



## Too Big to Ignore (TBTI) Working Group 1 (WG1) Workshop

### A summary report<sup>1</sup>

#### Introduction

The primary goal of TBTI WG1 as stated in the original project proposal is “to define and develop an information system suitable for capturing the key parameters of small-scale fisheries, and for undertaking multi-level and multi-scale analysis of their contributions.” This information system has been dubbed the Information System for Small-scale Fisheries (ISSF). While design of ISSF is the responsibility of the core WG 1 team members, which currently consists of Working Group 1 Leader (Rodolphe Devillers) and Senior Information Systems Analyst (Randal Greene), supported by Easkey Britton (TBTI post-doctoral fellow) and Ratana Chuenpagdee (TBTI project director), requirements input must come from a broad constituent base, including WG1 members, WG leaders and TBTI members at large.

A WG1 workshop focusing on ISSF design was held at University of British Columbia (UBC), June 16-17, 2013. The 19 participants are listed in Appendix I. Workshop activities included:

- Reviewing the original ISSF vision and describing the proposed process for refining it.
- Receiving input from workshop participants in the form of presentations on related topics and structured group discussions.
- Describing and expanding an initial set of high-level requirements, including a draft data model, developed by the project team based on earlier communications.
- Continuing the process, begun earlier through an online survey, of identifying and refining key attributes that help profile small-scale fisheries (SSF).
- Reviewing and discussing ISSF technology options based on examples of existing, working systems.
- Deciding on 18-month priorities for WG1, including a tentative ISSF rollout schedule and WG1 coordination of and participation in publications, conferences and meeting.

WG1 also participated on June 15 in a “synergy day”, which was the final day of the Fishing Futures and TBTI NAM/WG5 workshop. This was an opportunity to provide information to

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<sup>1</sup> Prepared by Randal Greene (rgreene@mun.ca) and Rodolphe Devillers

and get input from a broader group of stakeholders. Synergy day details will be available in a separate report for that workshop.

### **Member/Partner Presentations**

Powerpoint files for each of these presentations is available to workshop participants in the WG1 Workshop dropbox, or by request to WG1 leader Rodolphe Devillers (rdeville@mun.ca).

#### William Cheung – Climate change effects on the distribution of global fish stocks

Evidence has been gathered in some places in the world regarding the impact of climate change on specific fisheries. The approach described correlates the rate of change of Sea Surface Temperature with the rate of change of the Mean Temperature of Catch, while also taking into account fishing effort and large-scale oceanographic effects. The approach can be extended to project future species distribution, composition and potential catch.

#### Dirk Zeller – Reconstruction of historical fisheries catches: update

The *Sea Around Us* Project has developed a global database on fisheries and the world's marine ecosystems. Its current effort is to reconstruct catch for every country along an extended time series, to account for SSF catches, among other things, which are mostly under-represented in the existing data collection system. Lessons from this project potentially applicable to TBTI/ISSF include:

- Starting flat (a small number of useful and available key attributes) and wide (covering every possible country).
- Making the results globally searchable (i.e. pay attention to Google ranking).
- Quantifying, generalizing and scaling up to country level wherever possible to have maximum impact on policy makers.

#### Rebecca Lewison – Building global databases: bycatch and fishing effort, top down and bottom up

Project Global assesses the impact of fisheries bycatch on marine mammals, seabirds and sea turtles worldwide. Existing evidence suggests bycatch from SSF can have substantial impacts on sensitive species, while also providing a measure of coastal ecosystem integrity. Given that bycatch is more a function of effort than of catch, a Fishing Effort Envelope Tool was developed to help make a top-down estimate of the number of boat meters per square kilometer. Population size and size of fishing ground were found to be the key drivers of fishing effort intensity, and showed how the tool is useful to help characterize patterns of human-ecological linkage. The Project is also undertaking a bottom-up approach based on interviews.

Tara Whitty – Small-scale & Artisanal Fisheries Research Network (SAFRN)

SAFRN is an interdisciplinary hub of students, researchers, and faculty, based in San Diego, studying SSF with a goal of enhancing communication and reducing redundancy in SSF research. One of SAFRN’s key tools is a Snapshot Assessment Protocol, including a survey template, which has close synergy with ISSF. SAFRN is also involved with a National Science Foundation proposal, which would conduct a number of studies with local partners and feed relevant outputs back to TBTI/ISSF.

Paul Boudreau – Coastal and Ocean Information Network – Atlantic (COINAtlantic)

COINAtlantic has developed a Geocontent Generator and Search Utility that guide the creation of searchable metadata and a study area polygon to help organizations publicize their geospatial data. Some aspects of COINAtlantic’s approach and some of their lessons learned may be applicable to TBTI/ISSF:

- Avoiding as much as possible the need to data suck and hold copies of data that are managed/stored elsewhere.
- Having a simplistic search mechanism that Google and other search engines can easily index (COINAtlantic uses KML which has the advantage of being text-based while also containing georeferenced data such as study area polygons).

**High-level Requirements and Technology Examples**



The figure above illustrates some of the key high-level requirements for ISSF, loosely organized from left to right by firmness. It was used as a starting point for a discussion of prioritizing ISSF requirements. One of the approaches to thinking about high-level requirements was a demonstration and discussion of existing technology. The technology examples are in Appendix II and the results of the requirement prioritization exercise are in Appendix III.

### **Key Attributes**

A major focus of the workshop was deliberation on Key Attributes, which will be used to define the structure of the SSF Profile within the ISSF database. Prior to the workshop, round 1 of an Attribute Survey was conducted. It concentrated on attribute importance, and the results are presented in Appendix IV.

As part of the attribute refinement process, discussion of Analysis Scenarios was held. Participants suggested scenarios within their fields of expertise, and then considered which of the currently proposed attributes would support the analysis, or which additional attributes may be needed. Suggested Analysis Scenarios are provided in Appendix V.

Group discussions at the workshop also focused on data availability and attribute refinement, including clarifying attribute meaning and suggesting appropriate data types. These discussions will be used to help structure additional rounds of the Attribute Survey.

### **Next Steps**

The workshop ended with an open discussion of next steps for WG1. Key outputs are listed in Appendix VI (WG1 Priorities), Appendix VII (Conferences and Meetings) and Appendix VIII (ISSF Rollout Phases). It was decided that immediate priorities would be to continue stakeholder data collection, the key attribute survey and partner technical investigations.

### **Acknowledgments**

The workshop was generously hosted by the University of British Columbia Fisheries Centre. Video recording was provided by Neil Ladell, TBTI PhD student linked to WG5, of Simon Fraser University.

## Appendices

### Appendix I: Workshop Participants

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## Appendix II: Technology Examples

Technology	Site	Comments
Map-based navigation/presentation		Typically quantitative, but could provide drill-down to all kinds of detail...
	* <a href="http://earthpulse.nationalgeographic.com/earthpulse/earthpulse-map">http://earthpulse.nationalgeographic.com/earthpulse/earthpulse-map</a>	Typical, comparison of 2 maps, sometimes done with swipe instead of transparency
	* <a href="http://www.statsilk.com/maps/statplanet-world-bank-app-open-data/">http://www.statsilk.com/maps/statplanet-world-bank-app-open-data/</a>	Typical, linked panels with brushing (geovisualization), defined and flexible regions, time series using slider
	* <a href="http://www.protectedplanet.net/">http://www.protectedplanet.net/</a>	Drill-down to text and photos of each protected area
	<a href="https://www.movebank.org/">https://www.movebank.org/</a>	Point-based with user contribution
	<a href="http://map.stjohns.ca/mapcentre/mapcentre.html">http://map.stjohns.ca/mapcentre/mapcentre.html</a>	Web-based GIS interface
	<a href="http://www.seasketch.org/">http://www.seasketch.org/</a>	Sketching, analysis, collaboration
	<a href="http://maps.waterdata.usgs.gov">http://maps.waterdata.usgs.gov</a>	Web-based GIS interface
	<a href="http://geonetwork.fao.org/geonetwork/srv/en/main.home">http://geonetwork.fao.org/geonetwork/srv/en/main.home</a>	Various thematic maps presented in web-based GIS interface
	<a href="http://databasin.org/">http://databasin.org/</a>	Conservation GIS data publishing for anyone and sharing for other GIS users; free/public and paid/professional versions
	<a href="http://www.arcgis.com/about/">http://www.arcgis.com/about/</a>	GIS data publishing for anyone and sharing for other GIS users; free/public and paid/professional versions
	<a href="http://www.app.collinsindicate.com/worldbankatlas-global/en-us">http://www.app.collinsindicate.com/worldbankatlas-global/en-us</a>	Country indicators, linked tables and graphs, user import for other indicators
	<a href="http://maps.worldbank.org/">http://maps.worldbank.org/</a>	WB projects with details drilldown
	<a href="https://maps.google.com/">https://maps.google.com/</a>	
	<a href="http://www.iucnredlist.org/">http://www.iucnredlist.org/</a>	
Query-based navigation/presentation		
	* <a href="http://www.fishbase.org/search.php">http://www.fishbase.org/search.php</a>	Classic database query operators (not full-text)
	* <a href="http://www.searoundus.org/">http://www.searoundus.org/</a>	Some map-based selection and display, mostly quantitative data, some links to external collaborators (see EEZ, Treaties)
	<a href="http://www.mpaglobal.org/home.html">http://www.mpaglobal.org/home.html</a>	Text-based queries of data by country, multiple predefined region types, column sorting, drill-down to raw data
	<a href="http://www.wiofish.org/">http://www.wiofish.org/</a>	Country/fishery profiles of SSF
Hyper-linked based		
	* <a href="http://en.wikipedia.org">http://en.wikipedia.org</a>	Classic contribution wiki, but very link oriented
	* <a href="http://coinatlantic.ca/index.php">http://coinatlantic.ca/index.php</a>	Tells a succinct, coordinated story with links to authoritative sources for details and related information
Interactive community		
	* <a href="http://forums.arcgis.com/forums/214-ArcGIS-10.1-for-Server-General">http://forums.arcgis.com/forums/214-ArcGIS-10.1-for-Server-General</a>	Classic post/reply forums
	* <a href="http://spatiallyadjusted.com/">http://spatiallyadjusted.com/</a>	Classic blog with public comments
	<a href="http://linkedin.com">http://linkedin.com</a>	Professional network
Information contribution		
	* <a href="http://en.wikipedia.org">http://en.wikipedia.org</a>	Full wiki where anyone can contribute
	<a href="http://www.landscapecollaborative.org">http://www.landscapecollaborative.org</a>	Full wiki where only registered/approved users contribute
	* <a href="https://www.movebank.org/">https://www.movebank.org/</a>	Point-based with user contribution
	<a href="http://www.openstreetmap.org/">http://www.openstreetmap.org/</a>	Contribute all streetmap elements

### Appendix III: ISSF High-level Requirements

Requirement (approximately ordered by firmness)	Comment	Action	Status
Helps improve profile of SSF	Motherhood statement		Required
Support researchers	Motherhood statement		Required
Web-based	Motherhood statement		Required
Geographic	Not georeferencing of exact coordinate	Refine flexible "location" attribute	Required
Map/GIS user interface		Determin to which components this would apply...	Required
Maintains a database of small-scale fishery:		Work through design details	Required
key attributes/characteristics (ssf profile)	Designed from Key Attributes survey; populated from ongoing contributions		
case studies (unstructured)	Populated from ongoing semi-structured contributions		
Maintains a database of small-scale fishery stakeholders:			
researchers	Populated from Who's Who survey and TBTI member and collaborator profiles		
knowledge	Populated from State-of-the-art survey		
research priorities	Populated from Top 100 survey		
experience	Populated from Fishers Wisdom and Experience survey		
organizations	Populated from Organization survey and TBTI partner profiles		
capacity needs	Populated from Capacity Development and Training Needs survey		
data sources	Suggested metadata catalog		
projects	Suggested to help profile SSF; include failures		
Receives data in multiple formats:	Which formats are required?	Determine priority	Required
hard-copy			
online form/survey			
mobile form/survey			
electronic batch feed			
electronic real-time feed			
Supports delivery of online training (DELTS)	Which topics delivered using what tools?	Coordinate with WG7	Required
Provides free and open access to data	No licenses, install, login		Required
Only accept unrestricted data	Enables previous point without special security		Required
Accepts metadata related to restricted data	Facilitates contacting authoritative source		High priority
Provides TBTI-standard metadata template	Determine optional and required	Base on FGDC/ISO?	
Supports policy makers	Directly related to improving profile of SSF		High priority
Supports communities (non-scientists)		Some overlap with WG7	
Technically accessible	Old browsers, low bandwidth	Determine if separate low-bandwidth version needed	High priority
Handle absence of data	For instance, zero versus unknown quantitative data	Consider how to handle in qualitative data	High priority
Temporal	SSF Profile records would typically be for a particular year, but could be flexible to handle other time frames such as ranges and seasons	Refine flexible "time" attribute	Under consideration
Accepts contributions from identified, authentic sources only	Not live until validated	Decide if unsolicited public contributions are acceptable for some datasets	Under consideration
Exports data	See formats above under "receives"		Under consideration
KML version for Google users	Solution for low-bandwidth?		Under consideration
Provides information about TBTI network	Migrate current intranet to new web platform and make incremental improvements?		Under consideration
Provides real-time feed		What data for what types of users	Low priority
Supports disconnected users		What data for what types of users	Low priority
Delivered on mobile/handheld devices	All datasets? Special version of site?		Low priority
Links to authoritative sources	References information but links to original source site for details in order to minimize duplication (COINAtlantic model)	Determine to which parts of design this may apply...	Under consideration
Multi-lingual	Consider translated content with French and Spanish as leading candidates	Investigate/estimate technical mechanism	Under consideration
Multi-lingual	Consider just translating surveys as a fallback or initial step	Rodolphe and Ratana to consider volunteers	Under consideration
Provides interactive online community	Are blogs, forums, wikis, comments and other intra-group tools central to ISSF?	Use existing communities; don't reinvent wheel	Under consideration

## Appendix IV: Attribute Survey Round 1 Results

Category	Possible Attribute	Mean Importance Rating (out of 4)	Standard Deviation
General	Fishing effort	3.54	0.67
	Structure of SSF unit	3.41	0.90
	SSF gear type	3.33	0.80
	Number of SSF vessels	3.26	0.84
	SSF definition	3.15	1.08
	SSF vessel type	3.05	0.96
	Average length of SSF vessel	2.28	1.01
Economic	Market chain for SSF	3.33	0.88
	Volume of landings	3.33	0.94
	Value of landings	3.25	0.95
	Income of SSF unit	3.11	0.87
	Existence of SSF subsidies	3.06	0.97
	Designated SSF area	2.97	1.01
	SSF GDP	2.86	1.03
	Government expenditure on SSF	2.86	1.03
	Total government expenditures of fisheries	2.81	0.99
	Total fisheries GDP	2.78	0.97
	Value of SSF unit	2.78	1.11
	Product valorization	2.58	0.59
	Ecological	Impact of SSF on stock	3.50
Impact of SSF on habitat		3.42	0.92
Amount of bycatch		3.33	1.00
Marine Protected Area / SSF overlap		3.14	0.92
Number of species targeted by SSF		3.11	0.97
Habitat type		3.08	0.79
Marine Trophic Level (MTL)		2.61	1.19
Social	Employment in SSF harvesting	3.50	0.93
	Dependence on fisheries as primary income	3.50	0.93
	Employment in SSF processing	3.36	0.98
	Income level	3.36	0.98
	Other sources of income	3.28	1.04
	Employment in all fisheries	3.19	1.05
	Level of fish consumption	3.14	1.11
	Employment type	3.14	1.13
	Life satisfaction of SS fishers	3.00	1.13
	Gender ratio of SSF fishers in processing/marketing	2.92	1.09
	Gender ratio of SS fishers in harvesting	2.86	1.16
	Labour mobility	2.81	1.13
	Age profile of SS fishers	2.81	1.22
	Social assets of SSF	2.78	1.18
	Occupational health and safety	2.75	1.16
Experience profile of SS fishers	2.69	1.13	
SSF community issues	2.53	1.24	
Governance	Level and scale of involvement of SS fishers in fisheries management	3.75	0.49
	Policy support and/or legal framework for SSF	3.61	0.83
	Customary or informal management systems	3.44	0.96
	Dominant property regime	3.42	0.98
	Conflict(s) with other sectors, marine-resource users and/or marine activities	3.39	0.89
	Dominant governance mode in SSF	3.39	1.01
	Level of compliance with rules and regulations	3.25	1.01
	Science-SSF partnerships	3.06	1.13



## Appendix V: Analysis Scenarios

Following is a preliminary list that is being expanded in consultation with working group leaders:

SSF market chain (WG2)
Vulnerability to change (WG2)
The 'meaning' of fish (WG3)
Interactions of SSF with others in the area (WG3)
Environmental knowledge, conservation and stewardship (WG4)
Gear interaction and bycatch/discards (WG4)
Understanding of local ownership and entitlements (WG5)
Comparison of different property right regimes in SSF (WG5)
Performance criteria for SSF governance (WG6)
Images, principles and governance mismatch (WG6)
Problems, challenges and opportunities in SSF (WG2/WG5)
Definitions and common characteristics of SSF around the world (Global)
Comparison between SSF vs. LSF (similar to Pauly's table) (Global)
Who fish? (Global)

## Appendix VI: WG1 Priorities

Activity	Details	Target Date
Information about SSF Stakeholders		
Continue stakeholders data collection	Researchers first	End 2013
Prototype display of stakeholder data	Map-based	Winter 2014
Information about SSF		
"Finalize" SSF Profile (attributes)	Next step is attribute importance survey round 2	Fall 2013
Prototype "local" input with selected members	Danielle Edwards, Tara Whitty (SNAP assessment), etc.	End 2013
Prototype SSF Case Study (unstructured multimedia)		Winter 2014
Determine how to incorporate existing databases into SSF Profile		Winter 2014
Populate SSF Profile from existing databases		Spring 2014
Prototype display of SSF Profile		Fall 2014
Other WG1 member engagement		
Continue partner technical investigations	iMarine, CREAT, COINAtlantic, SeaSketch, etc.	Ongoing
Engage WG1 members who could not attend Vancouver		Ongoing
WG1 workshop	See Conferences and Meetings tab for additional	Feb 2014

## Appendix VII: Conferences and Meetings

Event	Date	Activity
Asia/WG3 Meeting (Hyderabad)	Dec 10-12, 2013	10th-12th; include PSC and WG1 discussions
WG1 Meeting (Tiburon)	Week of Feb 15-19, 2014	WG1 workshop
Coastal Zone Canada (Halifax)	Jun 2014	ISSF Prototype workshop
Society for Conservation Biology (Malaysia)	Aug 2014	ISSF Prototype workshop?
Merida	Sep 2014	ISSF Launch
CoastGIS (Cape Town)	Jun 2015	ISSF Additional Features Launch

## Appendix VIII: ISSF Rollout Phases

Phase	Target Date	Scope
1	May 2013	toobigtoignore.net update Simplified home page Allow non-web staff to control News
2	Fall/Winter 2013/14	Information about SSF stakeholders and TBTI network Prototype map-based display of stakeholder data Prototype SSF Case Study (unstructured multimedia) Improve usability of members intranet Optionally push intranet content to public web site Change overall technology platform if appropriate
3	Summer/Fall 2014	Information about SSF Prototype navigating/reporting of SSF Profile records using map-based interface Implement high-priority requirements first Launch at 2nd WSFC in Merida