



TBTI Connect

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# Developing a Transdisciplinary Fisheries Course Through Collaboration

## The complexity of small-scale fisheries

Small-scale fisheries contain complex and dynamic features that are interwoven, yet rarely addressed together. To deal with the complexity of small-scale fisheries, governance must be based on broad, comprehensive, and integrated understanding of fisheries social and ecological systems. Such perspective is not always reflected in the conventional training of fisheries researchers and practitioners. New approaches to teaching, training, and communication about fisheries are required. The Too Big To Ignore (TBTI) transdisciplinary fisheries cluster was created to address this need. The cluster aims to develop content for transdisciplinary fisheries teaching and training, that can be used as part of an academic degree or as part of local capacity development.



## WHAT IS TRANSDISCIPLINARITY?

Transdisciplinary approaches have been developed to frame and address complex and interacting systems often found in sustainability sciences.<sup>1,2</sup> They add an important dimension to multi- and interdisciplinary approaches, by urging researchers, not only to work dynamically between and across disciplines, but also to go beyond them. In so doing, it embraces complexity and leads to science that not only informs, but also transforms society.<sup>3</sup>

Transdisciplinary principles often emphasize collaboration among diverse academic disciplines, as well as practitioners, managers, and local stakeholders, e.g. fishers, in an inclusive participatory process. This "open" transdisciplinary approach helps address the imbalance in policy and research priorities that often leave small-scale fisheries marginalized.<sup>4</sup> An open process can also "develop trust, common vision, and common values."<sup>5</sup>

*"Transdisciplinarity enables us to ask different, unorthodox questions, the answers to which impact the future of humanity."<sup>6</sup>*



**Too BIG To  
IGNORE**

Global Partnership for Small-Scale Fisheries Research

## Transdisciplinary course development

A transdisciplinary approach was used to develop the initial course elements including the philosophy, principles and goals of the course. These foundational course elements were developed by a diverse group of collaborators, including small-scale fisheries practitioners, researchers, and students from around the world. This collaboration was intended as a first step in an on-going course development process (Figure 1). The next steps include the development of course content, the test delivery of the course through multiple learning pathways, and an evaluation.

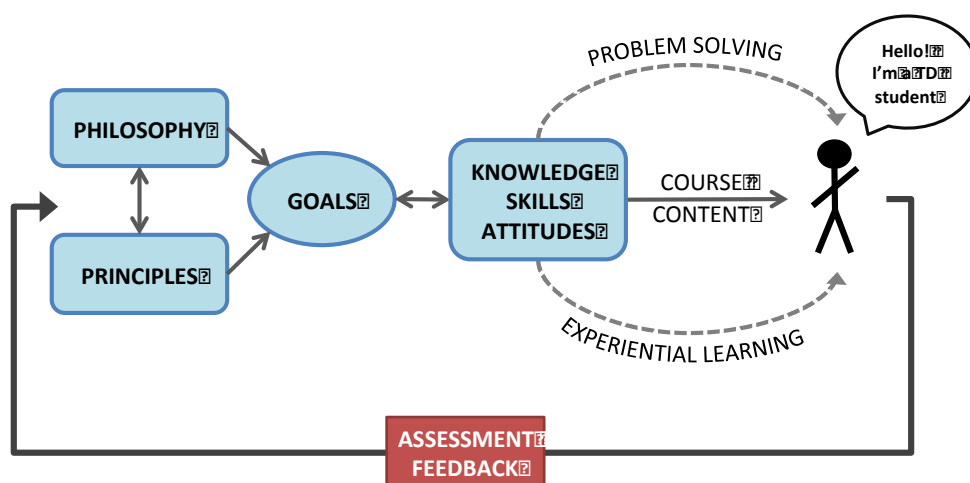


Figure 1. Course development pathway

## Collaboration process

A transdisciplinary fisheries course was first explored at the 2<sup>nd</sup> World Small-Scale Fisheries Congress in Merida in 2014. A nine-week on-line collaboration (January-April 2015) built off the initial workshop discussion and focused on developing the foundations of a transdisciplinary course including a course philosophy, principles, and goals (please see Collaboration outputs). Participants used an agile approach to collaboration so that they could respond to new ideas or changes in priorities. The collaboration used an on-line teaching space with the aid of the TBTI partner, Distance Education, Learning and Teaching Support (DELTS) of Memorial University. The platform worked well, once the participants became familiar with it, and when technological barriers, including software compatibility issues, were overcome.

## WHO WE ARE

The transdisciplinary course development collaboration included 28 people from around the world. All participants volunteered their time and offered their expertise. Participants included practitioners, early and late career academics, and students. Collectively the group had a diverse range of expertise including knowledge of natural, social, and governance systems, as well as experience with participatory research processes, teaching, and transdisciplinary theory. Participants also had research experience with small-scale fisheries in 20 countries or regions (Table 1).

Table 1. Geographic areas of expertise

Brazil	Indonesia
Cambodia	Madagascar
Canada	Mexico
Caribbean	New Caledonia
Columbia	Nicaragua
Comoros	South Africa
Ecuador	South Korea
Estonia	Thailand
European Union	USA
Fiji	Vietnam

The collaboration was facilitated by 'Too Big to Ignore' (TBTI). TBTI aims to promote sustainability and viability of small-scale fisheries around the world, through research and capacity development ([toobigtoignore.net](http://toobigtoignore.net)).





### PHILOSOPHY

The transdisciplinary fisheries course emphasizes development of research and collaboration skills, allowing participants to transcend their previously acquired disciplinary knowledge. The course takes a holistic, and problem-solving approach, which demands working across and beyond academic disciplines, as well as across spatial and temporal scales. Transdisciplinary work is viewed as an adaptive process, emphasizing inclusiveness and valuing the diverse viewpoints and knowledge of all the stakeholders. As part of the developmental practice of the course, the evaluation of power relations in knowledge access and production are included, aiming to create a reliable interactive multi-sector engagement based on trust.

### PRINCIPLES

#### 1) Approach principles

When defining transdisciplinary work, it is first important to describe the overarching approach that will be taken. Several of the identified approaches focus on how the topics will be framed such as holistic, multi-scale, and systemic. Other approach principles focus on the process of work, such as problem solving (the process is also more specifically detailed below). Both framing and process approaches are supported by working through and across disciplines.

#### 2) Personal trait principles

The personality traits identified as being important for transdisciplinary work included empathy, which allows participants to see problems from multiple perspectives and value different opinions. Innovation and out of the box thinking to engage with dynamic and complex contexts, and commitment to transdisciplinary approach to sustainability were also identified as important traits for transdisciplinary fisheries researchers.

#### 3) Process principles

The process principles describe specific steps to be taken during the transdisciplinary process. Many of the process principles focus on inclusion of diverse viewpoints and knowledge, and the need to recognize power relations in all steps of the process (i.e. stakeholder identification, and knowledge access, production, and sharing) to ensure that potentially marginalized groups are included in the transdisciplinary process. This is explicitly an open transdisciplinary process that includes academic and non-academic actors through interactive stakeholder engagement throughout the process (including the choice of research questions). To facilitate interactions, there is also a focus on the promotion of common language and exchange.

### NEXT STEPS

These initial collaboration outputs will serve as a foundation for future development of the course content and teaching materials. The TBTI transdisciplinary research cluster will continue to engage with its members in the development, review and testing of the course.

These collaboration outputs are freely available to anyone who wishes to use them.

We welcome anyone to use the outputs as a foundation for the development of their own materials. This open access is in the spirit of the transdisciplinary process, and done to respect the voluntary participation of the collaborators.

Teaching and training materials based on these foundational outputs could be tailored for a specific audience or learning context. Specific contexts could include academic course materials administered on-line or in person, or intensive on-site training of fisheries extension officers, or local capacity development among fishing people.



#### 4) Outcome principles

The outcome principles outline the expected results of a transdisciplinary approach. By integrating theory and practice a transdisciplinary approach would: (i) produce and communicate a new and holistic perspective and understanding of the problem; (ii) open pathways for ongoing problem solving; and (iii) facilitate change, with the ultimate goal of supporting the sustainability of fisheries and fishing communities.

### GOALS

The overarching goal of the course is to promote and model transdisciplinary approaches to fisheries. A transdisciplinary approach embraces the complexity of fisheries systems and the diverse viewpoints and priorities of different stakeholders. This course aims to examine the different theoretic perspectives and holistic, systems, multi-scale, and multi-stakeholder approaches used to identify and frame fisheries issues. It will outline pathways for ongoing problem solving by exploring the collaborative, iterative, and context-dependent transdisciplinary process. This will include examining and assessing methods for knowledge production, integration, and communication (both among and beyond academic disciplines), methods of stakeholder identification and active engagement in all stages of the transdisciplinary process, and methods of data collection and presentation. Particular attention will also be paid to power relations and its influence on fair and representative stakeholder engagement in all stages of the transdisciplinary process.

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#### PHOTO CREDITS:

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4<sup>th</sup> page – R. Chuenpagdee

#### ENDNOTES:

<sup>1</sup> Hadorn, G, et al. (2006). Implications of transdisciplinarity for sustainable research. *Ecological Economics*, 60, 119–128.

<sup>2</sup> Pennington, D, et al. (2013). Transdisciplinary Research, Transformative Learning, and Transformative Science. *BioScience*, 63(7), 564–573.

<sup>3</sup> Lang, D, et al. (2012). Transdisciplinary research in sustainability science: Practice, principles, and challenges. *Sustainability Science*, 7, 25–43.

<sup>4</sup> Chuenpagdee, R, et al. (2015) Curriculum Development in a Transdisciplinary Collaboration Space. <http://permalink.fliqz.com.aspx/permalink.aspx?at=6bee9d13e58b42e381403d404dbcf74&a=cc528ff43cad433896158331fdecce7b>

<sup>5</sup> Paterson, B, et al. (2010). Transdisciplinary co-operation for an ecosystem approach to fisheries: A case study from the South African sardine fishery. *Marine Policy*, 34(4), 782–794.

<sup>6</sup> McGregor, S & Donnelly, G. (2014) Transleadership for Transdisciplinary Initiatives. *World Futures: The Journal of New Paradigm Research* 70, 37–41.

