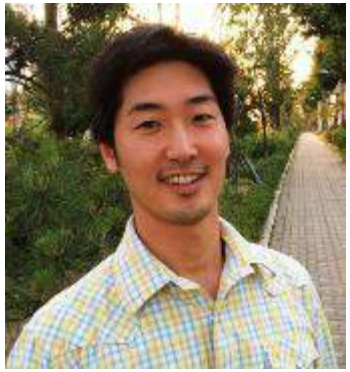
Inter-sectoral governance of inland small-scale fisheries

Shannon Bower

Steven Cooke

Andrew Song



TBTI Webinar # 9

October 3rd, 2016

Too BIG To IGNORE
Global Partnership for Small-Scale Fisheries Research

Social Sciences and Humanities Research Council of Canada | Conseil de recherches en sciences humaines du Canada | Canada

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Inland Fisheries

An Overview

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Fish Ecology and Conservation Physiology Lab
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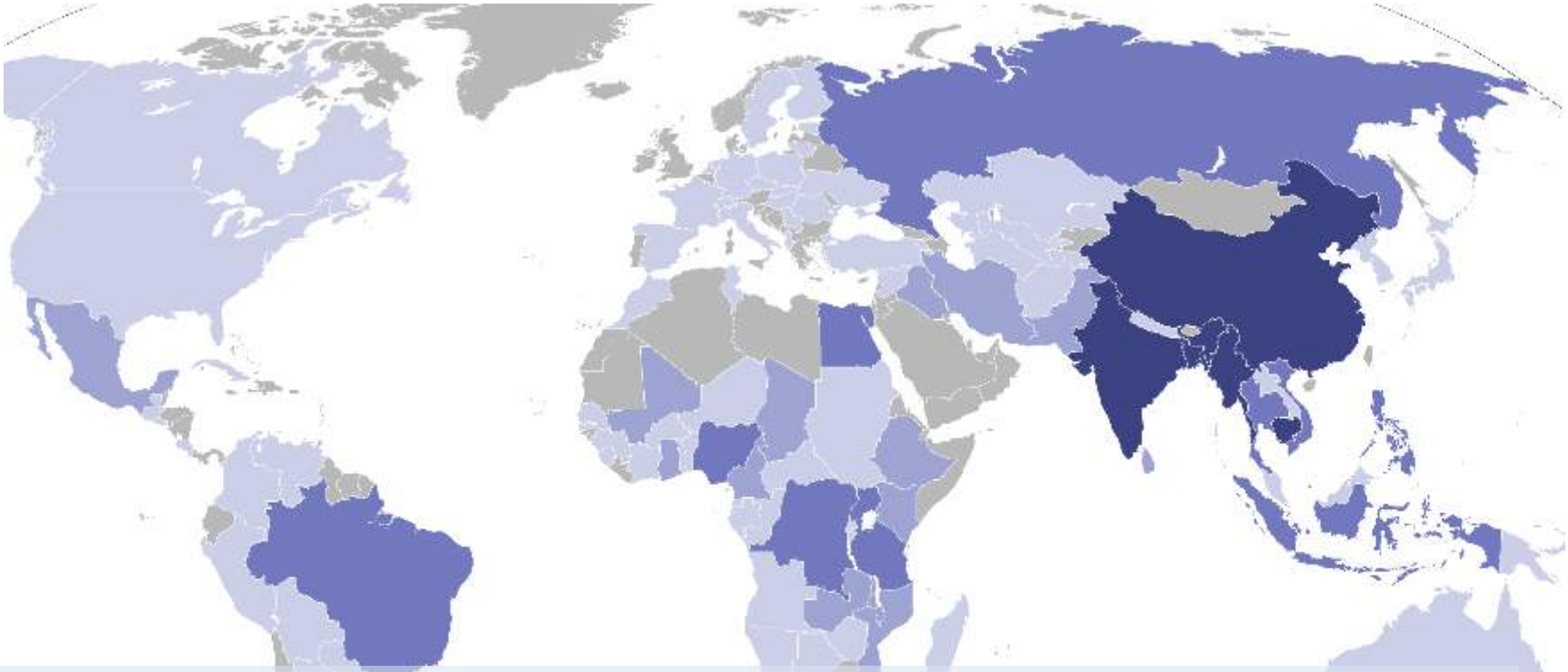
Carleton UNIVERSITY

Small-scale fisheries (slide from S Funge-Smith)

- Small-scale fisheries contribute over half of the world's marine and inland fish catch
- Most of that catch is used for direct human consumption
- SSFs employ over 90% of the world's about 28 million capture fishers
  - at least half of the people employed in small-scale fisheries are women

Global inland fishery production

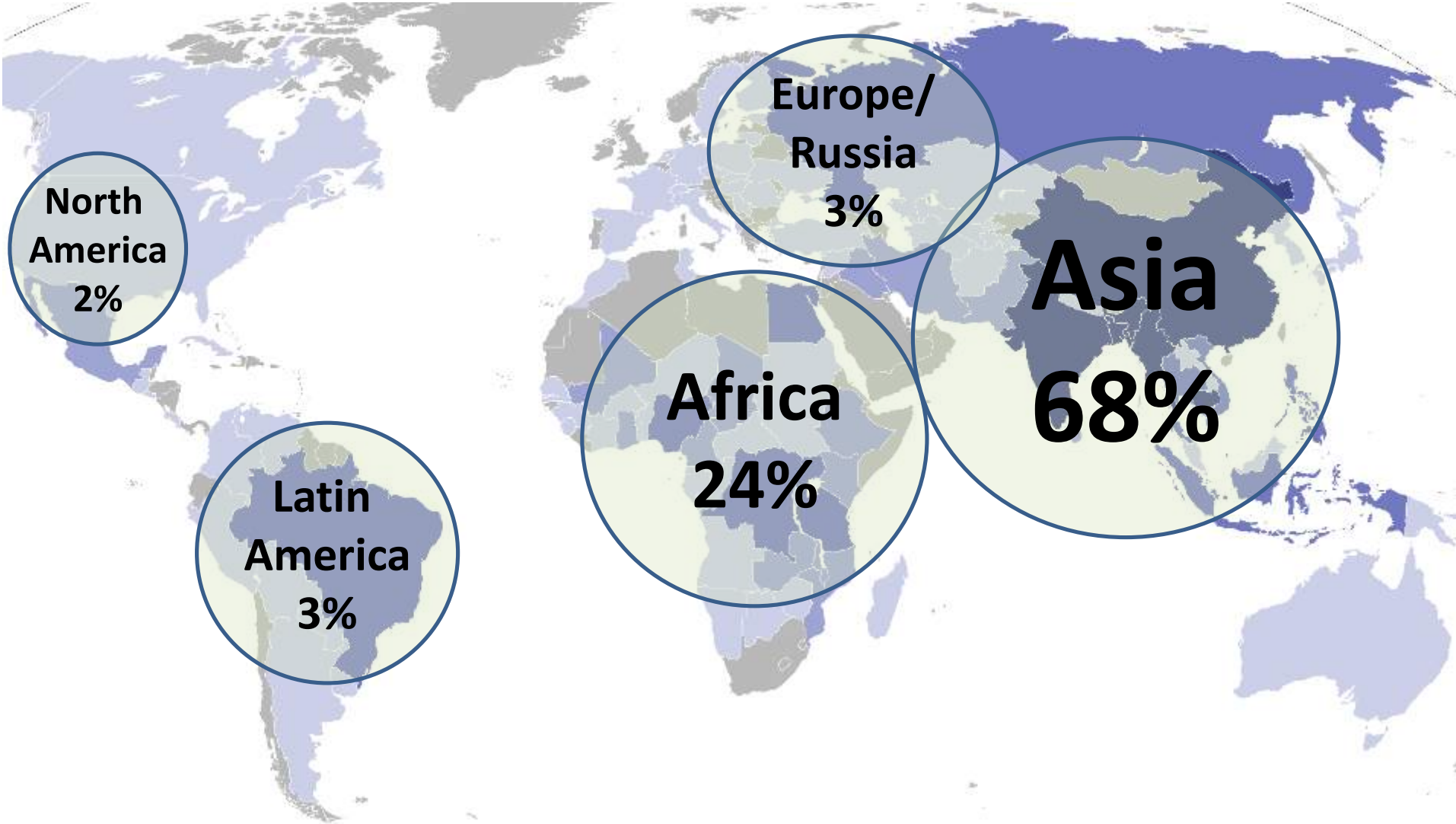
(S. Funge-Smith)



- 150 countries report >1 tonne inland fishery production to FAO
- Top 5 countries produce 55% of world's inland fish
- Next 11 countries produce 26%
- 14 countries 11 %

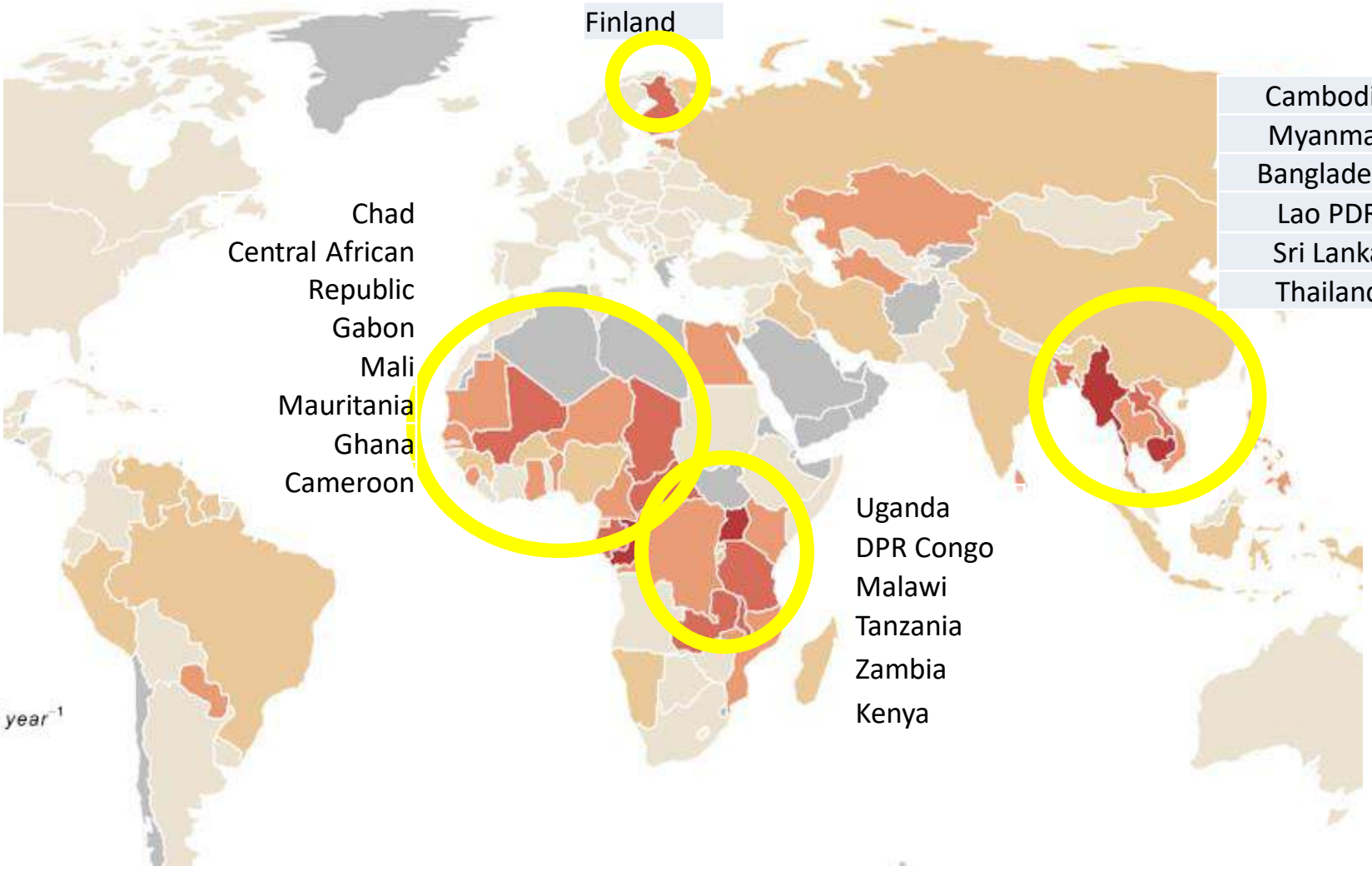
Inland fishery production by region

(S. Funge-Smith)



Countries with highest inland fish catch, per capita

(S. Funge-Smith)



Inland Fisheries

Production from the world's inland capture fisheries has grown steadily to over 11.6 million tonnes in 2012, with almost 95% of the catches from developing countries

Inland capture fisheries yield is only 6.3% of the global reported fish production (capture fisheries and aquaculture)

Likely an underestimate and actual yield may be several times greater. The apparent low proportion of fish provided by inland capture fisheries does not reflect importance of inland fisheries

Importance of Inland Fish & Fisheries

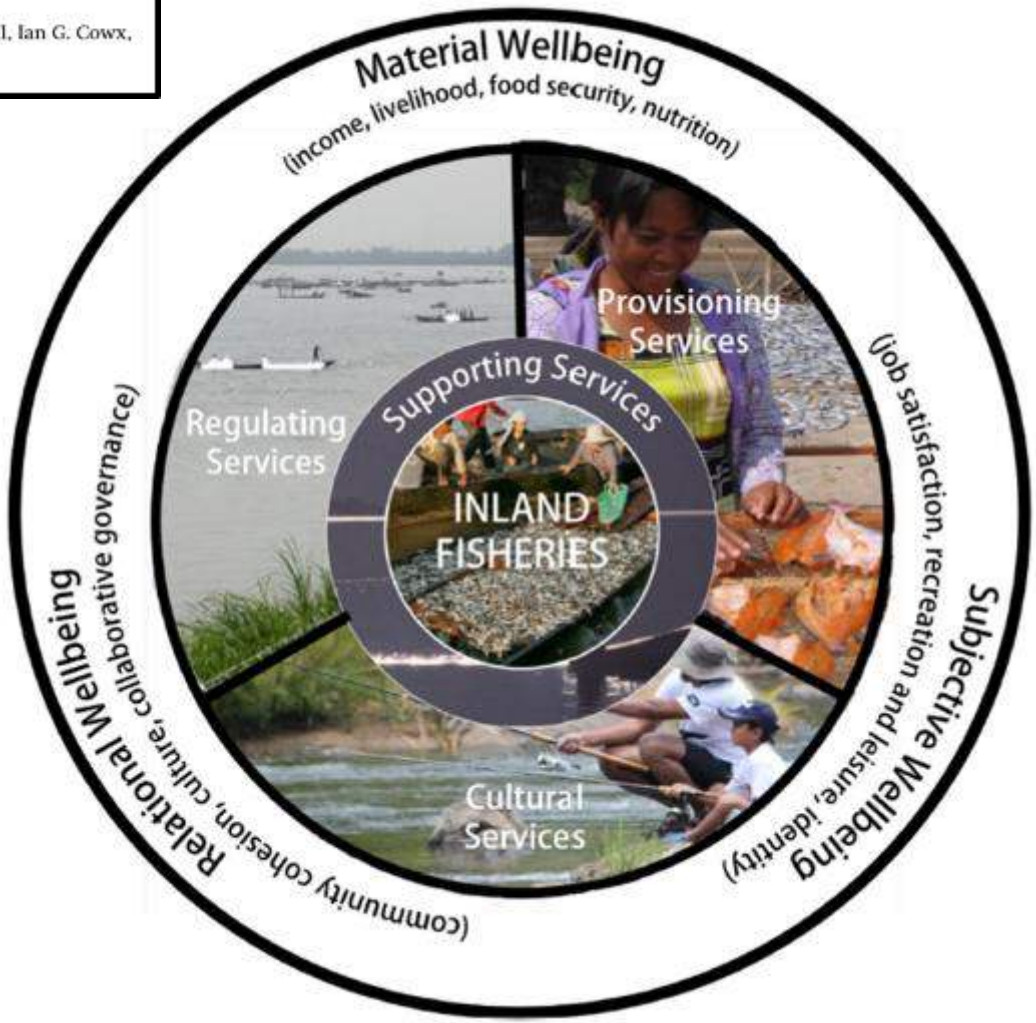
125

NRC Research Press

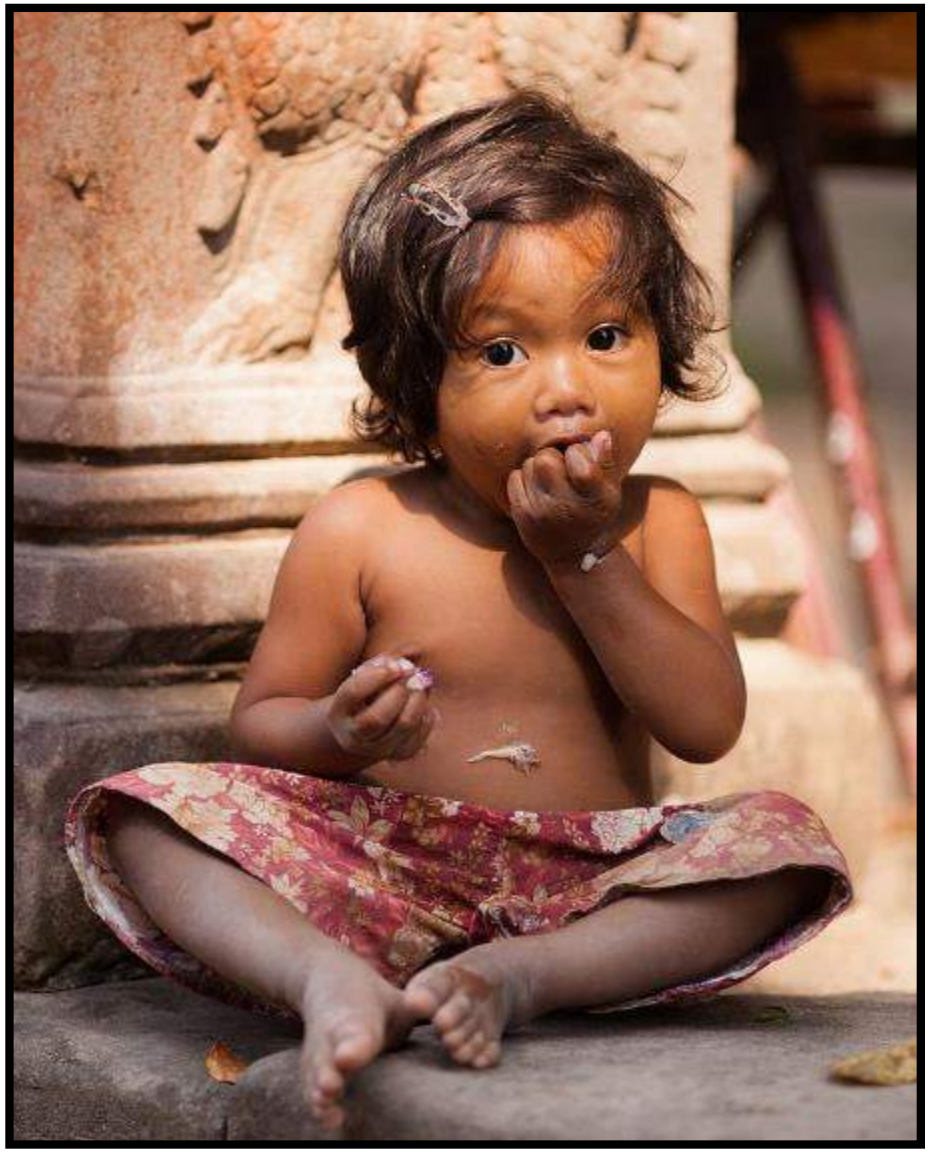
REVIEW

The social, economic, and environmental importance of inland fish and fisheries

Abigail J. Lynch, Steven J. Cooke, Andrew M. Deines, Shannon D. Bower, David B. Bunnell, Ian G. Cowx, Vivian M. Nguyen, Joel Nohner, Kaviphone Phouthavong, Betsy Riley, Mark W. Rogers, William W. Taylor, Whitney Woelmer, So-Jung Youn, and T. Douglas Beard, Jr.



Nutritional Security

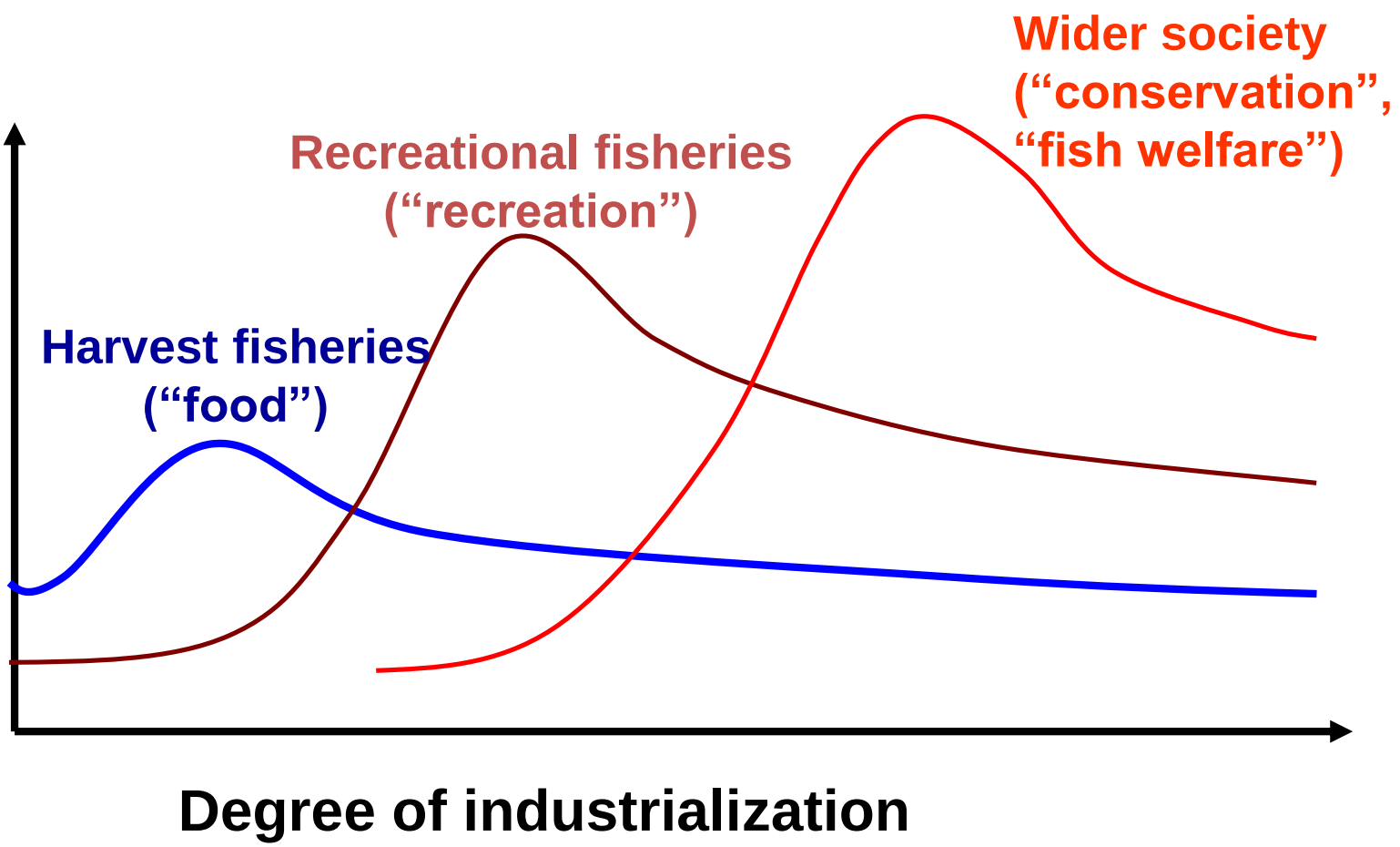


- Over 90% of inland fisheries production is used for human consumption (Welcomme et al. 2010)
- ~250 million children worldwide are at risk of Vitamin A deficiency, while 140 g of fish in Bangladesh supplies a child's weekly Vitamin A needs (Craviari et al. 2008)
- Zinc deficiency causes 800,000 child deaths a year, while 20 grams of a small fish from the Mekong River contains the daily needs of iron and zinc for a child
- Replacing fish expected to be lost from the construction of dams on the Mekong with beef would require about 40% more land and about 40% more water withdrawal from the river (Orr et al. 2012)

Conservation Status of Inland Waters

- Loss of biodiversity in freshwater is believed to exceed that observed in both terrestrial and marine environments (Ricciardi and Rasmussen 1999)
- Freshwater fishes are the most threatened group of vertebrates on Earth after amphibians (Bruton 1995; Sala et al. 2000)
- Global extinction rate of fishes is believed to exceed that of other vertebrates (Sisk et al. 1994; Bruton 1995)

Industrialization



Modified from Arlinghaus & Cowx (2008) and Cowx et al. (2010) J. Fish Biol.

Moving Forward

1. Invest in improved valuation and assessment

2. Manage inland waters across sectors and scales

3. Build capacity for effective governance

Ambio
DOI 10.1007/s13280-016-0787-4

KUNGL. VETENSKAP AKADEMIEN

PERSPECTIVE

On the sustainability of inland fisheries: Finding a future for the forgotten

Steven J. Cooke, Edward H. Allison, T. Douglas Beard, Jr., Robert Arlinghaus, Angela H. Arthington, Devin M. Bartley, Ian G. Cowx, Carlos Fuentevilla, Nancy J. Leonard, Kai Lorenzen, Abigail J. Lynch, Vivian M. Nguyen, So-Jung Youn, William W. Taylor, Robin L. Welcomme

Inland fisheries are not often a governance priority so inland capture fisheries are undervalued and largely overlooked BUT well managed inland fisheries support sustainable fisheries

Moving Forward

Need to identify different models of governance and local co-management arrangements, especially as many of these fisheries are under threat from other activities

- the “North American” regulatory approach will not work for small-scale fisheries in developing countries…

Moving Forward

- inland fisheries low priority relative to other uses of water – due to poor estimates of the status and trends in catches, as well as difficulties in estimating their total production, economic and societal value
- same stressors/challenges leading to multiple competing demands for water
- story repeated across the globe
- must view inland fisheries as closely-coupled social-ecological systems
- complexity and uncertainty inherent in decisions about managing water resources

Moving Forward

Inland Waters MISSING in SDGs!

SUSTAINABLE DEVELOPMENT GOALS

"Ecosystem health is the basis for a thriving global society and fundamental to achieving the 2030 Agenda for Sustainable Development"

Reid, Cooke et al. In Review. PNAS.

Failure to Engage

Journal of FISH BIOLOGY

fsbi

Journal of Fish Biology (2013) **83**, 997–1018
doi:10.1111/jfb.12222, available online at wileyonlinelibrary.com

Failure to engage the public in issues related to inland fishes and fisheries: strategies for building public and political will to promote meaningful conservation[a]

S. J. Cooke*†, N. W. R. Lapointe*, E. G. Martins*‡, J. D. Thiem*, G. D. Raby*, M. K. Taylor*, T. D. Beard Jr.§ and I. G. Cowx‖

Inter-sectoral governance of inland fisheries – the work of the TBTI Inland fisheries cluster

Andrew Song

on behalf of the cluster coordinators

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Inter-sectoral governance

- Inland fisheries production and consumption – dependent upon the quantity and quality of freshwater and aquatic habitats and is influenced by the factors external to the fisheries (e.g. agriculture, domestic use and hydroelectricity generation, climate change, invasive species, plastic microbeads)
- Dealing with external threats and cross-sectoral integration – one of the main research needs identified in the 2015 inland fisheries conference at FAO headquarter in Rome
- Relatively little research attention
- Research questions:
  - Which sectors are involved?
  - How are cooperation, conflicts or indifference manifested?
  - What is driving the relationships?

Case study approach

- To gain a grounded understanding of the observed phenomena and help generate a theory on explaining how or why of an inferred status

- Case studies solicited for an e-book volume of the same theme

E-book: 'Inter-Sectoral Governance of Inland Fisheries'

'Inland SSF' e-book chapters available for download

Inland fisheries are ubiquitous and provide multi-pronged and significant benefits to society. They are also predominantly small-scale, as they appear in diverse forms of capture and culture practices. However, the current status of inland fisheries that reveal both bright spots and deteriorating conditions are insufficiently known, risking underestimation of their merits, diverting policy and research attention, and inviting further marginalization of the sector. As part of a broader effort to generate a more coherent understanding of the sector's integral functions as well as the key factors that pose threats to its maintenance, ***this compilation aims to create a global-level survey of governance challenges that inland fisheries around the world are facing.*** In the process, it also seeks to highlight useful lessons for alleviating challenges and thus improving governance.

For more details about the book, see the **inland cluster e-book call for contribution**.

The first several chapters of the e-book are now available for download. Further chapters will be uploaded on a rolling basis.

Governance and Social-Institutional Arrangement of Small-Scale Fisheries and Relationship with Non-Fishery Users in Badagry Creek, Lagos State, Nigeria. Shehu L. Akintola & Kafayat A. Fakoya

Managing Upper Lake Constance Fishery in a Multi-Sector Policy Landscape: Beneficiary and Victim of a Century of Anthropogenic Trophic Change. Jan Baer, Reiner Eckmann, Roland Rösch, Robert Arlinghaus & Alexander Brinker

Capture Fishery of Koshi Tappu of Saptakoshi River, Nepal: Way Forward for Sustainable Management. Tek Bahadur Gurung & Umita Sah

Understanding Fishery Conflicts in Hilsa Sanctuaries of Bangladesh. Mohammad Mahmudul Islam, Md. Mostafa Shamsuzzaman, Atiqur Rahman Sunny & Naimul Islam

Competing Claims in a Multipurpose Lake: Mapping Resource Conflicts on Lake Kariba. Wilson Mhlanga & Kefasi Nyikahadzoi

Cultural Strengths and Governance Challenges of a Northern Inland Fishery. Pekka Salmi & Matti Sipponen.

Intra-sectoral relationships within fisheries

- Different gears/species – gillnet vs. pelagic
- Capture and recreational
- Capture and aquaculture
- Fishers and fish traders
- Fishers and government representatives (inc. enforcement officers)
- Among different government agencies

Intra-sectoral relationship #1

Different gears/species – gillnet vs. pelagic

- Capture vs. recreational
- Capture vs. aquaculture
- Fishers vs. fish traders
- Fishers vs. government representatives (inc. enforcement officers)
- Among different government agencies

Lake Kariba – Zambia/Zimbabwe

Intra-sectoral relationship #2

Capture and recreational

- Capture vs. aquaculture
- Fishers vs. fish traders
- Fishers vs. government representatives (inc. enforcement officers)
- Among different government agencies

Finnish Lakes

Inter-sectoral relationships beyond fisheries

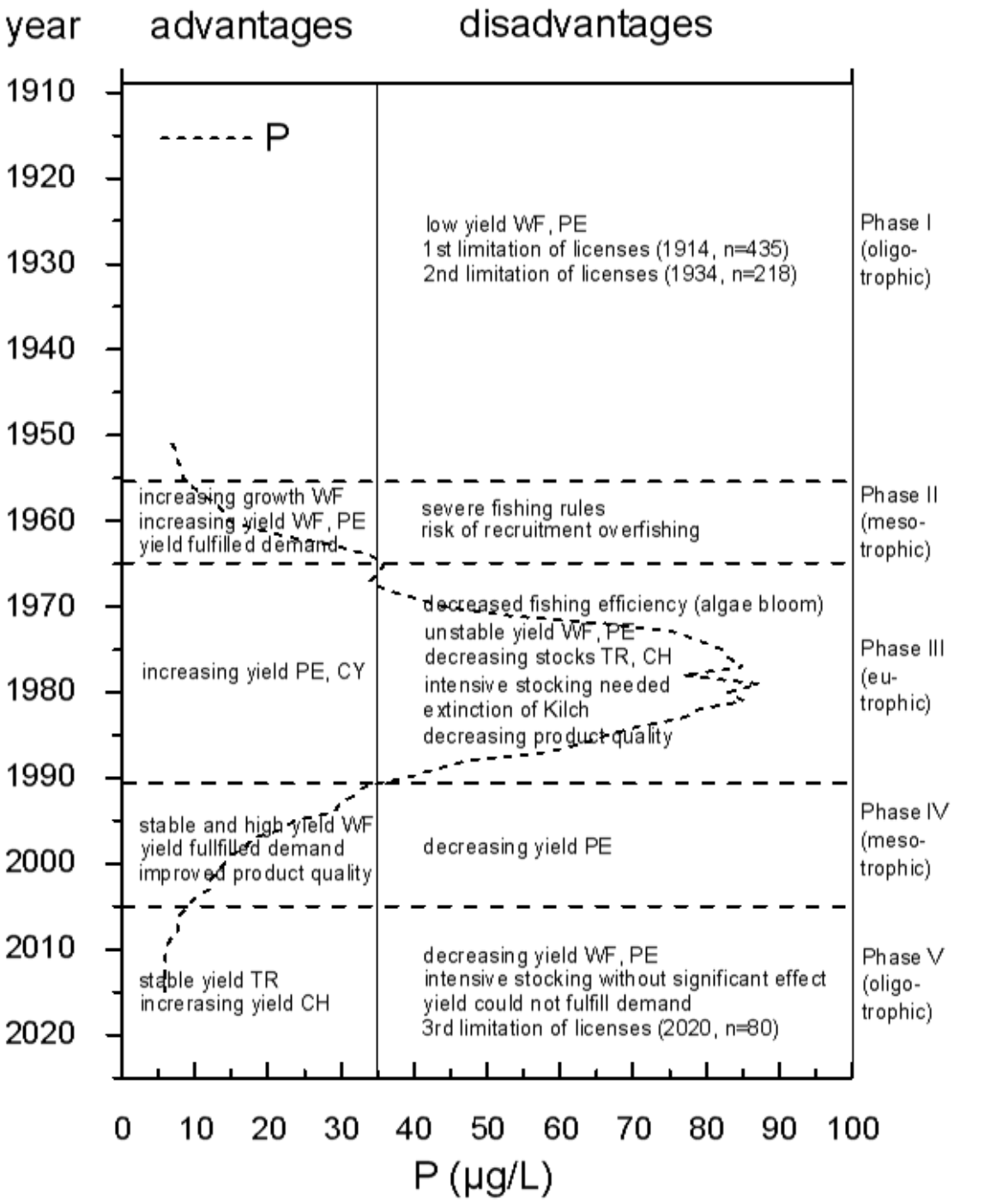
- Fishery and water quality/pollution prevention measures
- Fishery and urban development
- Fishery and hydroelectric development
- Fishery and sand mining
- Fishery and floodplain agriculture
- Fishery and tourism
- Fishery and wildlife preservation




Urban growth and wetland fishery – Wetlands of Kolkata and Colombo

Fishery and water quality/pollution prevention measures

– *Lake Constance*



Synthetic insights

1. Not always positive or negative; relationship can feature conflict and cooperation simultaneously

Meghna and Padma River – Hilsa fishery

Stakeholder interaction	Conflict	Co-operation
Fisher-Fisher	• Competition for fishing space • Unfair profit distribution or irregular payment between boat owner and crew • Competition for inclusion to Payment for Ecosystem Services (PES)	• Daily supports as colleague and well-wisher • Instrumental supports (comfort, money and food) during crises period such as illness, disaster, or persecution for non-compliance
Fisher-Fish entrepreneur	• Debt bondage cause selling fish at lower price • Some fishers' delay to pay loan • Attach productive assets of fishers in case of default	• Provide *dadon* for buying and maintenance of fishing productive assets • Provide loan for buying daily necessities • Provide protective security from subjective insecurity
Fisher- NGOs	• High interest rate of microcredit • Fishers utilize microcredit to buy illegal gears such as monofilament gillnet	• Provide micro-credit, training and asset for alternative income generating activities • Campaign and advocacy for women empowerment
Fisher- Law enforcing agencies	• Allegation of bribery and harassment • Allegation of allowed illegal fishing	• Ensure safe fishing environment by preventing criminal gangs

Synthetic insights

2. Higher-level governance aspirations and societal concerns create direct consequences on fisheries

Urbanization pressure on fishery – Wetlands of Kolkata and Colombo

"Urbanization is putting immense pressure on this ecosystem. The wetland area has shrunk by 20% due to direct conversion between 1945 and 2003, with an exponential rise of unaccounted conversion of wetlands (and fishery ponds) for real-estate purposes from mid 1990s"

"The flow of international finance capital into the real estate sector in both cities put pressure on the city administrations to 'open the wetlands for business' [which is also] described… as 'wetlands are real estate in waiting.' [So called] urban development agencies in both cities facilitated this take-over, using not only their political clout, but also the legal mandate carefully crafted for this purpose."

Synthetic insights

International/regional water quality norm

– *Lake Constance*

"Intensive, internationally coordinated measures have succeeded in restoring P levels in ULC to socially desired and legally required oligotrophic values and established an equilibrium in line with the contemporary environmental policies of ULC states, including the EU Water Framework Directive"

"The lake condition that would constitute an optimal solution from a fisheries perspective (i.e. P at about 10-12 µg/L) is anathema to prevailing societal concerns… and contravenes current interpretation of environmental policy"

Governance implications

- Pollution, always a bad thing? Water quality, always a good thing?

  → reaffirms the need to be context-sensitive and to draw on external/historical factors

- Even perfect fisheries management can be futile- in promotion of other sectoral/societal goals

  → working to foster external connections can be just as crucial as internal management actions

Case study contributors

Ayeyarwaddy Delta	Xavier Tezzo, Yumiko Kura, Eric Baran, Zizawah
Badagry Creek	Shehu Akintola, Kafayat Fakoya
Cauvery River	Shannon Bower, Rajeev Raghavan, Neethi Mahesh, Andy Danylchuk, Steven Cooke
Finish Lake District	Pekka Salmi, Matti Sipponen
Koshi Tappu wetlands	Tek Gurung, Umita Sah
Lake Constance	Jan Baer, Reiner Eckmann, Roland Rösch, Robert Arlinghaus, Alexander Brinker
Lake Kariba	Wilson Mhlanga, Kefasi Nyikahadzoi
Lake Victoria	Fiona Nunan, Paul Onyango
Meghna and Padma River	M. Mahmudul Islam, Md. Mostafa Shamsuzzaman, Atiqur Rahman Sunny, Naimul Islam
Mid-Ganga basin	Vipul Singh
Wetlands of Kolkata and Colombo	Missaka Hettiarachchi, Tiffany Morrison

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Synthesis paper

Synthesizing how inter-sectorality is characterized in inland fisheries and suggesting ways for studying the topic

1. Describing the relationships, which sectors are involved and to what extent, which actors in governance (description of what's being observed)
2. How do the measured, perceived and held values of different sectors measure up (instrumental explanation and trade-offs)
3. Power imbalances, both positive and negative, that vary temporally and spatially (interest-based and normative account)
4. High-level policy aspirations and societal concerns (cross-scalar influences and discourses)

Outcomes from TBTI Symposium on SSF in Asia-Pacific Region

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www.fecpl.ca

Unless otherwise indicated, all images courtesy of Shannon Bower or Raja PK, metaphoronline.in/Pelagic Tribe

TBTI Thailand Symposium

- August 7-9, 2016: Felix River Kwai, Kanchanaburi, Thailand
- Focus on topics relevant to the Asia-Pacific region

TBTI Thailand Symposium

- 30 attendees from Asia, Africa, Europe, North America, Australia
- Representatives of four clusters: Inland, Fish as Food, Women and Gender, Global Change Responses

Inland Cluster SSF Priorities

Day 1: Group discussion, identification of crucial themes

Day 2: Cluster discussions, development of recommendations

Day 1: Crucial Themes in Inland SSF

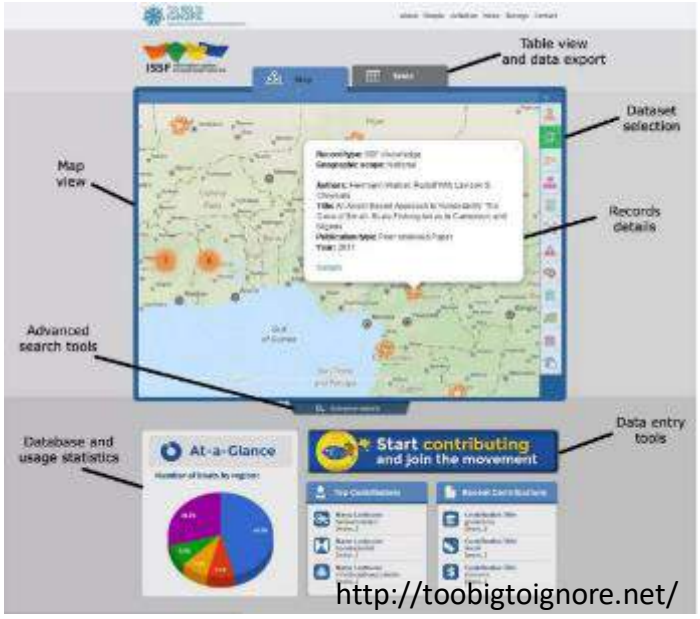
1. ‘Hidden’ Inland SSF
   - Subsistence
   - Aboriginal
   - Part-time
   - **Migratory**

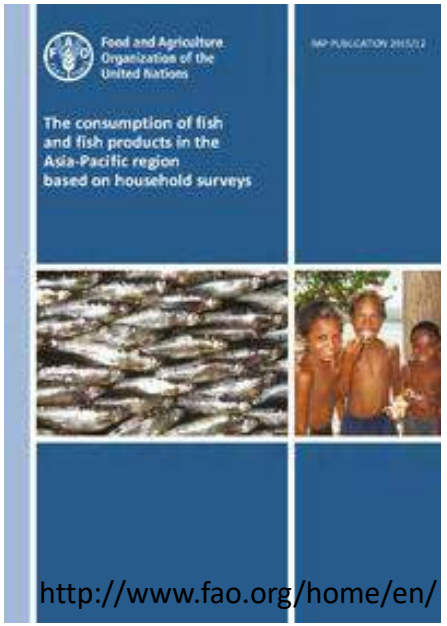
Day 1: Crucial Themes in Inland SSF

http://bffishers.org/

2. Barriers to Access
   - Increasing privatization
   - Shift from fisher to labourer
   - **Lacking opportunities for advocacy**

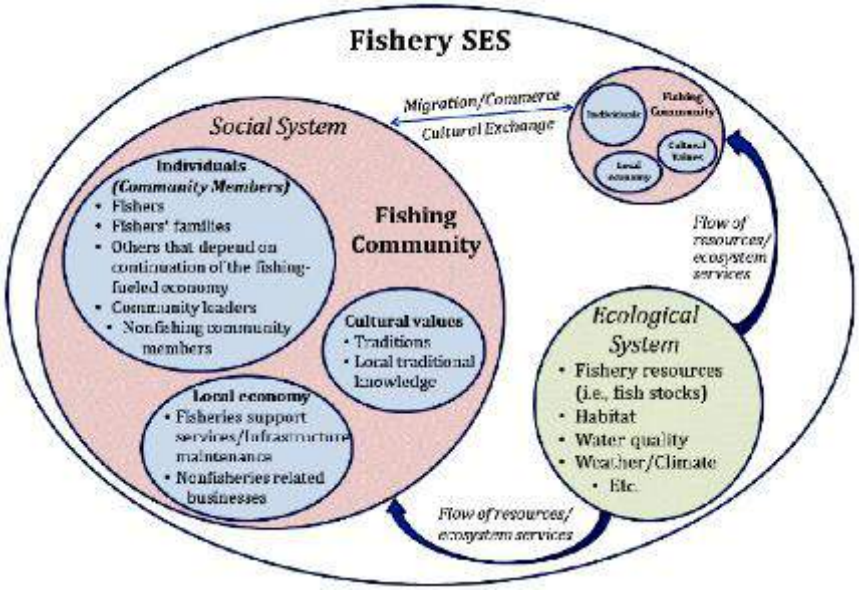
Day 1: Crucial Themes in Inland SSF





3. Address Inland SSF Data Gaps
   - Broad baseline database
   - Improve data quality
   - Evaluate proxy estimators
   - **Evaluate novel theories**

Day 1: Crucial Themes in Inland SSF



Himes-Cornell and Hoelting 2015

4. Include Inland-specific Concerns in Policy Discussions
   - High diversity/connectedness of fisheries/drivers
- Recognize importance of entire value chain (harvest to sale)
- **Acknowledge values/challenges in case study approach**

Inland Cluster SSF Priorities

Day 1: Group discussion, identification of crucial themes

Day 2: Cluster discussions, development of recommendations

Day 2: Recommendations for Inland SSF Research

1. 'Hidden' Inland SSF

3. Address Inland SSF Data Gaps

Validate for ALL distinct types of inland fisheries:

1. Examine the suitability of proxy metrics(including replacement costs, consumption surveys) and identify suitable proxies for socio-cultural metrics

Day 2: Recommendations for Inland SSF Research

1. 'Hidden' Inland SSF

3. Address Inland SSF Data Gaps

Validate for ALL distinct types of inland fisheries:

2. Identify drivers, impacts and responses specific to inland fisheries; determine which drivers lead to maximum impact

Day 2: Recommendations for Inland SSF Research

1. 'Hidden' Inland SSF

3. Address Inland SSF Data Gaps

Validate for ALL distinct types of inland fisheries:

3. Identify evidence or pro-inland fisheries policies and lessons for governance of inland fisheries, including strategies for supporting access, management, market chain

The Way Forward

Outcomes of the TBTI Symposium on SSF in Asia-Pacific are relevant to global inland SSF concerns.

Recommendations regarding the way forward include all four crucial themes, but addressing data deficiencies will essential for achieving all of them.

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Next TBTI webinar – November 1st, 2016

Women and Gender in small-scale fisheries

TBTI 'Women and Gender' cluster coordinators





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Ideas for the upcoming TBTI webinars?

Send us an email to toobigtoignore@mun.ca