing for processing industries and land-based activities directly linked to fishing activities, while taking into account the interests of both consumers and producers." But the Council of Ministers only accepted this mention with rather negative tone, recital 3 ('Basic legislation'): "Recreational fisheries can have a significant impact on fish resources and Member States should, therefore, ensure that they are conducted in a manner that is compatible with the objectives of the CFP." The ministers did not want to extend the scope for the CFP.

Link to video: http://youtu.be/J_QSHMW1fuY

Link to presentation: http://en.calameo.com/read/003567570611184b4c510

MTT Agrifood Research Finland - Clear water = clear profit

Janne Artell
MTT

Success story: Clear water equals clear profit! State of the art marine and economic modelling show benefits from Baltic Sea Action Plan clearly outweighing the costs.

Link to video: http://youtu.be/T__YT2G-lIk

Link to presentation: http://en.calameo.com/read/00356757of71b6ccb4ac2

Introduction to fishing tourism sector in Finland

Erik Erlevi
Finnish Fishing guides guild

Key learnings: Guided fishing is a growing sector in Finnish business.

Most fishing guides in Southern Finland have an exam for fishing guide's profession. Fishing tourism is developing together with accommodation and other services. Fishing tourism has the best chance to flourish in an area with tourists, companies and accommodation. Competition and collaboration between fishing guides is always useful. Finnish fishing guides want to see bigger minimum size limits and better monitoring for zander and trout.

Link to video: http://y2u.be/r707ceJmsH4

7 Thoughts about the dam problem!

Ari Lampinen
Strömstad Akademi

Key learnings: Future of hydropower - No dam, no problem.

Dams cause many problems, including:

1. Blocking fish migration upstream, killing and injuring fish passing through hydraulic turbines or over spillways downstream.
2. Large greenhouse gas emissions resulting especially from methane originating from decay of biomass under reservoirs.

Hydropower is 0.0001 % of global renewable energy resources. Any case, hydropower is the cheapest way of making electricity (from $ 0.01 /kWh). In the future hydropower will be used for electricity storage and balancing (for example pumped reservoirs of large and small scale) but dams will become history.

Link to video: http://y2u.be/6IuXg6V6jII

Link to presentation: http://en.calameo.com/read/003567570 5fdf4cb4c554

Turning adversity into opportunity

Sampsa Vilhunen
WWF

Key learnings (abstracted from "Turning Adversity into Opportunity 2013"): Tourism generated estimated €42 billion in the Baltic Sea coastal regions in 2012.

"Despite the recent economic downturn, coastal tourism has risen by 5.3 percent annually since 2009. The strongest boost has been observed in Russia and Sweden, which have annual growth rates of 9.7 and 6.9 percent, respectively. This growth of coastal tourism is being driven mainly by beach tourism, recreational boating, cruise tourism and recreational fishing. Coastal tourism in the Baltic Sea region is still more or less unaffected by growing environmental concerns, and the demand continues to exceed supply in many coastal regions" (Boston Consulting Group & WWF 2013).

"Clear waters state scenario: Marine environmental issues have been and are being addressed to such an extent that they no longer pose a threat to the tourism industry."

The industry's already strong growth has been maintained without extending the ecological footprint, and coastal tourism in the Baltic Sea region has continued to grow at a historical rate of 4 to 5 percent annually up to 2030. Some segments have seen particularly strong gains; ecotourism is booming, and recreational fishing is advancing by almost 6 percent annually, the value it generates surpassing that of the region's previously heavily subsidized commercial fishing industry (up from €350 million in 2012 to €1 billion in 2030).

"In 2030, coastal tourism has grown from €42 billion to around €70 billion in annual value add. Productivity has seen a significant rise, but total employment has also gone up to over 1 million in 2030, an increase of around 230,000 tourism jobs above today's levels" (Boston Consulting Group & WWF 2013).

More information: Boston Consulting Group's Survey 2013. Turning Adversity into Opportunity- a Business Plan for the Baltic Sea, http://awsassets.panda.org/downloads/bcg_turning_adversity_into_opportunity_aug_2013.pdf

Link to video: http://y2u.be/iCmBO1MzZBE

Endangered fisheries in Finland

Jasper Pääkkönen
Fisherman & environmentalist

Success story: Saving endangered fish species in Finland through citizen activism.

Persistent citizen activism in news and social media with accurate argumentation puts companies selling endangered fish species or using unsustainable hydropower as "green energy" in their marketing and also politicians in trouble – This has resulted is change in behavior when awareness about the state of fish stocks increased. Be active together!

Link to video: https://www.youtube.com/watch?v=tTPlP9Wl778&t=1s

Developing Fishing Tourism While Safeguarding The Resource

Dan Blomkvist
Senior fisheries officer

Success story: There are over 100 000 sport-fishing days per year in Norrbotten.

The County Administrative Board of Norrbotten is the largest fishery manager in Sweden measured by number of waters. Many high-profile waters and a number of famous fishing camps are attracting people from southern Sweden and abroad. Our success is based on Decision makers understanding the value of fishing tourism, Norrbotten's potential, what policy decisions that may be required and tourism entrepreneurs understanding the resource, the market and seeing good examples in international fishing tourism ("stealing good ideas") and developing cooperation.

Norrbotten's fisheries management is based solely on natural populations – there is no stocking! Differentiated fishery management: General and simple fishing regulation in most waters (bag-limits, minima size, closed season, no artificial bait in streams, etc.) and Individually adapted rules in "high-profile/ high pressure" waters (strict bag-limit, fly fishing only, slot- size limits, etc.).

Recommendations:

- Get your priorities right – is it "fishing tourism" or "recreational fishing" you want to develop?
- Understand the market – what does the visiting angler want?
- Understand your resource – what can you offer (fishing, services, people)?
- Success is built with long-term work and it may not happen fast!

Link to video: http://y2u.be/bIPvTkt75KI

Link to presentation: http://en.calameo.com/read/003567570 91ddf447ddd6

EKOenergy and fish passes

Riku Eskelinen
Finnish association for nature conservation

Key learnings: European ecolabel and Consumer Driven hydropower campaign.

The best salmon rivers in Finland are dammed. Companies market this electricity to consumers as green-energy. Consumers of hydro-electricity mean well, but would need more objective information about the product. A new European ecolabel for electricity was launched in 2013. Requirements for Eco energy labeled hydropower are that the power station must commit to implement measures, which mitigate negative impacts of the power station, minimum flow 5% of annual mean flow, a supplier pays minimum 0,10€/MWh to the Environmental Fund. The money is used to mitigate negative impacts of hydropower plants. In Finland the fund has generated €700.000 funding for good projects.

Fishrun - Fish Passage Electricity Campaign is a consumer driven solution, which brings trout and salmon back to Mustionjoki and saves the freshwater pearl mussel population in the river. 1000 households are enough to start an investment on 2,5 million and to build four fish passes in the river's four hydropower stations. Consumers pay 8€ monthly fish pass fee and switch their electricity agreement to owners if they co-fund the fish passes.

Link to video: http://y2u.be/YICmrjTR34s

Link to presentation: http://en.calameo.com/read/003567570165ef6072de1

EU Small Business Act and Tourism

EXTRA: Workshop Communication from European Commission DG Enterprise and Industry

Key learnings – EU Small Business Act, Entrepreneurship Action Plan and Work Program of Europe, the world's No 1. tourist destination.

99,8% of EU enterprises are small or medium sized. SMEs created 85% of new jobs in 2002–2010. It is up to EU member States to implement Small Business Act Nationally: Ensure access to markets and finance, Support entrepreneurship and reduce administrative burden.

The European Commission is aware of following challenges among others:

- Socio-economic data on tourism at EU level is insufficient.
- Information and communication technologies uptake is important and economic, social and environmental sustainability of tourism needs to be ensured.

One main axe of action is promoting the development of a sustainable, responsible and high quality tourism.

Link to presentation: http://en.calameo.com/read/003567570976e5ecff2d8

Main workshop - Recreational fishing tourism, society and economy

Welcoming words

Special thanks for keynote speakers Kenneth W. McBride Economic officer of US embassy, Sirpa Pietikäinen Member of European parliament and Simo Rundgren Member of the Finnish parliament and the agriculture and forestry committee.

Videos:

https://www.youtube.com/watch?v=BvSmv6h6EUY
https://www.youtube.com/watch?v=FatHLPorWYs
https://www.youtube.com/watch?v=n2RgtLrghyc

Recreational Fisheries in the USA, Economics & Strategy

Robert M. Hughes
President of American Fisheries Society, USA

Key learnings: American Fisheries Society is advocated for U.S. Commission for Fish & Fisheries led by fish scientist (formed in 1871), has 7000 to 9000 members in 62 nations and publishes 6 scientific journals and publishes books (73 current titles).

AFS PRESIDENT BOB HUGHES' GUIDANCE:

1) Measure economic impact. Economic impact of recreational fisheries is 4.0 Billion dollars in Minnesota with population of 5.3 million (26% participation to angling). NORDIC COUNTRIES WITH POPULATION OF MILLION MIGHT EXCEED THAT – WHY DON'T YOU MEASURE?

2) Get funded. US State license sales combined with Federal excise taxes on fishing gear and motorboat fuels, 50 million to $400 million per year, are earmarked to funding research, hatcheries, improved access and habitat rehabilitation.

3) Payback is remarkable. Note the Minnesota Fish Section has a $30 million dollar budget, making this a 133:1 economic return on direct investment when economic impact of State recreational fisheries is 4.0 Billion dollars.

4) Manage. Manage stocks, populations, ecologically significant units, species via population dynamics, Regulate harvest, Supplement via hatcheries, Enhance physical, chemical & biological habitat, Monitor & assess status & trends, Reduce stressors & pressures.

Link to Video: https://www.youtube.com/watch?v=MTiarF_qFXk

Link to Presentation: https://en.calameo.com/books/003567570a6d4c20a9cc6

Read also about ecological threats in the USA: http://en.calameo.com/read/0035675705 2fb9aacbba9

Saltwater Recreational Angling in US, Socio-Economic Dimensions

Sabrina Lovell
NOAA

Key learnings: U.S. saltwater anglers spent over $4.4 billion on trips and $19 billion on durable goods in 2011. Both residents and tourist anglers are important contributors to the economies of the coastal states in the U.S., but the relative importance varies by state. Good socio-economic data can provide information on angler characteristics and preferences, fishing related expenditures and how those expenditures generate economic output in local communities.

Link to Video: https://www.youtube.com/watch?v=iekNq1kWzhE

Link to Presentation: http://en.calameo.com/read/00356757049029f43221e

Read also about The Socio Economic Dimensions of recreational fishing: http://en.calameo.com/read/00356757042d0ec43d551

Nationwide angler surveys for recreational fisheries in Canada

Jacob Brownscobe
Carleton University, Canada

Key learnings: Survey of Recreational fishing in Canada 2010. Recreational fishing economy of 4.5 million Canadian anglers was in size of $8.8 Billion and 133 million fish kept. Fish population declines in four large recreational fisheries in Canada (walleye, lake trout, rainbow trout, northern pike). Declines largely unnoticed due to complex angler behavior, lack of long-term monitoring, and stocking.

Nation-wide angler surveys give essential information of Complex biological, social, and economic dynamics: species-specific catch & harvest, anglers, demographics, effort and economic value of natural resources. Fine scale information is used in management strategies and building worldwide fisheries assessment framework.

For more information contact jakebrownscombe@gmail.com

Link to Video: https://www.youtube.com/watch?v=24zzIRSHwxo

Link to Presentation: http://en.calameo.com/read/003567570590443a20c47

Read also about Best angling practices and considerations for sustainable recreational fisheries:

http://en.calameo.com/read/0035675702ef-41d8845e5

Hooked on Science
- Novel ways of working with anglers

Kieran Hyder
Cefas

Key learnings: Scientist & anglers need to work together to develop the evidence base for angling & maximize the utility of data collected. Technology offers new opportunities that will add to traditional surveys. Design carefully, understand data, & be able to correct for biases. Explore the potential of existing data sets and find the right partners.

Link to Video: https://www.youtube.com/watch?v=uA5ybk8f2wo

Link to Presentation: http://en.calameo.com/read/003567570 8c8df7bd8b6e

Read also about Sea Angling socioeconomics In England 2012:

http://en.calameo.com/read/003567570522d75ed1fa6

Recreational fishing in Denmark, an introduction

Christian Skov
DTU Aqua

Key learnings: Only wild fish is used for stocking since 2005! Fisheries management consisting of habitat restoration, stocking and regulations in Denmark can be said to be on highest level of Nordic countries.

Lystfiskeri i Danmark 2008–2010. Initiated by the Ministry of food, agriculture and fisheries. Fishing methods: 41% spin fishing, 20% hook and bait, 17% deep-water jig fishing, 10% fly-fishing. Example of successful management Salmon fishery in River Skjern: In the 80'ties almost extinct In the 90 ties actions were taken > habitat restorations, stocking program (local fish), regulation of fisheries (yearly bag limits and quotas) >> Anglers catch of Salmon in River Skjern grew from 100 to 950 fish in ten years (1999–2009).

Link to Video: https://www.youtube.com/watch?v=v49S6rwI7Vs

Link to Presentation: http://en.calameo.com/read/003567570 5b5f6c5cf3e7

A land of thousand lakes:
Finnish Game and Fisheries Research Institute & Fishing in Finland - Finland as a fishing destination

Päivi Eskelinen
Finnish Game and Fisheries Research Institute

Videos:

https://www.youtube.com/watch?v=qprfVo2ryu8

https://www.youtube.com/watch?v=GE7P2g6_Mwc

Ismo Kolari
FishingInFinland

Fishing in Finland Presentation:

http://en.calameo.com/read/003567570621918779d7d

How can we create a new Vision for Salmon restoration in Europe

Orri Vigfússon
NAFS

Key learnings: The North Atlantic Salmon Fund, NASF, is an international coalition of voluntary conservation groups who have come together to restore stocks of wild Atlantic salmon to their historic abundance. Problems are natural climatic fluctuations, overfishing – and poor regulations - less and less brood stock, damaged and reduced habitat - contaminated waters, negative effects from fish farming, agricultural run offs and many others.

Wild Atlantic salmon stocks can be restored by using common sense, prioritizing actions to gain maximum results in business type drives, more returning salmon generating more revenues & more profits and accelerates further recovery, inspiring and seeking leadership from private sector stakeholders, practical methodology of what is already well known about the resource, not only talking the talk but walking the walk delivering strong but fair message and dynamics through entrepreneurial mindsets and creative talents.

Direction to Europe: END of all mixed stock fisheries and all other forms of netting through voluntary agreement led by the private sector but supported by the authorities due to conservation and administration.

Link to Video: https://www.youtube.com/watch?v=ffgSAND33wY

Link to Presentation: http://en.calameo.com/read/003567570cb8e4c9c4c5a

Other presentations

The following presentations are available at http://en.calameo.com/accounts/3567570

Recreational Fishing Jens Persson, Swedish Agency for Marine and Water Management

The Economic Impacts of Recreational Salmon Fishing at the Finnish Side of Torne River Esa Storhammar

Cormorants and Mobile Real Time Question Tools Petri Heinimaa, Finnish Game and Fisheries Research Institute

Fiskekort.se Glenn Douglas, Sportfiskarna

Recreational Fishing in Estonia Endrik T Nsberg, Estonian Sportfishing Federation

Info about EIFAAC Symposium 2015

Development of CR Angling for Atlantic salmon, North Atlantic versus Nordic Perspective Øystein Aas, NINA

Best Angling Practices, Considerations for Sustainable Recreational Fisheries Jakob W. Brownscombe, Carleton University

Recreational Fisheries in the USA, Ecological Threats Robert Hughes, President of American Fisheries Society AFS

Sea Angling 2012 in England, Socioeconomic Survey Kieran Hyder, Cefas

Fish Base, Bridging the Gap Bernd Übershär

Vision for Sweden to become #1 Sustainable Fishing Tourism Destination in Europe Henrik Thomke, Sweden Fishing

Recreational Fishing Companies Localizations The Municipal Districts of Leningrad Region

Recreational Fishing in Leningrad Region Vladimir Pankov

Marine Fishing Tourism in Norway, Economic Impact Trude Borch, Nofima

The Management, Relevance and Organization of Norwegian Rec. Fisheries Øyvind Fjeldseth, Norges Jeger- og Fiskerforbund NJFF

Fisheries Management on the Island of Funen & New Trends Kaare Manniche Ebert, Danish Sport Fishing Association

Riverwatch & Fishrun Jasper Pääkkönen

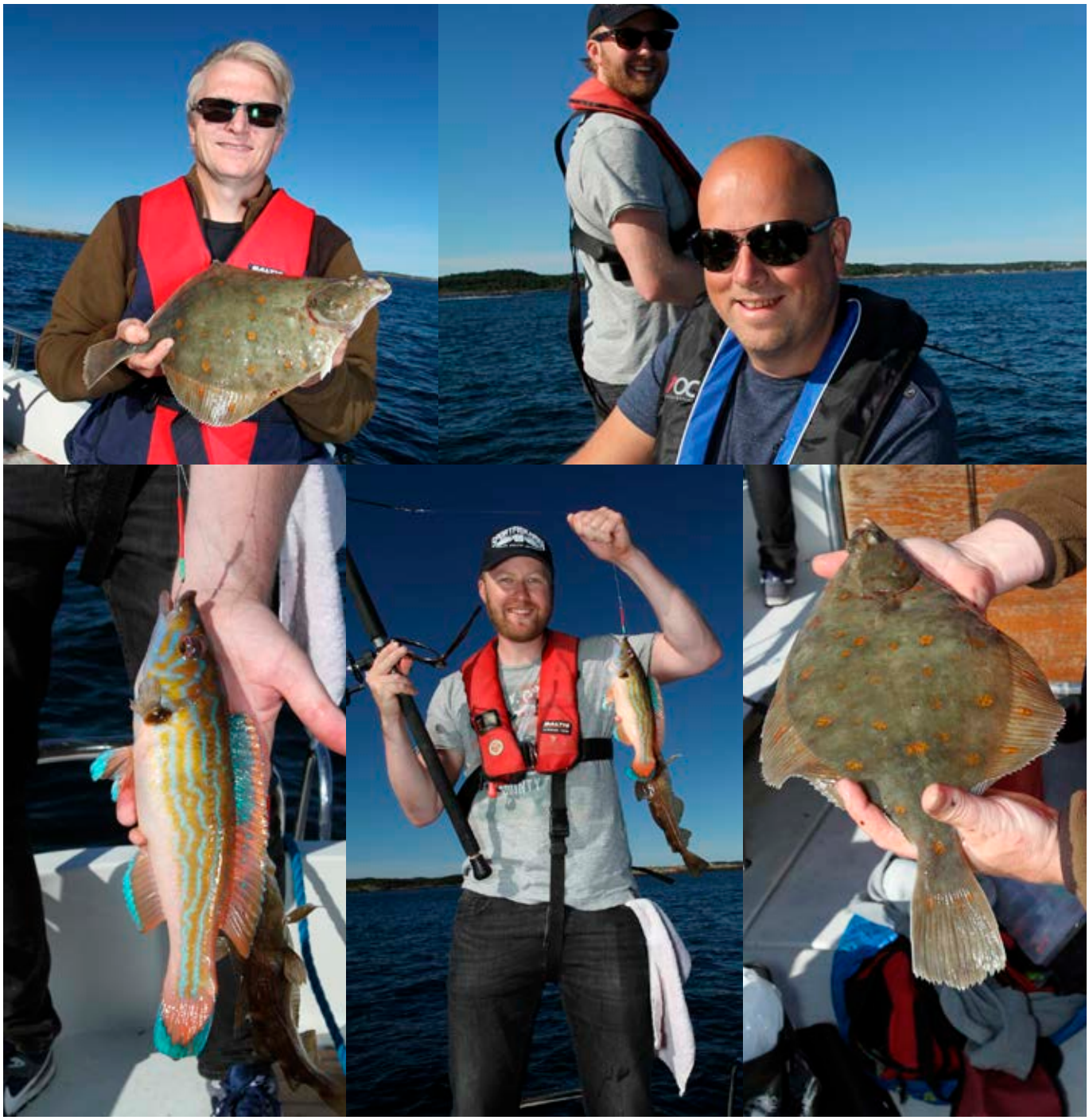
Thank you – The Nordic Way Forward

Orri Vigfússon, Jasper Pääkkönen and Hannu Lehtonen; generations proudly working together for the Nordic recreational fisheries. US Embassy hosting the WS Closing ceremony.

Thank you for all participants & Nordic Council of Ministers Working Group for Fisheries Collaboration, AG-Fisk for funding the workshop. Dearest thanks for US Embassy for hosting WS closing ceremony. Special thanks to North American keynote speakers Sabrina Lovell, Robert Hughes and Jakob Brownscombe as well as European colleagues Kieran Hyder and Bernd Übershaer. Also, thank you Henrik Kettunen for stunning photos and Jani Laitinen for videos.

Recreational fisheries in the Nordic Countries

Report from the 2015 Nordic Recreational Fishing Workshop in Arendal, Norway



Fishing session in Lillesand, Norway. Photo: Tommy Egra

Attending the workshop

Organizer and moderator: Alf Ring Kleiven

The workshop participants represented:

DTU-Aqua	Denmark
Danmarks Sportsfiskerforbund	Denmark
CEFAS	Great Britain
Natural Resources Institute	Finland
Metsähallitus (Finnish Park and Forest Services)	Finland
Center of Economic Developement, Transport and Env.	Finland
Greenlandic Ministry of Industry, Labour and Trade	Greenland
Institute of Marine Research	Norway
Akvaplan-NIVA	Norway
NINA	Norway
Directorate of Fisheries	Norway
Scanatura/iNatur	Norway
Swedish University of Agricultural Sciences	Sweden
Lunds University	Sweden
Swedish Board of Agriculture	Sweden
Swedish Anglers Association	Sweden

Summary

An important aim of the workshop was to get an overview of status of recreational fisheries in the respective Nordic countries when it comes to management regulations and activities, and availability of national data on number of fishers/effort, catches and socio-economics.

Even though the numbers are of varying quality, it is a general trend that the Nordic countries have a high participation rate in the population compared to the rest of the western world. A high participation rate has a potential higher impact on both fish stocks and the economy. However, it is clear that the knowledge about the biological and socio-economic impacts are scarce. Norway, which has an expected participation rate around 40 %, does not conduct any national monitoring of effort, catches nor socio-economic impacts. Sweden, Finland and Denmark conducts annual or bi-annual surveys on effort and catches. However, the budgets are low and potential biases can be high. In Greenland, recreational fisheries are dominated by subsistence fishing, which is not monitored.

The scientific quality of the data is not considered to be at a level where it is needed for conducting targeted management actions and to be used in stock assessments. Further, due to the high participation rate, it is expected that recreational fisheries have a high socio-economic impact in the Nordic countries. However, the lack of high quality data prohibits management, NGOs and businesses to take well-informed actions for future management and development of the recreational fishing sector in the Nordic countries.

Monitoring of recreational fisheries is a challenging task and the participants on the workshop agreed for a collaborative effort to build up more expertise in the Nordic countries. To do so, the partners will work for establishing a Nordic center of recreational fisheries research, focusing on education, research and knowledge sharing. As a first step the group will work to establish a virtual center to share experiences and education opportunities in the Nordic countries. Further, the group aims to apply for research funding to develop methodology and increase the knowledge base of recreational fisheries in the Nordic countries.

Sweden has implemented a strategy for recreational and tourism fishing for 2020, including visions and aims, in collaboration with both inland and marine interests. The workshop group recommend management authorities in all Nordic countries to implement a strategy for recreational fisheries in collaboration with scientists, NGOs and business interests.

Summary of recommendations

1. Participation rate in recreational fisheries in the Nordic countries is one of the highest in the western world with expected significant impacts on stock and importance for the economy.
2. Lack of high quality scientific data prohibits targeted management actions and a sustainable development of the recreational fishing sector in the Nordic countries
3. The Nordic countries share common challenges and it is an aim to collaboratively:
    i. Establish a Nordic center for research on recreational fisheries
    ii. Seek funding for a research grant to develop survey tools and to estimate effort, catches and socio-economic impacts of recreational fisheries in the Nordic countries.
4. All Nordic countries should seek to implement a future strategy for recreational fisheries.

Table of content

About the workshop

This is a report from the 2nd workshop on recreational fisheries in the Nordic countries, held in Arendal, Norway, from August 12th-13th 2015. The workshop gathered scientists, managers, NGOs and businesses from Denmark, Finland, Greenland, Norway and Sweden to assess how best to realize the potential of the recreational fishing in the Nordic countries.

The workshop was held between August 12-14, 2015. This was at the same time and place as "Arendalsuka", a large Norwegian political gathering. The workshop was opened with a field trip with focus on specimen fishing in Lillesand municipality. This included testing report systems including mobile applications. A welcoming session was held at Lillesand city Hall by the mayor of Lillesand, Arne Thomassen. Fishing guide, Tommy Egra, held a presentation about specimen fishing and fishing opportunities in Norway.

The official opening of the workshop was held August 13th. Member of Norwegian Parliament and leader of the committee for energy and environment, Ola Elvestuen, held an introduction and was presented an overview of recreational fisheries in Europe (by invited speaker, Kieran Hyder, CEFAS, England) and Norway (presented by Alf Ring Kleiven, Institute of Marine Research).

The overall aim of the workshop series was to bring the angling community, NGOs, business, management and international research communities together to assess how best to realize the potential of the recreational fishing in Nordic countries.

An important aim of the 2015 workshop was to get an overall overview of status of recreational fisheries in the respective Nordic countries when it comes to management regulations and activities in the country, and availability of national data on number of fishers/effort, catches and socio-economics.

There were 28 participants (Denmark: 5, Finland: 4, Greenland: 1, Sweden: 6, England: 1 and Norway: 11). We were not able to get any representatives from Iceland to the workshop. There were participants from different fields (scientists: 16, Fishing NGOs: 5, management: 7, business sector: 1).

The workshop attracted media attention and was covered by:

NRK Sørlandet
https://www.nrk.no/sorlandet/na-skal-forskerne-kartlegge-fritidsfisket-1.12495802

Fiskeribladet
https://fiskeribladet.no/nyheter/?artikkel=42153

Nynorsk Pressekontor (published in Nationen and local newspapers)

Introduction

Nordic countries have strong foundation on recreational fishing as the participation rate in this activity is much higher in Nordic countries than the rest of Europe and globally. From this baseline, it is possible to target increasing public welfare, health, green growth, and tourism, from recreational fishing and water-based ecosystem services.

Nordic countries collaborated to estimate the economic value of recreational fishing from 1998 to 2000 (TemaNord 2000:604). In 1999 there were 5.4 million recreational fishers in Nordic countries (Age group 18-64) with a total 77 million fishing days (mean number of annual fishing days for occasional anglers was 8 days, sport fishers 16 days and subsistence fishers 25 days). This is high in comparison with days fished per year in other European countries (e.g. UK), but it is likely that participation, activity, catch, value, social benefits, and motivation has changed in the last 15 years.

These data are needed in order to make value based judgements on how to best to manage fisheries and deliver sustainable exploitation. It will also ensure that the needs of recreational fisheries are taken into account alongside other uses of the aquatic environment, allowing development and growth in recreational fishing to occur. In fact, one outcome of 2014 Nordic recreational fishing workshop was the need to collect scientific high quality data on participation, effort, catch, social benefits, and economic value of the recreational fishing sector.

For these reasons, the 2015 workshop focused on developing cross-organisational buy-in to evidence collection and use to support development of recreational fishing in the Nordic countries.

Internet and web2.0 technologies along with citizen science are new opportunities to collect recreational fishing data via smart phones and tablets. The use of new technology is high in the Nordic countries. The potential to use new technology to collect data has to be tailored with high scientific standards on survey methodology and data quality. The workshop will look at these opportunities and the potential future collaboration between scientists, recreational fishers and technology businesses.

Country reports

Every country presented an update of their recreational fisheries based on the following list:

1. Brief overview of the recreational fishing **regulations and activities** in the country:
    a. Fresh water and marine
    b. Who manage these environments?
2. Are there available **national data on number of fishers/effort** for freshwater and marine recreational fishing? ?
    b. What is the estimate?
    c. What are the main challenges?
    d. If no: Why are there no data available?
3. Are there available **national data for catches** for freshwater and marine recreational fishing?
    a. How are they collected?
    b. What is the estimate?
    c. What are the main challenges?
    d. If no: Why are there no data available?
4. Are there any available **national data on the socio-economic value** of recreational fisheries in the country?
    a. How are they collected
    b. What is the estimate?
    c. If no: why are the data not available?
5. Is there a **public/political/management discussions** concerning data collection in recreational fisheries in the country?
6. Present a **1–2 case studies** (at least 1 inland and 1 marine) illustrating recreational fisheries and data collection in your country.

Denmark

By Christian Skov, Hans Jakob Olesen, Finn Sivebæk and Josianne Støttrup. DTU Aqua.

Regulations and fishing activities

Denmark has a high variety of fishing opportunities with 9,000 lakes and ponds, 64,000 kilometers of rivers and streams and a 7,300 km shoreline covering the North Sea, Skagerrak, the Belt Seas and the Baltic Sea. The responsible Ministry for both inland and ocean fisheries in Denmark is the Ministry of Environment and Food. Fishing rights in freshwater are private, public and owned by fishing clubs. Recreational fishing in the sea is public. There are two distinct types of recreational fishers in Denmark; 1) Angling with reel and rod and 2) Passive gear fishing such as hook, line, nets and traps. In addition, also underwater fishing i.e. spearfishing seems to grow in importance. There are several angling associations and two major passive gear-fishing associations in Denmark. However, the two largest organizations are "Danmarks Sportsfiskerforbund" and "Dansk Amatørfiskerforening". There are many hundred local fishing clubs covering both angling and passive gear fishing.

National data on fishing effort and catch

Denmark has a national fishing license register. Annually, about 195,000 persons purchase an angling license (allowed to fish with rod and reel) and about 30,000 purchase a passive gear-fishing permit. The majority of the latter group fish in fjords and along the coast. However, the number of fishing license holders does not reflect the actual number of anglers/fishers. The license for angling is restricted to the age group between 18 to 65 years, landowners do not need a license and neither do anglers fishing in put & take fishing ponds. The license for passive gear fishing is compulsory for any person older than 12 years of age. In addition, illegal fishing does occur. Effort estimates have therefore been obtained from socio-economic surveys conducted in 1997 (Bohn and Roth, 1997) and 2008 (Ministry of food, Agriculture and Fisheries, 2010) or from national statistics surveys conducted biannually since 2010 (Sparrevohn & Storr-Paulsen, 2012). Based on these studies it is expected that there are around 500,000 (9-10 % of the population) anglers in Denmark, of which less than 50 % hold a license.

On average a Danish angler undertakes 10 fishing trips according to the Ministry of Food, Agriculture and Fisheries of Denmark (2010) or 9.4 fishing trips for legal anglers (79% of all anglers) and 3.6 fishing trips for illegal anglers (21% of all anglers) (Sparrevohn & Storr-Paulsen, 2012). Altogether, it is estimated that Danish anglers conduct around 4.5 million fishing trips per year. Due to the high number of fishers without licenses, the license frame cannot be used to estimate effort and catches.

To obtain information about the catches of eel, cod and seatrout, a recall internet survey constructed by DTU Aqua is carried out on a biannual basis by Statistics Denmark. The surveys are conducted to be able to estimate catch and effort mainly of species within the data collection framework (REF). The survey targets passive gear anglers and anglers

with a valid annual license. The survey questionnaires contain detailed questions on species harvested, numbers released and fishing effort within the last six months for eel, cod and sea trout. The information is provided pr. quarter and for areas corresponding to ICES management areas (Sparrevohn & Storr-Paulsen, 2010; 2011a; 2012; Olesen & Storr-Paulsen, 2015). Eel and cod have been monitored since 2009, seatrout since 2010, sharks were included in 2014 and pike in 2015. In 2009, it was estimated that 1231 tons of cod were harvested by the recreational fisheries, which constituted 4.8 % of the entire Danish cod yield. In certain areas the recreational harvest of cod accounted for >30% of the total yield in that area. Eighty one percent of the cod was taken by anglers, 19 % by passive gear anglers. Total recreational harvest of eel in 2009 was 104 tons (19% of total Danish eel yield) and was almost exclusively caught with passive gear. The inclusion of harvest taken by fishers without a valid license was important and added almost 20% to the estimated harvest.

Catch and release rates by anglers in Danish waters can be high. For cod and sea trout, the release rates were estimated to 61 % and 70 % respectively (Sparrevohn & Storr-Paulsen, 2012). For pike, the release rate has been estimated to be more than 80 % (Jansen et al, 2013)

Socioeconomics

An economic validation of the recreational fishery emphasizes its importance in Denmark, as the willingness to pay for fishing is among the highest in Nordic countries (Roth et al., 2001; Toivonen et al., 2004). Apart for some exceptions mentioned above all anglers- domestic as well as tourists - between 18 and 65 years of age have to buy a license costing 19 € for one year, 13 € for one week and 5 € for one day. All passive gear fishers have to pay a license costing 37 € per year and you are not allowed to fish before the age of 12.

A web panel survey including 1500 respondents was used to establish the direct and indirect economic impact of angling in 2008. This amounted to 388,536,824 Euro (2,900,000,000 DKR), and 147,376,037 Euro (1,100,000,000 DKR) respectively after excluding taxes and leakages) and resulted in employment of 2,473 people (Ministry of Food, Agriculture and Fisheries of Denmark, 2010). In comparison, the recreational golf sport (in 2006) and the fitness industry (in 2008) had economic impacts of 2,500,000,000 DKR and 1,500,000,000 DKR, respectively (Jacobsen, 2010).

The web panel survey concluded that an average Danish angler spends 543 Euro (4,051 DKR) pr. year, but there were huge variations between angler types and angling location, i.e. specialized sea anglers (trolling fishermen) most often fishing for salmon, spend on average 3,349 Euro (25,000 DKR) pr. year. (Ministry of Food, Agriculture and Fisheries of Denmark, 2010).

Recreational angling tourists had in 2008 an economic impact of 376,000,000 DKR (253,000,000 DKR, excluding taxes and leakages) (Ministry of Food, Agriculture and Fisheries of Denmark, 2010): Note that this survey does not distinguish between tourists fishing in freshwater or in seawater, but assumes that tourist anglers display similar behavior as Danish anglers.

Finland

Regulations and fishing activities

The recreational fisheries in Finland are managed through the “Fisheries Act of 1982” A new act will come into force in 2016 with inclusion of social aspects. The new Fisheries Act highlights sustainability and the need of knowledge-based management. Ownership and boundaries of waters are often complicated, which has contributed to the complexity of the Fisheries Act, especially concerning administration of the fisheries in private waters. This field of legislation crosses the borderline between public law and private law. Joint ownership of private fishing waters peculiar to Finland.

The main administrative regulator is the Ministry of Agriculture and Forestry. Regional authorities comprise of three Employments and Economic Development Centers (ELY-Center). A statutory fisheries association represents the owners of fishing rights (joint ownership) and is the management unit in charge. These have joined to form geographically much larger fisheries regions management units (organizations for co-operation), which may stipulate bylaws and regulate fisheries. In addition to owners, both recreational and commercial fishers' organizations are members of this body. In the whole country, there are 225 fisheries regions and 10,000 statutory fisheries associations. State-owned public water areas are presently managed by fisheries regions and since the beginning of 2016 by Metsähallitus (The National Board of Forestry). In coastal waters there are privately owned and managed areas near inner coast. Further away towards open sea there exist state-owned public waters, which are managed by public authorities. However, fisheries regions management units cover also inner coastal private waters.

National data on fishing effort and catch

The Natural Resources Institute Finland (LUKE) is responsible for the data collection for recreational fishery statistics at a national level. The data collection is based on the" Population information system of Finland". A household (people living at the same address) is the primary sampling unit and sampling method is stratified sampling through 6 stratum. 6000 households are contacted every other year, including both inland and coastal fishing. The survey is a postal questionnaire and it is conducted with three contacts to follow up no-response. The last survey was conducted concerning the year 2014 in which nearly 1.6 million people were estimated to have fished, representing ca 30 % of the population. Fresh water fishing is dominating in Finland with about 1.2 million fishers, while about 0.3 million fished in the coastal area. Compared to previous years, the participation rate is slightly increasing after many years with decreasing development. It was estimated in 2012 that Finnish recreational anglers conducted 16 million fishing trips. The most popular gears are gill net, trap net and spinning rod for fresh water, while in the coastal area spinning rod, gill net, and hook & line are the most popular gear. Total catch was estimated to be nearly 29 million kilo. Most caught species (in weight) in fresh water were perch, pike and pike-perch. In the coastal fishery, perch, pike, pike-perch and Baltic herring were the most common catches by weight. In addition, local studies for different specific purposes, for example fishing in salmon rivers, are conducted. These studies can serve fisheries management or be data collection for estimating the effects of operator on fish and fisheries.

Finnish data can be found at:
http://stat.luke.fi/en/recreational-fishing-2014_en

Challenges in estimating catches

There is no existing register of anglers in Finland, making surveys more complicated. For example, fishing with hook and line does not need any license and anglers under 18 or over 65 years are not obligated to pay fisheries management fee. The response rates of the postal questionnaires have nowadays been under 50 %, which is considered low.

Moreover, less than a half of the responded households had been fishing. The sample size is therefore considered to be small, especially in cases when scaling the results down to regional levels or less abundant species (which might be of concern). This affects high confidence intervals and degrades the feasibility of data.

Socio-economic values

Statistics on recreational fishing forms the basic data: number of anglers, age, sex, residence, fishing days, fishing area as well as catches by species, gear and for human consumption.

In a few case studies (1996, 1999, 2006) the expenditure to recreational fishing hobby (excl. long-lasting items) has been studied. It is estimated, that each fisherman spend about 200 Euro per year for the hobby (Eskelinen et al. 2013) and that the value of one fishing day is between 6.3–19 Euro (Vesterinen et al. 2010.). On account of 16 million fishing days and about 1.5 million anglers in 2012, a coarse estimate of the economic value of the Finnish recreational fishery is about 200 million Euro per year. In the state-owned waters, the impact of fishing license holders personal expenditure on regional economics was estimated to be 9.3 million Euro in 2013 (Zimoch et al. 2014). In northern salmon rivers, a fishing tourist spent 550–1200 Euros per fishing trip (Eskelinen et al.2013). For the governmental sector, fisheries management fees totals about 9 million Euro annually to the state, the funds are reallocated to the fisheries sector.

Greenland

With 56.000 inhabitants over a vast area spreading over 7.600 settlements there are many fishing opportunities in Greenland. Fishing is the most important primary industry in the country and 90 % of the catches are exported. The industry employs 14 % of the population. Mainly, except commercial fishing, subsistence fishing is dominating where fish is a primary food source and catches are distributed in-kind. Therefore, recreational fishing as we know it from the other countries is quite small. There are no data collection of the catches in the subsistence fishery. The catches are either distributed within families and friends or sold through informal channels.

There are no property rights in Greenland, which means that everyone can fish wherever they want. However, foreigners need a license to go fishing. In 2014, 328 fishing licenses were sold. However, groups are not visible in the license data and it is therefore not data on total foreign tourist fishers. Most of the foreign tourist fishing activities are catch and release. It has been a challenge for the tourist industry to not be able to give exclusive fishing rights for tourist operators. This means that people paying for fishing may experience that the riverside can be crowded with other fishers. This makes it difficult for tourism operators to sell exclusive fishing trips. In 2012, a new act was introduced:

"Concession for the tourism industry". This makes it possible for tourist industry to gain exclusive right to sell a product to foreigners within a geographically defined area. This sets a framework for long-term development objectives. The intended benefits are:

- Security for long-term investments, such as houses, camps, etc.
- Possible to attract foreign investors
- Incentives to keep areas clean and secure environmental protection
- Better product and experiences for guests
- Increased job opportunities for locals

The Greenland government is now in a process together with the local stakeholders. The concessions for recreational fishing for arctic char in Qeqqata Municipality are soon to be entered. When this is done, it is an aim to improve the data collection from the recreational fishery.

Norway

Regulations and fishing activities

Recreational fisheries in Norway are conducted in rivers, inland waters and marine. For anadromous fisheries in rivers and waters, responsible ministry is Ministry of Climate and Environment and their Directorate of Environment. Spawning targets are the basis of salmon fisheries management and is established for 439 rivers. Assessment of management target attainment for 187 rivers (98 % of total river catch). Catch advice is given in five categories depending on the assessed average probability for management target attainment. Local owners have some freedom in management adjustments. For anadromous fisheries in the marine system, there are no license requirements and no catch reporting systems. However, there are general regulations such as minimum landing size. The same Ministry and Directorate are responsible for the non-anadromous lakes and rivers. Here are regulations mainly based on local scale (eg. Season, MLS, bag limits etc.) and catch data collection is varying between management units.

Marine recreational fishing is managed by the Ministry of Trade, Industry and Fisheries and Directorate of Fisheries. There is no licensing system and no data collection on effort and catches. A domestic recreational fisher is allowed to use a wide variety of gear: Rod & line, one jigging machine, gillnet up to 210 m length, longline up to 300 hooks, 20 pots or fyke nets. Allowed to sell for up to 50 000 NOK. A non-resident recreational fisher can only use handheld tackle, has an export limit of 15 kilos and cannot sell the catch. There is no national registry for businesses arranging tourism fishing.

National data on effort and catches

For anadromous fisheries, there is a licensing system in place. Fishers are obliged to report their catches. Salmon is a high priority species in Norwegian management. There are landing statistics from all registered national salmon rivers. It is estimated that 100–110,000 fishers participated in the salmon river fishery in 2014. Sea trout fisheries are less monitored.

For general recreational fisheries, the best Norwegian data are Statistics Norway "outdoor recreation survey". For fishing, data has been collected in 1997, 2001, 2004, 2007, 2011 and 2014. This is a 12-month recall survey (Vaage 2015). Recreational fishing in general is a popular activity in Norway and 43 % of the Norwegian adult population informed that they fished in 2014. The participating rate has been decreasing, but due to an increase in population, the number of fishers have been quite stable the latest 20 years. There are many persons that fish both in marine and fresh water systems. Thirty-three percent informed that they had fished in the sea, while 27 % had fished in inland. A survey conducted on children (6-15 years old) in 2013 shows a high participation rate with around 80 % for boys and 70 % for girls.

For anadromous species in rivers, catch data are available for every national registered salmon river based on a license frame and self-reporting system. It was landed 91 789 salmon (283 tons) in the river systems in 2013.

Anadromous species in the sea: No data collection on recreational rod and line landings

Fresh water: Highly variable data collection between regions. No national estimates.

Marine: Only reliable probability based estimate is of organized tourist fishing industry (Vølstad et al. 2011). There is no national monitoring strategy in place for marine recreational fisheries. However, studies from Skagerrak shows that recreational fishers dominate the catches of lobster (Kleiven et al. 2012) and cod in in-shore areas (Kleiven et al. in review).

Challenges in estimating catches

Norway has a high participation rate and large areas to cover both inland and marine. It is a spread population structure and boats are spread out in

small marinas and private docks, making boat ramp surveys unrealistic. Data collection from recreational fisheries (with exception from anadromous rivers) has not been prioritized by management authorities.

Socio-economic values

In 2003, inland fishing license and rental was estimated to be 29 million Euro and additional services 70 million Euro. For salmon fishing the value of fishing licenses and rental was 44 million Euro and additional services was 104 million Euro. (RBL and NSF 2004). For the organized marine tourist-fishing sector, Borch et al. (2011) estimated that for 434 tourist fishing businesses it was a total expenditure of 104 mill Euro. This is the only existing estimates covering marine recreational fisheries.

Sweden

Sweden has a long coastline covering the Skagerrak and the Baltic, which gives many recreational fishing opportunities. In addition, the country has rivers with anadromous species and many small and large lakes where recreational fishing is popular.

Management of fish populations in the sea and in the five biggest lakes is the responsibility of the Swedish Agency for Marine and Water Management. The bulk of remaining inland waters are privately owned and managed. Promoting commercial and recreational fishing is the responsibility of the Swedish Board of Agriculture.

The two agencies work close together in trying to develop and promote long-term sustainable fishing. They host annual meetings with different national stakeholders (the national advisory group) and have launched a joint national strategy for the development of recreational fishing and fishing tourism. In order to follow up on the targets in the national strategy the Swedish Board of Agriculture presents yearly reports in which the stakeholders present in what way they contribute to reaching the targets.

National data on number of fishers / effort

There are no national license systems in place in Sweden. National screening surveys have been performed since 1975 (1990, 1995, 2000, 2005, 2007, 2009, and 2010). However, the surveys have had different objectives and different methods, which make it difficult to combine and compare data and results.

A new national screening survey was conducted in 2013, with a new approach. In total, 10 000 questionnaires are distributed per year. The survey is distributed into 3 waves; January-April (2500), May-August (5000) and September-December (2500). The survey target citizens between 16 and 80 years. The survey cover both fishing method and effort and aims to estimate caught species per fishing technique related to effort and geographic area. The benefits of the new survey are that it is easier to answer, has statistical improvements, different levels of aggregations and includes Catch-Per-Unit-Effort (CPUE). The 2013 survey shows that 1.6 million Swedes were fishing this year (75 % men) spending 13.3 million days of fishing (4.1 million at sea and 9.2 million inland).

The most common species in inland waters were perch, pike, trout and crayfish, and the most common methods were spinning, coarse fishing and trolling.

The Swedish national screening survey will continue on a yearly basis and sample size will be increased. The results will be combined with results from small scale surveys where needed in order to; 1) Prioritize areas and species, 2) Get higher precision and accuracy and 3) to be used in stock assessments.

Socio-economic values

In the 2013 survey of national recreational fishing, total expenditure was estimated to be 530 million Euro (short-term costs: 230 million Euro, long-term investments: 350 million Euro). Another recent estimate is the yearly spending in Swedish sport fishing for salmon, which is estimated to be up to 50 million Euros yearly. The Swedish Board of Agriculture is conducting a national survey for sport fishing entrepreneurs during autumn 2015. Latest available data for this sector are from 2008 and estimated a total revenue of 200 million Euros, employing about 6 600 persons (800 FTE) in a total of up to 2500 enterprises.

Summary of country reports

Recreational fishing is popular in all Nordic countries and can be viewed important for public health, recreation and the economy. The fishing opportunities are extensive covering marine coastal areas, rivers and inland. There are differences in management and law regulations. In general, coastal areas are public, with some exceptions in Finland. However, inland fisheries are owned by both public, regional authorities, clubs/co-operatives and private.

Denmark seems to have come the furthest way in monitoring recreational effort and catches and having license fame can be an advantage in that perspective. However, it is clear that it may be a challenge to use the license system in Denmark as an unbiased sample frame for scientific purposes due to illegal fishing activity and many exceptions

from license requirements. Sweden and Finland conducts national recall surveys on recreational fishing. Sweden has now distributed the surveys in three waves throughout the year, making the recall period shorter (4 months). This is expected to decrease recall bias. However, both for Denmark, Sweden and Finland, the method used for collecting recreational fishing data have potentially many biases, especially when it comes to estimating catches and regional scales. Norway and Greenland does not have national standardized surveys. For Norway, the only national data collected is through the "living conditions" surveys looking at the Norwegian populations outdoor activities. This gives an indication of trend in participation, but has limited possibilities in science and management.

The economic value of recreational fisheries in the Nordic countries are expected to be high. However, the economic value of the fisheries is estimated differently in the countries. Estimated angler spending per year stretches from 543 Euros in Denmark to 200 Euros in Finland. While Denmark estimate that the recreational fishing sector employs around 2500 people, the Swedish estimate is 6600. The Nordic countries are popular for foreign fishing tourists. In Norway, the tourist fishing business has grown continuously the latest decade and it was estimated that among 434 identified tourist fishing businesses (marine fishing), a total expenditure of 104 million Euro.

All countries identify large knowledge gaps in recreational fisheries, and all countries have a long way to go to reach best scientific standard in their recreational fishing surveys. If recreational fishing data should be used in management and stock assessments, it is a need to improve methods and economic effort to reach a higher level of precision.

Recreational fisheries can be viewed as a green economy with a high potential for further development and increased economic revenue. Sweden has in the "vision 2020" stated an aim to double the tourist fishing sector by 2020 and in Norway the marine tourist fishing industry is continuously growing. An economic growth in the recreational and tourism sector is highly dependent on research-based knowledge. It is therefore a need to increase the effort on building up a knowledge base for recreational fishing in the Nordic countries to secure a sustainable fishery and future economic income.

Even though the numbers are of varying quality, it is a general trend that the Nordic countries have a high participation rate in the population compared to the rest of the western world. A high participation rate has a potential higher impact on both fish stock and the economy. However, it is clear that the knowledge about the biological and socio-economic impacts are scarce. Norway, which has an expected participation rate around 40 % does not conduct any national monitoring of effort, catches nor socio-economic impacts. Sweden, Finland and Denmark conducts annual or bi-annual surveys on effort and catches. However, the budgets are low and potential biases can be high.

The scientific quality of the data is not considered to be at a level where it is needed for conducting targeted management actions and to be used in stock assessments. Further, due to the high participation rate, it is expected that recreational fisheries have a high socio-economic impact in the Nordic countries. However, the lack of high quality data prohibits management, NGOs and businesses to take well-informed actions for future management and development of the recreational fishing in the Nordic countries.

Monitoring of recreational fisheries is a challenging task and the participants on the workshop agreed for a collaborative effort to build up more expertise in the Nordic countries. To do so, the partners will work for establishing a Nordic Center of recreational fisheries research, focusing on education, research and knowledge sharing. As a first step, the group will work to establish a virtual Center to share experiences and education opportunities in the Nordic countries. Further, the group aims to apply for research funding to develop methodology and increase the knowledge base of recreational fisheries in the Nordic countries.

Sweden has implemented a strategy for recreational and tourism fishing for 2020, including visions and aims, in collaboration with both inland and marine interests. The group recommend all Nordic countries to implement a strategy for recreational fisheries in collaboration with management, science, NGOs and business interests.

Carousel working groups

Economic dimensions of recreational fishing in the Nordic countries

Organized by Trude Borch, Akvaplan-NIVA (NO)

As fisheries management is not only about the biological management of fish stocks but also include goals of maximizing the economic impact from utilizing these stocks, economic dimensions are often taken into consideration in:

1. Resolving stakeholder conflict
2. Evaluating trade-offs between recreational fishing and other industries, infrastructure development etc.
3. Deciding on management decision (like allocating quotas to different fisheries groups, e.g. between capture fisheries and tourist fisheries).

Non-market goods, such as most recreational activities, do not have a directly observable price. Hence, indirect methods are applied to estimate value. These include mapping travel costs, and costs of licenses, gear and equipment, to derive revealed preferences (RP). The largest bulk of valuation studies, however, apply various stated preferences (SP) methods to derive the valuation of recreational activities, i.e. ask people about their preferences or the value they attach to recreational fishing. The contingent valuation method involves asking people how much they would be willing to pay for a specific environmental service, like recreational fishing. It is called "contingent" valuation, because people are asked to state their willingness to pay, contingent on a hypothetical scenario. Choice experiments (CE) attempts to model the decision process of an individual in a particular context. Choice modeling may be used to estimate the benefits and costs connected to recreational fishing. Choice cards with different qualities and costs are often used to "tease out" preferences under different scenarios of benefits and costs (one card could be a fishing license of 10 Euro and a bag limit of 2 halibut).

Main issues to be discussed in the group were:

Q1: Which stakeholders ask for studies of socio-economic dimensions of recreational fishing and for what purpose?

Angler associations:

1) Showing the value and importance of recreational fishing
2) Be able to evaluate economic impact of different fisheries regulations
3) Keep municipalities and stakeholders engaged in project/environmental issues.
4) Get mandate to altered legislation
5) To be invited to participate in management

Management:

1) Need of knowledge to be able to allocate fish resources and prioritize management choices.

Science:

1) Need the numbers to argue for fund
2) Need number to raise new research questions

Industry:

1) Tourism industry needs numbers for strategy and advocating

Q2: What are the possibilities and obstacles in your country for collecting socio-economic data?

- Denmark have done five socio-economic studies already and can potentially add questions about economic dimensions in our catch study (recall study). In addition, Denmark has a good registry as well as an increased political/societal focus on recreational fishing
- We would need the numbers per stock – challenging
- The more «social» you get the harder it is to quantify and come up with a number, keep studies simple to be able to come up with reliable numbers
- It is difficult to compare economic dimensions of angling with commercial fisheries
- These are costly surveys and there is the question of who should pay for these
- Collaboration between fishery scientists and social scientists needed
- The fact that rec fishing (marine and freshwater/inland) is divided between different sectors and government agencies in Norway makes it challenging (in total 3 ministries involved)
- Norwegian Association of Hunters and Anglers have performed surveys among their members in collaboration with a research institute (NINA). However, these findings are not representative for the Norwegian population as the members are the more avid anglers. We need numbers towards both government and partners (especially in conflict areas).
- Most countries do not have a registry/list frame
- It is a challenge to identify tourism businesses
- Sweden can collaborate with governmental agencies and for example, do questions about recreational fishing in government panels.

Communication between management, stakeholders and scientists

Organized by Trond Ottemo and Anne Marie Abotnes, Directorate of Fisheries (NO)

Introduction

The subject for this carousel group was communication between management, stakeholders and scientists. The first part of the discussion aimed at giving a short description of the structure of communication and collaboration in the respective countries. The second part focused on the possibility of better formalizing the collaboration and communication between science, management and fishing organizations.

Summary of discussion

The communication and collaboration between science, management and fishing organizations in Denmark, Sweden and Norway was generally described as quite good. There are regular meetings between the parties, although in Norway this mainly apply to the management of inland fisheries, while marine fisheries are discussed between management and fishing organizations in a more ad hoc manner. There are also regular meetings between the parties in Finland, but the communication seems more strained, probably somewhat due to different views on how to distribute fishing rights in privately owned waters. The communication and collaboration in Greenland was described as having a low conflict profile. In all respective countries, the communication is enhanced by digital platforms, including the use of informative websites and newsletters. In Denmark, the collaboration also takes place in certain co-management groups, where all parties are represented. Sweden has a similar arrangement with national advisory groups.

Recommendations

There was a common appreciation of the usefulness of regular meetings between science, management and fishing organizations. Several parties suggested that a way forward to improve communication and collaboration is to increase the frequency of formalized meetings. It was also suggested that scientists should try to meet fishers and fishing organizations more often, in order to establish a common ground for understanding the reasoning behind management considerations.

Apps potential and challenges

Organized by Christian Skov, DTU-Aqua (DK), Kieran Hyder, CEFAS (GB) and Alf Helge Tønnesen, Scanatura/iNatur (NO)

Introduction

Mobile technology used as a vector in citizen science is emerging in many parts of the world. Also within fisheries science there seem to be huge opportunities for engaging recreational fishers in citizen science to further the development of the evidence base for recreational fisheries. In this workshop, we explored this specifically for anglers and angler logbooks, where anglers register their catch and effort as well as relevant supplementary information useful in a fisheries scientific context.

There were two questions in play:

1) What are the opportunities to use citizen science to develop the angling evidence base?
2) How can we make it relevant and interesting for the anglers to use mobile app based angler log books?

App 1

All participants recognized that catch and effort data were essential data that anglers could provide. In addition, a range of different suggestions on potential opportunities for angler apps were given. This related both to relevant additional data that anglers could collect as well as angler apps as a platform for angler/manager interactions. These are listed below in random order.

Additional data

- Environmental information such as water temperature, turbidity etc.
- Fish health-through mobile photos
- Reporting of non-native species
- Predator abundance
- Illegal fishing
- Parasite loads
- Frequency of escaped Salmon in catch
- Sampling depth contours through ecosounding
- Fish size of catch automatized through photo technology
- Reporting of small scale pollution, i.e. education of “environment detectives”

Angler/management interactions

- Education/engagement
- Angler led tagging of fish and subsequent reporting of recaptured tagged fish
- Platform for youth and/or angler education
- Registration of angler health and satisfaction

App 2

A substantial number of suggestions were given on how to motivate anglers to use mobile technology, i.e. telephone apps for reporting catch and effort. These are listed below in a non-prioritized order

- Sharing catches and fishing experiences on social platforms
- Incentives such as prizes/vouchers
- Easy available Information about fisheries regulation, fish cocking recipes, good fishing spots, fish biology, i.e. ssp ID.
- Locality specific information about previous catches and species, good fishing spots, fish health and pollution
- Deposit which is refunded on report
- Easy to use and should work offline
- It could integrate with license purchasing... although there were pros and cons of this.
- Easy to include own data from previously used log books
- Feedback to the angler about collected data preferably analyzed in an appealing way.
- The notion that anglers "can make a difference" in terms of securing future fishing opportunities
- Information feedback should be designed to the interests of the specific angler, which is elucidated upon sign up.

Concluding remarks

The focus in the workshop was on the opportunities rather than the challenges related to mobile technology. Still challenges do indeed exists and a few of these were touched upon at the workshop. For example it needs to be recognized who own the sampled data, is the user or the owner of the app? Also different aspects of compliance were discussed, i.e. how angler compliance will react if the data obtained from the app at some point is used to infer management that restrict the fisheries of involved anglers. Finally it was discussed if the development of mobile technologies were too fast for the developers of apps, i.e. that a lot of technologies available on the telephone fail to be included. No conclusions on these topics were given.

Overall, the workshop was very inspiring and participants showed a huge interest for the topic.

Catch and Release (C&R)

Organized by Keno Ferter, Institute of Marine Research/UiB

Introduction

The practice of C&R is becoming increasingly common in the Nordic countries, both due to regulatory and voluntary reasons (Sparrevohn and Storr-Paulsen, 2012; Ferter et al., 2013; Jansen et al., 2013). While C&R is legal in all Nordic countries, its practice has led to several public debates across Europe (Aas et al., 2002a; Aas et al., 2002b; Arlinghaus, 2007; Arlinghaus, 2008). The main concerns are the potential lethal and sub lethal effects of C&R on the fish. Several studies have shown that the released fish may die, change their behavior, show increased levels of stress hormones, or experience other sub lethal impacts after being released. The degree of impact depends on many factors including, but not limited to, the species, anatomical hooking position, capture depth, water temperature and fighting time (Bartholomew and Bohnsack, 2005; Hühn and Arlinghaus, 2011). However, by following best practice guidelines, anglers are able to minimize unintended negative impacts of C&R (Cooke and Suski, 2005).

During the workshop the following main question were discussed:

1. Is C&R a discussion topic in your country (e.g. animal welfare issues)?
2. Do we have enough data on C&R impacts to generate species-specific guidelines?
3. Are general guidelines useful when no data are available?
4. How should we communicate the information?

Summary of discussion

C&R is an important topic in Denmark, Norway, Sweden, Finland and Greenland, although attitudes towards its practice vary both between and

within countries. In general, C&R rates are very high in all Nordic countries, but vary between species (Sparrevohn and Storr-Paulsen, 2012; Ferter et al., 2013). Moreover, release reasons vary between species and countries. In terms of animal welfare, voluntary C&R is the most controversial and in Denmark, Sweden, and Norway discussions have been coming up in recent years. C&R with respect to animal welfare was also heavily discussed in Finland 10 years ago, and although this is not an issue at the moment, such discussion may fire up at any time. Regulatory C&R is used in all countries, and generally well accepted as long as high post-release survivorship is proven. There is a range of studies on C&R impacts on Nordic fish species, but most of the focus has been on freshwater fish species, e.g. carp (e.g. Rapp et al., 2008; Rapp et al., 2012; Rapp et al., 2014), pike (e.g. Klefoth et al., 2008; Arlinghaus et al., 2009; Stålhammar et al., 2012; Baktoft et al., 2013), Arctic char (Norrgård et al., 2015), and salmon and sea-trout inside rivers (e.g. Booth et al., 1995; Dempson et al., 2002; Thorstad et al., 2003; Halttunen et al., 2010). In terms of marine species, the only available data are on Atlantic cod (Weltersbach and Strehlow, 2013; Mandelman et al., 2014; Ferter et al., 2015a; Ferter et al., 2015b). Ideally, one will have to develop gear-, habitat-, and species-specific guidelines, but in many cases the current knowledge does not allow for such guidelines. In these cases, general guideline should be implemented, e.g. minimizing fighting time and air exposure, using barbless single hooks, and avoiding angling during spawning season (Cooke and Suski, 2005). However, it is important that these guidelines are easy to understand and to follow by all anglers. More advanced guidelines, e.g. the use of release tools, may only be suitable for more advanced anglers at this point. Guidelines could be communicated via different channels (Dedual et al., 2013), but the most efficient may be via the license, TV programs, newspaper and magazine articles, information meetings and dedicated web pages.

Recommendations

As C&R is becoming increasingly common, both in freshwater and in marine waters, studies on the impacts of C&R should be conducted for the relevant Nordic species to develop gear-, habitat-, and species-specific guidelines. If the data for such guidelines are not sufficient, general guidelines should be implemented to minimize negative C&R impacts and promote animal welfare.

References

Aas, Ø., Thailing, C. E., and Ditton, R. B. 2002a. Controversy over catch-and-release recreational fishing in Europe. In Recreational Fisheries: Ecological, Economic and Social Evaluation, pp. 95-106. Ed. by T. J. Pitcher, and C. E. Hollingworth. Blackwell Science, Oxford, UK.

Aas, Ø., Thailing, C. E., and Ditton, R. B. 2002b. The discourse about catch and release in recreational fishing in Europe: implications for North America. American Fisheries Society Symposium, 30: 201-204.

Arlinghaus, R. 2007. Voluntary catch and release can generate conflict within the recreational angling community: a qualitative case study of specialised carp, Cyprinus carpio, angling in Germany. Fisheries Management and Ecology, 14: 161-171.

Arlinghaus, R. 2008. The challenge of ethical angling: the case of C&R and its relation to fish welfare. In Global Challenges in Recreational Fisheries, pp. 223–236. Ed. by Ø. Aas. Blackwell Publishing, Oxford, UK.

Arlinghaus, R., Klefoth, T., Cooke, S. J., Gingerich, A., and Suski, C. 2009. Physiological and behavioural consequences of catch-and-release angling on northern pike (Esox lucius L.). Fisheries Research, 97: 223-233.

Baktoft, H., Aarestrup, K., Berg, S., Boel, M., Jacobsen, L., Koed, A., Pedersen, M. W., et al. 2013. Effects of angling and manual handling on pike behaviour investigated by high-resolution positional telemetry. Fisheries Management and Ecology, 20: 518-525.

Bartholomew, A., and Bohnsack, J. 2005. A review of catch-and-release angling mortality with implications for no-take reserves. Reviews in Fish Biology and Fisheries, 15: 129-154.

Bohn, J. and Roth, E. (1997) Survey on angling in Denmark 1997 – Results and Comments. In: A.-L-Toivonen & Tuumaimem, P. (eds) Socio-Economics of Recreational Fishery. Copenhagen: Nordic Council of Ministers, Temanord 1997, Vol. 604, p.79-88

Booth, R. K., Kieffer, J. D., Tufts, B. L., Davidson, K., and Bielak, A. T. 1995. Effects of late-season catch and release angling on anaerobic metabolism, acid–base status, survival, and gamete viability in wild Atlantic salmon (Salmo salar). Canadian Journal of Fisheries and Aquatic Sciences, 52: 283-290.

Cooke, S., and Suski, C. 2005. Do we need species-specific guidelines for catch-and-release recreational angling to effectively conserve diverse fishery resources? Biodiversity and Conservation, 14: 1195-1209.

Dedual, M., Sague Pla, O., Arlinghaus, R., Clarke, A., Ferter, K., Geertz Hansen, P., Gerdeaux, D., et al. 2013. Communication between scientists, fishery managers and recreational fishers: lessons learned from a comparative analysis of international case studies. Fisheries Management and Ecology, 20: 234-246.

Dempson, J. B., Furey, G., and Bloom, M. 2002. Effects of catch and release angling on Atlantic salmon, Salmo salar L., of the Conne River, Newfoundland. Fisheries Management and Ecology, 9: 139-147.

Eskelinen P. et al. 2013. Vapaa-ajankalatalous Suomessa. RKTL:n työraportteja 6/2013, a review, in Finnish

Ferter, K., Hartmann, K., Kleiven, A. R., Moland, E., and Olsen, E. M. 2015a. Catch-and-release of Atlantic cod (Gadus morhua): post-release behaviour of acoustically pretagged fish in a natural marine environment. Canadian Journal of Fisheries and Aquatic Sciences, 72: 252-261.

Ferter, K., Weltersbach, M. S., Humborstad, O.-B., Fjelldal, P. G., Sambraus, F., Strehlow, H. V., and Vølstad, J. H. 2015b. Dive to survive: effects of capture depth on barotrauma and post-release survival of Atlantic cod (Gadus morhua) in recreational fisheries. ICES Journal of Marine Science: Journal du Conseil, 72: 2467-2481.

Ferter, K., Weltersbach, M. S., Strehlow, H. V., Vølstad, J. H., Alós, J., Arlinghaus, R., Armstrong, M., et al. 2013. Unexpectedly high catch-and-release rates in European marine recreational fisheries: implications for science and management. ICES Journal of Marine Science: Journal du Conseil, 70: 1319-1329.

Halttunen, E., Rikardsen, A. H., Thorstad, E. B., Naesje, T. F., Jensen, J. L. A., and Aas, Ø. 2010. Impact of catch-and-release practices on behavior and mortality of Atlantic salmon (Salmo salar L.) kelts. Fisheries Research, 105: 141-147.

Hühn, D., and Arlinghaus, R. 2011. Determinants of hooking mortality in freshwater recreational fisheries: a quantitative meta-analysis. American Fisheries Society Symposium, 75: 141-170. Jacobsen, L-B., (2010) Lystfiskernes bidrag til dansk økonomi Fødevarøkonomisk Institut, Københavns Universitet. FOI, working paper 2/2010. 35 pp. ISBN 978-87-92087-94-2

Jansen, T., Arlinghaus, R., Als, T. D., and Skov, C. 2013. Voluntary angler logbooks reveal long′ term changes in a lentic pike, Esox lucius, population. Fisheries Management and Ecology, 20: 125-136.

Klefoth, T., Kobler, A., and Arlinghaus, R. 2008. The impact of catch-and-release angling on short-term behaviour and habitat choice of northern pike (Esox lucius). Hydrobiologia, 601: 99-110.

Kleiven AR, Olsen EM, Vølstad JH (2012) Total Catch of a Red-Listed Marine Species Is an Order of Magnitude Higher than Official Data. PLoS ONE 7(2): e31216. doi:10.1371/journal.pone.0031216

Kleiven AR, Fernandez-Chacon A, Nordahl J-H, Moland E, Espeland SH, Knutsen H, Olsen EM. 2016. Harvest pressure on coastal Atlantic cod (Gadus morhua) from recreational fishing relative to commercial fishing assessed from tag-recovery data. PLoS ONE 11(3): e0149595. doi:10.1371/journal.pone.014959

Mandelman, J., Capizzano, C., Hoffman, W., Dean, M., Zemeckis, D., Stettner, M., and Sulikowski, J. 2014. Elucidating post-release mortality and "best capture and handling" methods in sublegal Atlantic cod discarded in Gulf of Maine recreational hook-and-line fisheries. NOAA Fisheries, National Marine Fisheries Service, Office of Sustainable Fisheries, Bycatch Reduction Engineering Program (BREP), 43-51 pp.

Ministry of Food, Agriculture and Fisheries of Denmark. (2010) Lystfiskeri i Danmark. [Online] available from http://fvm.dk/fileadmin/user_upload/FVM.dk/Dokumenter/Servicemenu/Publikationer/Lystfiskeri_i_Danmark.pdf

Norrgård, J., Sandström, A., and Alenius, B. 2015. Release mortality of Arctic char in a trolling fishery. (Orig title: Överlevnad hos återutsatt röding vid trollingfiske.). Report number: 118, Vätternvårdsförbundet, 32 pp.

Olesen, H. J. & Storr-Paulsen M. (2015) Eel, cod and seatrout harvest in Danish recreational fishing during 2012. DTU Aqua report no. 293-2015. National Institute of Aquatic Resources, Technical University of Denmark, 21 pp. + appendices.

Rapp, T., Cooke, S. J., and Arlinghaus, R. 2008. Exploitation of specialised fisheries resources: The importance of hook size in recreational angling for large common carp (Cyprinus carpio L.). Fisheries Research, 94: 79-83.

Rapp, T., Hallermann, J., Cooke, S. J., Hetz, S. K., Wuertz, S., and Arlinghaus, R. 2012. Physiological and behavioural consequences of capture and retention in carp sacks on common carp (Cyprinus carpio L.), with implications for catch-and-release recreational fishing. Fisheries Research, 125: 57-68.

Rapp, T., Hallermann, J., Cooke, S. J., Hetz, S. K., Wuertz, S., and Arlinghaus, R. 2014. Consequences of air exposure on the physiology and behavior of caught-and-released common carp in the laboratory and under natural conditions. North American Journal of Fisheries Management, 34: 232-246.

Rasmussen, G. and Geertz-Hansen, P. (2001) Fisheries management in inland and coastal waters in Denmark from 1987 to 1999. Fisheries Management and Ecology. 8: p.311-322.

Roth, E., Toivonen, A.L., Navrud, S., Bengtsson, B., Gudbergsson, G., Tuunainen, P., Appelblad, H., and Weissglas, G. (2001) Methological, conceptual and sampling practices in the surveying of recreational fisheries in the Nordic countries – experiences of a validation survey. Fisheries Management and Ecology. 8: p.355-367.

Sparrevohn, C.R., Nicolajsen, H., Kristensen, L. and Støttrup, J.G. (2009) Registrering af fangster i de danske kystområder med standardredskaber fra 2005-2007. Nøglefiskerrapporten 2005-2007. DTU Aqua-rapport nr. 205-2009. Charlottenlund. Institut for Akvatiske Ressourcer, Danmarks Tekniske Universitet, 72 p.

Sparrevohn, C. R.; M. Storr-Paulsen 2010. Eel and cod catches in Danish recreational fishing : Survey design and 2009 catches in series: DTU Aqua-report (ISSN: 1395-8216) (ISBN: 978-87-7481-110-7) , pages: 23, 2010, DTU Aqua, Charlottenlund

Sparrevohn C.R. & Storr-Paulsen M. (2011a) Eel, seatrout and cod catches in Danish recreational fishing, survey design and 2010 catches in Danish waters. In series: DTU Aqua Report (ISSN: 1395-8216) (ISBN: 978-87-7481-139-8). DTU Aqua, Charlottenlund. 21 p.

Sparrevohn, C. R., and Storr-Paulsen, M. 2012. Using interview-based recall surveys to estimate cod Gadus morhua and eel Anguilla anguilla harvest in Danish recreational fishing. ICES Journal of Marine Science, 69: 323-330.

Stålhammar, M., Linderfalk, R., Brönmark, C., Arlinghaus, R., and Nilsson, P. A. 2012. The impact of catch-and-release on the foraging behaviour of pike (Esox lucius) when released alone or into groups. Fisheries Research, 125: 51-56.

Swedish strategy for development of recreational fishing and fishing tourism 2020: https://www.havochvatten.se/download/18.2a9b232013c3e8ee03e7c9b/1365145141488/rapport-hav-jv-svenskt-fritidsfiske-fisketurism-2020.pdf

Thorstad, E. B., Naesje, T. F., Fiske, P., and Finstad, B. 2003. Effects of hook and release on Atlantic salmon in the river Alta, Northern Norway. Fisheries Research, 60: 293-307.

Toivonen, A.-L., Roth, E., Navrud, S., Gudbergsson, G., Appelblad, H., Bengtsson, B. and Tuunainen, P. (2004) The economic value of recreational fisheries in the Nordic countries. Fisheries Management and Ecology. 11: p.1-14.

Vaage OD. 2015. Fritidsaktiviteter 1997-2014 Barn og voksnes idrettsaktiviteter, fruluftsliv og kulturaktiviter. Resultater fra Levekårsundersøkelsen (eng: Recreational activities 1997-2014. Sports, outdoor and cultural activites among children and adults. Results from the surveys on living conditions). Statistics Norway, Reports 2015/25, pp. 109.

Vesterinen, J. et al. 2010. Impacts of changes in water quality on recreation behavior and benefits in Finland, Journal of Environmental Management 91:984-994.

Weltersbach, M. S., and Strehlow, H. V. 2013. Dead or alive – estimating post-release mortality of Atlantic cod in the recreational fishery. ICES Journal of Marine Science, 70: 864-872.

Zimoch U. et al. 2014. Metsähallituksen metsästys- ja kalastuslupa-asiakkaiden rahankäytön aluetaloudelliset vaikutukset. Helsingin yliopisto, Ruralia-instituutti, raportteja 132, in Finnish.

Fishing tourism in the Nordic Countries - recommendations for sustainable development

Report from the 2016 Nordic Recreational Fishing Workshop in Jönköping, Sweden

Elite Stora Hotellet, Jönköping, December 2016

Attending the workshop

Organizer: Daniel Melin, Swedish Board of Agriculture

Moderator: Anders Esselin

The workshop participants represented:

DTU AQUA National Institute of Aquatic Resources	Denmark
Fishtrip ApS	Denmark
Korsholm Consulting	Denmark
University of Copenhagen	Denmark
Lystfiskerturisme i Sydlige Østersø	Denmark
Fishing Zealand	Denmark
Havørred Fyn Sekretariatet	Denmark
Danmarks Sportsfiskerforbund	Denmark
Ministry of Environment and Food of Denmark	Denmark
FishBrain AB	Finland
Augur Fishing Services	Finland
Natural Resources Institute	Finland
Fisheries Center of the Tampere Region	Finland
Center for Environment, Fisheries and Aquaculture Sci.	Great Britain
Angling Club Lax-A	Iceland
Institute of Marine Research	Norway
Akvaplan-NIVA	Norway
Norwegian Environment Agency	Norway
Directorate of Fisheries	Norway
European Fishing Tackle Trade Association (EFTTA)	Russia
Swedish Board of Agriculture	Sweden
Fiskejournalen	Sweden
Sveriges Fisketurismföretagare (SeFF)	Sweden
Consultant	Sweden
Sweden Fishing	Sweden
Swedish Agency for Marine and Water Management	Sweden
Swedish University of Agricultural Sciences	Sweden
Swedish Anglers Association	Sweden
County Administrative Board of Jönköping	Sweden
Ministry of Enterprise and Innovation	Sweden
Uppsala University	Sweden
Fishing in Sweden	Sweden
Nordic Anglers community	Sweden

Summary

The focus for the 2016 workshop was to hammer out what is needed to develop sustainable and thriving fishing tourism in the Nordic countries. The recommendations are meant to be useful as guidelines in producing national strategies on recreational fishing and fishing tourism in the Nordic countries.

The most important recommendations for developing sustainable and thriving fishing tourism in the Nordic countries are:

- Fisheries management and conservation should be based on knowledge and scientific data, long term sustainability and aim to optimize the social and economic values of the fish resource.
- The needs of recreational fishing and fishing tourism, such as abundant wild stocks and large individuals of important gamefish species, should be taken into high consideration in fisheries management and conservation.
- Negative influences on fish stocks of importance for recreational fishing and fishing tourism should be pinpointed and measures taken to decrease or eliminate such influences.
- Public interest and participation in recreational fishing should be promoted by introducing children, youth, elderly and immigrants to the sport.
- Marketing of countries and regions as fishing destinations should be funded and coordinated by relevant authorities and executed by expert stakeholders and organizations.
- The role and responsibility of authorities and stakeholders in promoting development of recreational fishing and fishing tourism should be better defined and financed.

Other topics discussed was success factors and drivers for fishing tourism destinations, what the fishing tourism industry needs in order to develop, constraints and challenges in improving and digitalizing the angling industry, general challenges and possibilities for development, socioeconomics of fishing tourism, human dimensions of recreational fishing and its relevance for the angling tourism business. There was also a workshop on establishing a Nordic Recreational Fishing Research Center. Based on the outcome of the workshop it became evident that a research center needs to be multidisciplinary, involving both fishery science and socio-economics.

Putting together the outcomes of both the 2015 and 2016 workshop a few main aims of the center becomes clear:

1. Co-ordinate recreational fishing research on
    a. Fishery impacts; effort and catches
    b. Catch and release; impacts and guidelines
    c. Socio-economics; health, tourism and economic values
2. Develop a Nordic education system for recreational fishing research based on collaboration between countries and institutions.

It seems challenges and possibilities for the fishing tourism sector are similar in most of our countries. These are highlighted in the report.

Table of content

Introduction

Tourism is an increasingly important part of the export industry and fishing tourism has great potential to create jobs and development in rural areas. In 2011, the Swedish government appointed the Swedish Board of Agriculture responsible for promotion of recreational fishing and fishing tourism in Sweden. Since then Sweden has produced and implemented a strategy for recreational and tourism fishing, including visions and targets for 2020. The strategy, which was developed in close collaboration with relevant stakeholders, is an important document in the work towards development of recreational fishing and fishing tourism in Sweden.

During the 2014 and 2015 workshops in Helsinki and Arendal it became evident that most of the challenges and possibilities pinpointed in the Swedish strategy are common for the Nordic countries. Sweden applied to host the 2016 workshop in order to bring NGOs, businesses, policymakers, management, research communities and other relevant stakeholders together to discuss the topic of how to best promote development of long-term sustainable fishing tourism in the Nordic countries.

The main purpose of the workshop was to hammer out recommendations to the Nordic Council of Ministers on what is needed to develop and strengthen the recreational fishing tourism sector. The workshop was held in Jönköping, Sweden on the 8–9 of December 2016. Participating countries were Denmark, Finland, Great Britain, Iceland, Norway and Sweden.

The workshop was comprised of several presentations on relevant topics followed by group and panel discussions. The scope of the presentations are available in the report. At the end of the workshop, specific workshops were held to hammer out common strategic guidelines for development of the fishing tourism sector and to expand on the idea of a Nordic Research Center for recreational fishing and fishing tourism

Presentations from the Jönköping workshop are available at:
http://en.calameo.com/accounts/3567570

Presentations and group discussions

An outlook on recreational fishing, fishing tourism and management from some of the top fishing destinations in the world

Keynote: Martin Falklind, Fiskejournalen (SE)

In his work as a sport fishing journalist, photographer and filmmaker, Martin Falklind has fished his way around the world. During the years, he has visited destinations in different stages of developing a sustainable sports fishing operation. Martin has also documented many destinations way to – or from – being a sustainable and successful fishing destination.

Martin has reflected on what factors that make one destination more successful than another. Despite if the site is in the tropics, in the arctic, on an island or by a river – there are some common key factors to success.

- See the business opportunity, understand the product and the target group
- Cooperate and gain acceptance in the local communities
- Provide competent staff, great service and infrastructure
- Offer a long term sustainable product (cultural and biological)
- Manage the fish stocks in a way that attract anglers

Group discussions

The participants were asked if they agreed with Martins success factors to improve fishing tourism destinations in the Nordic countries and if they had something to add or comment.

One major problem seem to be that we do not see the forest for all the trees. In Sweden, this is referred to as "home blindness". People in the Nordic countries take the abundance of waters and fishing opportunities for granted and by doing so we don´t realize the attraction and value they may hold to potential visitors. If we don´t understand and recognize the value of the resource we will most likely manage it in a non-profitable and possibly ecologically devastating way. This is the case not only on a local scale, but also on a national and international scale. In short, the recreational value of the fish resource need to be better understood by policymakers, politicians, managing agencies, fishing right owners and the public.

This need to change if we want to attract more fishing tourists in the future. In order to do so we need better understanding of what the different target groups want and what they are willing to pay for. Once economic potential and value is better understood "home blindness" will most likely not be a problem anymore. One way of achieving such an understanding could be by pinpointing and show casing good examples of fishing tourism destinations and operators in our own countries.

The target groups vary over the seasons. Spring and autumn tend to attract specialists that are more devoted while the summer season attracts anglers and families who have several purposes to their visit. The winter season is traditionally slow, but there is potential to develop the ice fishing tourism. Target groups can also be expanded. For example videos about Norwegian deep sea fishing has attracted new groups of international anglers to the northern parts of Norway during the last few years.

All participants agreed that this is of crucial importance since the fishing rights often belong to private persons. The fishing right owners must be involved in the fishing tourism development and be able to profit from it. Otherwise, operators and their customers will most likely encounter local resistance, envy and suspicion on arrival. In short, a win-win situation must be established between local fishing right owners and fishing tourism operators for long-term sustainable and profitable fishing tourism to develop.

This win-win situation between operators, fishing right owners and local communities rarely comes easy but is of crucial importance. First, the operator need to show that his or her business is not depleting the fish stock. In other words, strict rules and regulations are necessary. Secondly, the fishing right owners need to understand the economic potential of increased fishing tourism. That way they can charge more for the licenses, limit the maximum number of licenses per day, provide accommodation or sell different services to the fishing tourists. The revenue will give them a strong incentive to provide a great experience to the tourists and manage their waters and fish stocks in a sustainable way.

It´s important to point out the positive economic yield of tourism not only to fishing right owners but also to other stakeholders in the local communities. Hotels, restaurants, bait shops etc. all have a great deal to gain from increased fishing tourism, especially in rural areas. We also need to identify competing sectors and work together with them (ex. hydropower) and perhaps sometimes accept that we might need new species or restock to attract anglers (ex. rainbow trout).

Fishing right owners need to promote the fishing in their waters, raise the prices on fishing licenses and improve management of the fish stocks. That way they can increase the revenue from selling licenses and at the same time attract anglers willing to pay for quality. It is important that the revenue from fishing licenses go to the fishing right owners. It will increase their incentive to provide a good experience to the tourists.

Other issues brought up in the group discussions was poor infrastructure to restaurants and pubs from many great fishing locations, the difficulty to provide the service demanded by the different target groups and the importance of providing opportunities for re-training of locals so that the service skills are made available. The need for an international quality label for sustainable operators/destinations was also briefly discussed. The tourism sector should be in forefront and ahead of legislation in this respect.

Other suggested success factors was to show case good examples, present economic data/proof, facilitate investments, promote marketing and to create international networks for operators and marketing initiatives.

The fishing tourism industry – input from the sector

Keynotes: Per Jobs, SeFF (SE), Rasmus Dahl, Fishtrip ApS (DK) and Erik Herlevi, Augur Fishing Services (FI)

The interest and demand for high-class sport fishing is growing fast. Along with the growth in interest and demand, the fishing tourism industry in the Nordic countries is also growing rapidly and gradually developing into a more mature and professional business. Today, the entrepreneurs who succeed are not merely good anglers; they also have a well-developed sense for service, quality and business.

The purpose of this session was threefold:

- To get a better understanding of the trends in the fishing tourism business in the Nordic countries
- To understand how the fishing tourism entrepreneurs view their business opportunities and constraints for future development
- To find out if those constraints are the same throughout the Nordic countries

The keynotes representing fishing tourism businesses in Sweden, Denmark and Finland talked about their view on constraints and challenges for development of the fishing tourism sector.

FishYourDream - Sustainability, creativity, knowledge and quality of life (Per Jobs)

Per talked about his company FishYourDream and his experiences as CEO of a professional fishing tourism operator. He was asked to list and talk about what he think the fishing tourism industry needs in order to grow and develop in a sustainable and profitable way.

These are Pers major bullet points on what is needed:

1. A stronger and more professional industry.
2. More organized fishing stakeholders. Who is who and who does what?
3. More possibilities for entrepreneurs to exclusive water means refined offers and profit
4. More productive waters, mainly through cleared migration routes (read less hydropower).
5. Coordinated marketing of Sweden as a sport-fishing destination.

Fishtrip ApS - Learnings from a booking platform for angling trips (Rasmus Dahl)

Fishtrip ApS is a booking platform with focus on Nordic angling experiences. Rasmus talked experiences from working with the platform regarding learnings, positive experiences and constraints.

These are Rasmuses view on the largest constraints and challenges in the game of improving and digitalization of the angling industry:

1. Professional outfitters vs. semi-professional outfitters. The automatization of the booking process is hard with semi-professional outfitters. Service, responsibility, lack of communication, etc. The Danish outfitters are in general small and unprofessional.
2. Effects of the sharing economy: Challenge from the peer-to-peer businesses – how does the industry look like in 10 years?
3. Tourists fishing vs anglers. How many tourists can we attract to go fishing? Is it only for the angling nerds or is the fishing in the Nordic countries interesting for the general tourists?
4. Devaluation of the market. Bad Goodwill of the market, with free angling courses making it hard for the real businesses to approach customers.

5. Perception of fishing in the Nordic countries vs. in the US. What is the Big game fishing in the Nordic countries? Do we have the angling to build the businesses? And if we do, how can we improve the marketing?

Augur Fishing Services (Erik Herlevi)

Augur Fishing Services has specialized in providing fishing excursions in the archipelago in the Gulf of Finland to company groups and tourists, such as cruise passengers. Erik talked about the main problems and possibilities in developing fishing tourism in Finland.

Main problems:

- The winter season in Finland is quiet from December to April.
- Pikeperch and seatrout are small due to extensive recreational net fishing.
- Few salmons enter the rivers in Southern Finland. Commercial fishing on the open sea and recreational net fishing are the main reasons.
- The fishing guide companies are small and their resources very limited.

Main possibilities:

- We need to offer additional winter activities aside from fishing such as accommodation, meeting facilities and saunas.
- We need to regulate recreational net fishing in a better way. For example, less nets, bigger mesh size and closed areas in the river mouths.
- We need to build better fish ways in the rivers (like in Kymi River).
- We need more support from the government and EU to develop fishing tourism, not only for traditional commercial fishing.
- We need more cooperation between companies, like marketing together.

Group discussions

The groups were asked to reflect on the presentations and discuss the topics at hand. They were then asked to answer the following questions.

Q1: How can we remove, or better manage, the constraints that hinder the development of the fishing tourism industry in the Nordic countries?

- There is a lack of strong stakeholder organizations. Those who exist should be better organized and speak on behalf of different interest groups.
- We need registers of fishing domestic anglers, fishing tourists and fishing tourism businesses.
- It is important that science and management are highly informed (top notch). The management of the resources and tourism industry should be knowledge based.
- A quality assessment system/certification for nature-based tourism is being developed in Norway. This could be interesting to look at for the other Nordic countries as well.
- We should focus on securing the resources so tourism can grow. Sustainability is the lead word for development.
- We need better understanding of the demography, motivations, willingness to pay and satisfaction of the users.
- Net fishing (recreational and commercial) need to be better regulated in Finland since it is limiting stocks of pikeperch, seatrout and salmon stocks.
- We need good national plans and funding for solving problems with hydropower barriers for fish migration.
- Volunteer activity on river restoration and restoring streaming areas has been active for several years and is important, but we cannot rely on volunteer work alone.
- We need to solve the problem of overfishing! The problem solves itself very slowly as the older generation of commercial and recreational net anglers grows even older.
- We need national decisions on how to best manage our fish stocks. Recreational fishing and fishing tourism should be taken into account in the decision-making.
- Ice fishing is an interesting “off season” product, but since the ice quality varies between years it is difficult to have continuity in ice fishing products. An alternative is fishing in the sea, the great lakes or put and take.
- The authorities should produce guidelines on rules and regulations and highlight good examples where sustainable fishing has resulted in profitable fishing tourism.

- Marketing initiatives should focus on recreational anglers, not people who just come here to enjoy nature.
- We need to focus on regional marketing via EU-funding. The entrepreneurs need to work together and find common ground in terms of marketing. It is important with coordinated funding via the governments in the initial stage.
- Arrange infrastructure to pubs. Access to alcohol is important for many anglers.
- Collaborate with fishing shops and other services. They can increase sales by commissioning fishing trips for the entrepreneur. Local networking is crucial.
- It is important to strive for customer satisfaction and try to meet their needs and requests. This requires sales and service skills that are sometimes not good enough among fishing tourism entrepreneurs today.

Q2: Are the solutions all local and/or national, or can the Nordic countries do something together to remove or manage the constraints?

- Overall problem: How do we get our message about sport fishing tourism across with one voice (policy, lobby work and decision-making)?
- If the Nordic countries could brand themselves as a science based recreational fishing system, it will create international attention and attract tourism interest.
- There are many similar problems in the Nordic countries. We need to take them seriously, stay focused and work together to solve them.
- It is important to document and display all values (economic, health benefits, recreational etc.) connected to recreational fishing and fishing tourism.
- We need to acknowledge that we have many niche-user groups in the Nordic countries. Marketing strategies should therefor vary. Knowledge of customer segments is important in terms of masses, anglers in general and experienced angling tourists.
- The quiet winter season and limited resources of small companies are barriers for development.
- The fishing tourism industry need to work together with big companies who facilitate conferences, meeting rooms etc.
- Increased state funding for taking school kids, troubled kids, families, mental health patients and elderly fishing.
- Tourists like fishing for pike so focus on building pike spawning areas and good fishing spots for pike.
- Tourists find Scandinavia and the Nordic countries interesting and fascinating. We should use our culture, lifestyle and food in marketing and branding fishing tourism on fairs and
- A good start could be to map all fishing tourism entrepreneurs. Norway has come a long way in this respect. Maybe we could hold a Nordic workshop on this topic?
- Lift fishing tourism/angling within the Nordic countries with the help of socioeconomics and common management policies. Implement this together into EUs fishery politics to achieve a change and implement new management models nationally.

Socioeconomics of fishing tourism

Keynotes: Mats Jonsson, consultant (SE), Søren Bøye Olsen, University of Copenhagen (DK), Heidi Pokki, Natural Resources Institute (FI), Trude Borch, Akvaplan-NIVA (NO) and Håkan Carlstrand, Swedish Agency for Marine and Water Management (SE)

Recreational fishing and fishing tourism is one of many different interests in the landscape. To understand trade-offs between different interests and to be able to make appropriate and just decisions, politicians and other decision-makers need to have good knowledge about the economic value and economic impact of different interests.

In this session, five presenters talked about the current state of knowledge and ongoing research regarding the economic value and economic impact of recreational fishing and fishing tourism on a national, regional and local scale.

The presentations was followed by a short panel discussion on what the major knowledge gaps are today regarding economic value and economic impact of fishing tourism and what is needed to close those gaps.

Socioeconomics of fishing tourism in Sweden - valuations and forecasting (Mats Jonsson)

Several estimations have been made of the economic value of fishing tourism and angling in Sweden. However, when researching literature it is apparent

that few Swedish socioeconomic studies of high scientific level have been made that in a more reliable way can define the monetary value in this field. In addition, when it comes to evaluating economic benefits of a future scenario, for example to forecast revenues and jobs from fishing tourism and angling after a dam removal or other restoration efforts, they are even rarer.

So still today, reliable socioeconomic data is hard to find. Consequently, monetary values of fishing tourism and angling are seldom included or respected in decision-making processes or of great help in water management planning. Therefore, Sweden need to invest and put much more efforts in this field, both when it comes to suitable methods for defining and forecasting economic values, but also when it comes to implementation of such tools and values into real decision making processes. Furthermore, it would facilitate the development process if all Swedish stakeholders could reach a consensus of that decisions shall include and respect all costs and benefits of all stakeholders.

Currently a new project, Value in Water, is forming with the aim of establishing a new cost effective and generalizable valuation model for water, with focus on fishing tourism and angling. This project also intends to investigate how public administration and all other stakeholders use such values today, in order to identify gaps and problems in cooperation and decision-making. Finally, the project intend to implement the new valuation model and values into actual water projects and decision-making processes. Since the project, Value in Water could be beneficial for all Nordic countries the members could consider scale it up to a Nordic joint venture.

Fishing for more (angler) tourists, an investigation of German anglers' preferences for angling sites when on vacation in Denmark (Søren Bøye Olsen)

The quality of angling sites is important for attracting tourists who enjoy recreational angling. Aiming to assess which characteristics of angling sites are particularly important for attracting tourist anglers from abroad, we have conducted a survey investigating the preferences of 968 German anglers who have recently been abroad on a holiday trip in which they went angling. The survey focused on the particularly dedicated anglers who state that recreational angling affects their choice of holiday destination.

A choice experiment was employed to investigate their preferences for environmental characteristics, catch opportunities and social aspects as well as travel distance to the angling site. Three distinct segments of German tourist anglers were identified, characterized as "catch oriented" anglers (57 %), "nature oriented" anglers (24 %) and "trophy oriented anglers (19 %)". All three angler segments had strong preferences for water quality. However, they differed with respect to catch preferences and preferences for social interaction on the angling site.

A high catch rate was very important for the "catch oriented", but the size of fish was not important. Moreover, this segment prefered to be rather alone at the angling site. For the "nature oriented", it was very important that the angling takes place in "natural" conditions, but the catch rates were not important. It was though important for them to catch large fish, but they did not mind if a few other anglers were present at the angling site. The "trophy oriented" anglers concentrated on catching large fish, while the catch rate was of moderate importance, and they did not mind if there were many anglers at the site.

To attract tourist anglers, an angling site manager may use this information to target marketing efforts towards segments of tourists that prefer the type and quality of angling characteristics of the angling site in the manager's possession. Additionally, it may be possible to adjust and improve the angling sites e.g. in a municipality so that they suit the preferences of specific segments one is interested in attracting.

Valuing recreational fishing in River Teno with travel cost method (Heidi Pokki)

The economic value of recreational fisheries of salmon in the northern rivers of Finland has been widely recognized, but there is a lack of information on both the value of the catch and the value of the recreational experience. Knowledge of the economic value of the recreational fishing and fishing tourism in Finland is urgently needed in order to assess the social and economic importance of recreational fisheries and fishing tourism and to support the associated management decisions.

Around 9 000 fishing tourist visit The River Teno annually. The River Teno is the most visited river for recreational wild salmon fishing in Finland and the most productive salmon river in a natural state in the Northern Europe. The majority of fishing tourists visit the Teno river area only once per fishing season and stay for several days, a week on average, since the Teno is in the far north and the travel costs from southern Finland are high in terms of money expenses as well as travel time. Few recreational anglers visit the Teno more frequently, while there is considerable variation in the duration of a fishing

trip, making the data heterogeneous and challenging to analyse.

A single site travel cost analysis was performed to estimate the recreational value of the Teno river area in 2011 fishing season. The estimated consumer surplus per fishing trip was found to range from around 200 to 300 euros depending on the model used, while the estimated total recreational value of salmon fishing in the area is estimated to be around three million euros. The findings underline the importance of the proper management of salmon fisheries in supporting the recreational benefits to anglers, and the income from fishing tourism.

Economic dimensions of fishing tourism (Trude Borch)

Trude spoke on:

- Fishing tourism – definitions and variation in type of products on offer
- Fishing tourism markets – what are the motivation for travelling to fish?
- Economic impact study – marine fishing tourism in Norway
- Profitability study – marine fishing tourism enterprises in Northern Norway
- Valuation study – recreational fishing in Northern Norway

More information on Trudes presentation: http://en.calameo.com/read/003567570b09ca0f8519b

Present work with collection of recreational fishing data in Sweden (Håkan Carlstrand)

A new method is since 2013 used to provide national statistics on recreational fisheries in Sweden. A postal questionnaire was sent to 10,000 randomly selected permanent residents in Sweden. The questionnaire was sent out at three occasions during the year with questions regarding fishing activities in the most recent four months.

During 2013, a total of 1.6 million Swedes ages 16–80 went fishing at least once, 1.2 million men and 0.4 million women. In the age group 16–30 years, 0.4 million people went fishing; for those ages 31–50, the total was 0.6 million; and in the age group 51–80 years, 0.6 million.

The total number of fishing days during 2013 was 13.3 million. Of that total, 9.2 million days was conducted in lakes and rivers and 4 million days in the sea.

The number of occasions in which handheld gears was used totaled to 40 million during 2013; the number of occasions in which nets, pots and similar gears was used was 7 million.

In 2013, the retained part of all catches equaled 16,000 tons of which 9,000 tons was caught in rivers and lakes and 7,000 tons in the sea. The most important species for catches in inland fisheries were perch, pike, trout, crayfish and pike-perch. The most important species for catches in sea fisheries were perch, pike, mackerel, trout and herring.

Total expenditures in recreational fisheries are estimated at SEK 5.8 billion of which SEK 2.3 billion was in short-term costs such as fishing equipment, travelling, fishing guides, food and accommodation. Expenditures in long-term investments such as boats and more costly fishing equipment equaled SEK 3.5 billion.

Panel discussion

A short panel discussion followed the presentation where the keynotes was asked to answer questions from the rest of the participants. Unfortunately, there was only time for one question.

Q: What are the two major knowledge gaps regarding value and impact of fishing tourism?

Søren – What the customers want and how to reach them. This differs because customer groups are heterogeneous in terms of what they expect and their willingness to pay.

Mats – Due to the Water Framework Directive hydropower permits might have to revised. What about the economic values from recreational fishing and fishing tourism in relation to these measures? Better knowledge is needed here.

Trude – The sector has low diversification, which is a challenge that need to addressed. There is also need to estimate willingness to pay for different customer groups. In Norway, there is increasing conflicts between aquaculture, seaweed growing and recreational fishing/fishing tourism.

Heidi – More evaluation studies are needed on the value of recreational fishing and fishing tourism.

Håkan – How the resource is managed and used.

Human dimensions of recreational fishing and its relevance for the angling tourism business

Keynote: Øystein Aas, Norwegian Institute for Nature Research - NINA (NO). Presented by Trude Borch (NO) and Christian Skov (DK)

Understanding human dimensions provides business stakeholders, authorities and NGOs with essential insights into how, why and with what outcome people participate in, or consider participating in angling. Specifically, approaches from human dimensions research help us understand the behaviour of people, for instance why they select a brown trout product offered in Iceland and not in Finland, why more anglers nowadays seem more inclined to prefer and support (which is different from accepting) catch and release angling over catch and harvest, or why they chose to participate or not in voluntary river restoration projects.

Both psychological (individual), social (group) and cultural studies and approaches will have important lessons for stakeholders in angling tourism on how to meet current and future demand, and how a dynamic market segmentation approach is needed in order to meet these dynamic and multiple expectations.

This presentation addressed major drivers in explaining megatrends in angling participation and how that affects overall demand. Reasons why angling behaviour and preferences change over time were also addressed and discussed from a multidisciplinary perspective.

The participation in recreational fishing has been in decline since the 1990´s, especially among children and youth. According to Murdock et al. 1996, there are different factors that influence participation.

- Factors that likely will reduce demand: Urbanization, ageing, reduced income/employment.
- Factors that likely will increase demand: Economic growth, more leisure time, improved health.
- Factors that are difficult to assess Globalization and cultural exchange, increased education, climate and ecosystem changes, changing socialization, competing supply of leisure opportunities.

I seems the angling community is in change when it comes to attitude towards wildlife, behaviour, attitudes and preferences. One example is gear use in Norwegian salmon angling, where spinn-fishing and angling with worm has decreased whereas fly-fishing has increased. Another is in Scottish salmon angling where catch and release practice has increased by almost 50 % from 1995 to 2005. According to Arlinghouse et al. 2020, the degree of industrialization influence participation and preferences where a high degree of industrialization seems to lead to preferences toward conservation and fish welfare.

Personal values (related to ideology and personality), norms (informal rules of behaviour within a defined social group), emotions, knowledge and situational factors all influence opinions, beliefs and behaviours towards fish and wildlife.

Take home messages

- Fisheries management is people management.
- Publics influence policy, which influence management.
- Education/interpretation is essential if we want to succeed in changing someone's attitudes or behaviour.
- Understand and respect that the public and stakeholders might have different values, attitudes and norms than wildlife managers and scientists.

Digital infrastructure, information and marketing of recreational fishing and fishing tourism

Keynotes: Adam Johansson, County Administrative Board of Jönköping (SE), Otso Valta, FishBrain AB (FI), Johan Hedin, Sweden Fishing (SE), Gordon P. Henriksen, Fishing Zealand (DK), Jan Kjeldsen, Havørred Fyn, Ismo Kolari, Fisheries Center of the Tampere Region (FI) and Jóhann Davíð Snorrason, Angling Club Lax-A (ISL)

There is room for improvement when it comes to digital infrastructure and information about rules and regulations, fishing licenses, fishing spots etc. The marketing of recreational fishing and fishing tourism in the Nordic countries can also be developed. The question is if this is better done by the individual destinations themselves or if it is important to look at the Nordic region as a whole since the market is global.

In this session, different initiatives and solutions regarding digital infrastructure was highlighted. Good examples and best practice in marketing of fishing tourism was also presented. After the presentations, the audience were given the opportunity to talk and ask questions to the presenters.

Svenska Fiskekartan – A map that shows where to fish in Sweden (Adam Johansson)

Approximately 62 % of recreational fishing in Sweden occurs in private waters. Therefore, the County Administration Board (CAB), together with Swedish Agency for Marine and Water Management (HaV) and Swedish Board of Agriculture want to expand

the website "Svenska Fiskeregler", which informs about rules and regulations for recreational fishing in the five big lakes and the sea, to include information about fishing possibilities in privately owned waters. CAB in Jönköping is in the beginning of the process of developing this system.

The main purposes of Svenska Fiskekartan are:

1. Digitalize the administrative boundaries of "fishing management areas".
2. Provide a website with a map including basic information about fishing waters, where to buy fishing licenses, etc. to the public

The main target group for the information is recreational anglers. The public information will be available as open data to facilitate development of new applications. One major challenge is how to keep the system updated by the help of fishing management area associations. There are approximately 2 000 of them in Sweden. To make this work, our solution is an easy, intuitive system developed for users with limited computer experience. It is also important to find the incentives, which trigger updating, limit the amount of compulsory information and build good functions and routines for reminders.

The register will also play an important role in strengthening the contact between fishing right owners and government agencies, which can be helpful in spreading information about new fishing rules and invasive alien species.

Svenska Fiskeregler (Adam Johansson)

Recreational fishing along the coast and in the five biggest lakes of Sweden is extensive and possesses potential impact on the development of fish stocks. In 2014, the Swedish Agency for Marine and Water Management (HaV) published the results of a survey regarding recreational fishing habits among the public. The survey found that nearly 1.6 million Swedes performed recreational fishing in 2013 and spent around five million fishing days along the coast and in the five biggest lakes that year. In addition, there is a substantial number of visiting foreign tourists who fish during their trip to Sweden.

The "free" fishery in the areas mentioned above is regulated by a complex legal system consisting of a number of laws and regulations. Easy accessible and understandable information about these laws and regulations have previously been lacking, leading to enforcement difficulties. The expectations of service and availability in the form of Internet based services has increased in the latest years.

With reference to the above the website svenskafiskeregler.se where launched in spring 2014. "Svenska Fiskeregler" is today the official public website where the public can read about the rules that apply to recreational fishing in the five biggest lakes and along the entire Swedish coast. The user can search through digital maps of an area of interest and been presented the rules that apply in that particular area.

The primary purpose of "Svenska fiskeregler" is to facilitate the public to find and assimilate information on existing fishing rules. This will ultimately lead to better compliance and a greater understanding of the regulatory objectives. If the compliance is improved, the fishing will be conducted in a socially, sustainable and responsible manner.

Angler needs and digital solutions (Otso Valta)

Basic needs of recreational anglers have not changed. Knowledge of where to go, what to do and how to get a fishing license is still of great importance. Today's digital tools enable better service with a wider reach, for example social medias like Facebook and Facebook marketing, website resources like TakeMeFishing.org and mobile social networks like Fishbrain.

SwedenFishing – book a great fishing trip to Sweden! (Johan Hedin)

The purpose of SwedenFishing is to improve and cultivate Sweden's extraordinary potential in the international fishing tourism sector. The web development of SwedenFishing.com and targeted market selection started in 2010 as a collaborative effort between 23 local areas with the support from the EU Rural Development Program. In 2013, SwedenFishing made the transition from a project to an economic association.

Our vision: Making Sweden the leading destination for sustainable fishing tourism in Europe.

Core values: Sustainable fishing tourism, dedicated hostmanship, quality and competence, marketing and product development.

This is SwedenFishing:

- The website SwedenFishing.com

Website for export of Swedish fishing experiences in 11 different European languages. More than 10 000 downloaded pdf-descriptions each year. Possibility to book directly online

- Priced and bookable fishing experiences

  Product development of fishing experiences from Skåne in the South to Lapland in the North, and a wide range of bookable products for tourist fishing.

- Platform for quality

  A 10-point bullet list to companies who want fishing tourism with environmental and sustainable usage of resources

- Familiarization trips

  Familiarization trips that aim to introduce foreign media and travel agents to our fishing tourism companies.

- Consumer, TO/Agent – Fairs

  So far some 40 turnouts at fairs in Denmark, Poland, Czechia, Italy, France, Germany and Holland. More than 10 000 personal meetings

- Sale visits and roadshows

  Visits to foreign tour operators in Germany, Holland, France, Italy, Czechia and Russia.

- Market analyses and feedback

- Analyses on how to extend and find new seasons. Reports on interesting players as well as other news on the European market. Detailed travel reports exclusively for our members

Fishing Zealand - What works for us (Gordon P. Henriksen)

The goal of the presentation is to give an understanding of some of the main reasons tourism organisations and business sometimes fail when targeting anglers. There is a basic lack of understanding that sports fishing is divided into several different subgroups with very different ways of traveling, different interests and needs, and different behaviour when it comes to planning their fishing trips. The failures are often a result when business and tourism operators work on their own, while the success come when they work close together with fishermen representing the subgroups themselves. This way of working and been a good success for Fishing Zealand and some of the many examples of this will be highlighted.

Seatrout Fyn – a commercial project with an environmental profile (Jan Kjeldsen)

Seatrout Fyn is a combined business-promotion and environmental project with focus on seatrouts on the island of Fyn. The project is a cooperation between ten municipalities, originally started in 1990. The project consists of three main areas of activity:

- stream restoration
- fish stocking
- development of angling tourism

Each year, the ten municipalities of Fyn invest a total of DKK 4.2 million in Sea Trout Fyn. The project produces improved environmental conditions in the watercourses, more fish and an increase in turnover in the local economy, thus producing additional tax revenues that approximately offset the municipalities' contributions to Sea Trout Fyn.

Key figures from the 2013 assessment:

- 38 full time equivalents created
- Local turnover of DKK 50–58 million
- At least 55,000 overnight stays by tourists visiting to angle for sea trout

The tourism objectives are to increase turnover and create more jobs. Focus areas:

- To focus more strongly on existing markets for the established target group of tourists
- To encourage collaboration with committed commercial players who will tailor their offering to tourists who come to angle for sea trout.
- By means of collaboration, to enhance the quality of products, services and facilities tailored to the target group of tourists
- To gather knowledge of the target group of tourists who have not yet visited the destination
- To disseminate results and effects

The marketing objectives are followed up by www.SeaTrout.dk, own books and magazines, PR-films about the fishing, press trips, articles, reviews, own YouTube-channel and Instagram. In 2017 eight professional films will be published about SeaTrout Fyn.

Finally, we are participating in an EU project "Fish Trail" together with five partners from Slovenia, Portugal, UK and Ireland. The project aims to break down barriers to transnational angling tourism. Barriers could be language, different and varied fishing licence and permission requests and lack of knowledge due to poor communication and promotion.

Marketing of Finland as a fishing tourism destination (Ismo Kolari)

The Finnish fishing tourism industry has developed considerably in the last 20 years. For many entrepreneurs, domestic companies and travellers are the most important clients. Operators of the industry are marketing their services for potential customers depending on the resources they have. Enterprises are typically small and marketing resources - money, time, physical - are limited. Partners, such as local, provincial and national travel organizations, projects and other travel enterprises and networks, have helped fishing entrepreneurs to achieve more visibility.

Clients that are coming from other countries are crucial and form the major client segment for several enterprises. The Fishing tourism sector has done international marketing by participating in fishing and travel exhibitions and workshops, organizing tours for press and tour operators, producing marketing material and channels (brochures, manuals, videos, webpages and advertisements) and making straight contacts with clients. Digital marketing has become more and more important in the last years.

In the last 20 years, especially in the beginning of millennium, there have been several projects where marketing of fishing tourism has been included; mostly they were regional/provincial projects. Only a few national projects have been carried out; Fishing Finland / Kala-Suomi were executed by Federation of Finnish Fisheries Associations (KKL) some 15–20 years ago. During last years, there have been less concrete activity and just few real fishing tourism projects.

With FIN-FISH I-IV projects (2012–2016), mainly financed by Ministry of Agriculture and Forestry by fishing management fees, the Federation of Finnish Fisheries Associations has built the national fishing tourism portal www.fishinginfinland.fi. Webpages introduce Finland as a diverse fishing destination. Areas, waters, species and fishing methods together with some general information (licences etc.) are presented in 10 different languages. The portal gathers the enterprises of the sector that offer their services for international clients. At the moment, some 90 enterprises are visible at www.fishinginfinland.fi.

Marketing of fishing tourism in Iceland and the market in general (Jóhann Davíð Snorrason)

The market in Iceland is a bit different from the other Nordic countries. All of the high-class rivers in Iceland are privately owned, usually by farmers who own land on which the river flows. It is mandatory for all landowners that own rights to a river to form an organization.

The rights to fish are then leased to the highest bidder who in turn sells licenses. In each river very few rods are allowed, creating a sought after high-end product. Medium and low-end products include lakes, trout fishing and sea angling.

There is no official marketing effort in place by the government or municipalities. All official marketing efforts are based on general impression of Iceland and the nature, no special segmentation in place. Angling is just a small subsector on the official Iceland Tourist site. The marketing of Iceland in general has been very successful and we get a small spill over effect in sales of daytrips and low cost licenses.

The Icelandic market has revenue of over ISK 20 billion (milliard). There are over 20 companies that specialize in fishing tourism, four large ones. Lax-Á angling club is the oldest and largest outfitter.

We divide the market in to three segments: High-end, medium and low cost. Most of our efforts are targeted towards the high-end market from which we get most of our revenue.

The high-end target group consists of very limited group of clients with low renewal rate. The medium and low cost segments consist of local anglers, common tourist (spill over effect) and Scandinavians.

Our marketing efforts are based on a variety of factors. Personal contacts and reliable service are simply one of the most important factors to keep our high-end client base returning. We attend various trade shows abroad mostly seeking renewal of high-end clients. We use a newsletter, which we send out to our large customer base. We use social media (Facebook mostly) in connection with our websites. We have launched a priority club aimed at the local anglers.

Finally yet importantly, our web sales have been growing a lot. We launched a new web shop in 2016 added products and made them available earlier which resulted in 95% increase in sales.

Workshops

Guidelines for strategies on recreational fishing and fishing tourism in the Nordic countries

Keynotes: Daniel Melin, Swedish Board of Agriculture (SE) and Gordon P. Henriksen, Fishing Zealand (DK)

Since 2013, Sweden has a national strategy for development of recreational fishing and fishing tourism. It has proven very valuable in the efforts to

strengthen the sector. This workshop aims to discuss and reflect on the targets in that strategy and produce recommendations on the most important factors for development and strengthening of the fishing tourism sector in all Nordic countries.

Gordon started by talking about Danish success stories and failures for sustainable fishing tourism. His main conclusion was that is crucial that marketing of fishing tourism products are done by or in close collaboration with people who know the incentives of the different customer groups. He also pointed out that it is very effective to use digital social media in marketing campaigns. Daniel then talked about the targets in the Swedish strategy and their importance in highlighting, strengthening and developing the fishing tourism sector in Sweden.

The particpants went through a workshop and have reached consensus. The following recommendations are supported by most of the participants in the workshop (see complete list below).

The most important considerations to be taken to ensure a sustainable and thriving fishing tourism in the Nordic countries are:

1. Fisheries management and conservation should be based on knowledge and scientific data, long term sustainability and aim to optimize the social and economic values of the fish resource.
2. The needs of recreational fishing and fishing tourism, such as abundant wild stocks and large individuals of important gamefish species, should be taken into high consideration in fisheries management and conservation.
3. Negative influences on fish stocks of importance for recreational fishing and fishing tourism should be pinpointed and measures taken to decrease or eliminate such influences.
4. Public interest and participation in recreational fishing should be promoted by introducing children, youth, elderly and immigrants to the sport.
5. Marketing of countries and regions as fishing destinations should be funded and coordinated by relevant authorities and executed by expert stakeholders and organizations.
6. The role and responsibility of authorities and stakeholders in promoting development of recreational fishing and fishing tourism should be better defined and financed.

The following stakeholders and organizations participating in the workshop has ratified the recommendations:

Fishing Zealand, Denmark

Department of Food and Resource Economics, Denmark

Otso Valta (consultant), Finland

Danmarks Sportsfiskerforbund, Denmark

Swedish University of Agricultural Sciences, Department of Aquatic Resources, Sweden

Havørred Fyn Sekretariatet, Denmark

Havforskningsinstituttet, Norway (not 4, 5 and 6 due to lack of mandate)

Uppsala University, Sweden

Korsholm Consult, Denmark

Mats Jonsson (consultant), Sweden

Fisheries Center of the Tampere Region, Finland

Sportfiskarna, Sverige

Lystfiskerturisme i Sydlige Østersø, Denmark

Natural Resource Instituite, Finland

Norwegian Environment Agency, Norway

Niels Lagergaard Pedersen, Denmark

Fiskejournalen, Sweden

The Norwegian Institute for Nature Research, Norway

Institut for Akvatiske Ressourcer (DTU Aqua), Denmark

The County Adminstrative Boards of Jönköping, Norrbotten, Östergötland, Skåne, Stockholm and Värmland, Sweden

Akvaplan-niva AS, Norway

Sweden Fishing, Sweden

Follow up on Nordic collaboration and research center

Keynote: Alf Kleiven, Institute of Marine Research (NO)

To follow up the discussions regarding establishing a Nordic Research Center for Recreational Fisheries, a session was organized under the 2016 workshop in Jönköping. Alf Ring Kleiven held a short introduction summing up the outcome from the 2015 workshop and raised the question: What should such a research center focus on?

The participants were divided in 6 groups and challenged to write their ideas on large post-it notes. In the end, all groups worked together to put the different ideas under common headlines.

Education

- Coordination of education, both at a scientific level, i.e. Master courses at University levels, but also education of anglers/layman for example in fish biology, restoration of poor quality water (aquatic stewardship) etc.

Good governance

- Success factors in management (not only fish)
- The Florida case?

Restoration

- Ecological effects of habitat restoration
- River restoration

Sustainable fishing practice

- Joint agreement on sustainable fishing practices

Valuation and impacts

- Socio-economic effects of fishing tourism
- Measuring socio-economic effects of fishing tourism
- Socio-economic value in water valuation and impacts
- Market research

Financial values

- Address the lack of financial values

Implementation

- Implementation of data collection in management

Collaboration

- Bridge gap research / Entrepreneurs

Coordination

- Lack of joint databases and hosting data
- Coordinate research cross national
- Lack of methodological standards
- Harmonization and cooperation: Data collection

Regulations and rules

- Fishers acceptance of and compliance to regulations
- Effectiveness of national vs local fishing rules
- Understanding and acceptance of fishing rules

Social dimensions of fishing

- Social acceptance of fishing tourism

Catch and Release

- Mortality rates
- Best practice guidelines
- Social acceptance

Recreational impact

- Fishing methods effects on recreational fishing quality

Discussion

The workshop had participants from all different sectors involved in recreational fishing (science, management, NGOs, tourist operators etc.). This can explain the high diversity of ideas for aims at a Nordic Recreational Fishing Research Center. Not all points listed are directly researchable and some questions are more broadly linked to ecology and not directly towards recreational fisheries. With that said, it does not mean that the subjects are not relevant for recreational fisheries. However, such scope could be too wide for a research center specializing in recreational fisheries.

Based on the outcome of the workshop it is clear that a research center needs to be multidisciplinary, involving both fishery science and socio-economics. Putting together the outcomes of both the 2015 and 2016 workshop a few main aims of the center becomes clear:

3. Co-ordinate recreational fishing research on
    a. Fishery impacts; effort and catches
    b. Catch and release; impacts and guidelines
    c. Socio-economics; health, tourism and economic values
4. Develop a Nordic education system for recreational fishing research based on collaboration between countries and institutions.

Notes

Notes