

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/envsci

Youth as the inheritors of collaboration: Crises and factors that influence participation of the next generation in natural resource management

Melanie Zurba^{a,b,*}, Micaela Trimble^{a,c}

^a Natural Resources Institute, University of Manitoba, Canada

^b Common Ground Research Forum (CGRF), Ontario, Canada

^c Center for Marine Studies (CEM) – Federal University of Paraná (UFPR), Brazil

ARTICLE INFO

Keywords:

Governance
Co-management
Crisis
Forests
Fisheries
Youth

ABSTRACT

Collaborative decision making is increasingly common in natural resource management. However, the current and future involvement of youth in resource management, as well as the ways in which crises affect youth, have been poorly addressed. This article contributes to partially filling this gap by analyzing youth involvement in resource-extraction activities and collaborative opportunities regarding fisheries and forestry in Uruguay and Canada, respectively. Our findings show that social, ecological and economic crises affect the viability and attractiveness of these resource-based activities, and crises also trigger collaborative approaches to management. Even though adult community members highlighted material dimensions of wellbeing when referring to their expectations for the youth, subjective components including values and cultural identity seem to affect the way in which the youth connect with the fishery and forestry. Young fishers in Piriápolis (coastal Uruguay) are attached to the fishery and they will likely become engaged in fisheries co-management in the future. In contrast, many questions remain around the involvement of First Nations youth in forestry in Northwest Ontario (Canada), potentially due to factors relating to incentives, leadership, and wellbeing. Our research indicates that there are various adult expectations of youth, and that youth engagement will continue to be an important question for the futures of fisheries and forestry management in our study areas. Additional research should investigate youth perspectives regarding their participation in collaborative management in order to better understand the future of the inheritors of collaboration and guide policies accordingly.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

Deliberative and participatory processes, including those found in civil society, are important for maintaining sustainable and

socially responsible resource and place-based management (Wals, 2007; Zurba, 2014). So far, much consideration has been given to existing forms of collaboration, the actors involved, the power dynamics, and the implications for decision making. Nevertheless, little attention has been given to youth

* Corresponding author at: Natural Resources Institute, University of Manitoba, 303 - 70 Dysart Rd. Winnipeg, Manitoba, Canada. R3T 2M6. Tel.: +1 2042300991.

E-mail addresses: umzurba2@myumanitoba.ca, melzurba@gmail.com (M. Zurba).

<http://dx.doi.org/10.1016/j.envsci.2014.05.009>

1462-9011/© 2014 Elsevier Ltd. All rights reserved.

participation in natural resource management. Through an extensive review of the literature on collaboration in resource management and governance,¹ we identify this as being a significant gap in the field, especially in light of the directions being taken towards understanding the promotion and maintenance of community engagement and participation (Berkes, 2010; Cornwall, 2008). As well, policies for natural resources management have been predominantly intergenerationally blind, disregarding the involvement of the youth in resource-based activities, and their contributions to the social-ecological systems they belong to (Neis et al., 2013).

Here we aim to contribute to filling this gap by thinking futuristically in order to understand how the next generation of community members will be affected by on-going collaborations with government and industry partners. We do so by exploring questions around youth in the context of two different and heavily studied resource systems, namely fisheries and forestry, in two study areas, coastal Uruguay and Northwest Ontario, Canada. We defined “youth” as being a term relative to regional context. However, in both cases youth was considered to be younger than thirty years of age. We also analyzed different forms of “crises” as triggers for opportunities and drastic change around the use and management of natural resources (Richards, 1998; Wondolleck and Yaffee, 2000; Olsson et al., 2006), and how such changes in turn may affect youth in terms of the expectations of them to participate in harvesting activities.

Both cases looked independently at collaborative management that was occurring, and focused on questions regarding local participation. Collaboration, here is described as a form of communicative action existing within a social-political space (i.e., such as governance) where autonomous parties work towards mutually favourable outcomes (Ross et al., 2002; Peters and Pierre, 2004). As collaboration has become increasingly necessary, a focus on building positive outcomes for communities has become concurrently prevalent in the natural resources and environmental governance literature (Adger et al., 2006; Berkes, 2010; Zurba et al., 2012). Benefits of engaging in collaborative resource governance include improving the knowledge-base for regional solutions, engaging critical community participation, and contributing to local sustainability (Kearney et al., 2007; Wiber et al., 2009). Co-management is the most prevalent form of collaboration regarding natural resources and has been defined “as the collaborative and participatory process of regulatory decision-making among representatives of user-groups, government agencies and research institutions” (Jentoft et al., 1998: p. 423).

In order to address the topic of youth as the next generation of collaborators we have developed the following objectives: (1) describe how different forms of crises have resulted in opportunities for collaboration and the involvement of

community members in resource management in the two areas; (2) analyze the existing youth participation and determine what adults and current collaborators expect of the youth in terms of their involvement in the fishing/forestry activities or in ongoing collaborations.

First we describe our methods, how the two case studies were brought together for comparison, and how the data was worked with in order to meet our objectives. In the following section, we describe our two study areas, giving particular attention to fisheries and forestry management, and the crises that these two systems have been facing. We then present the main findings regarding the involvement of youth in fishery/forestry activities and participation opportunities. Finally, we discuss the factors that influence participation of the next generation in natural resource management.

2. Methods

The two case studies were chosen for comparison because: (i) both cases explored collaboration of natural resources; (ii) both had been affected by crises influencing the management of resources; and (iii) both had strongly emergent data relating to youth engagement in resource extraction as being critical to the future of collaboration.

The case study (Yin, 1994) in Uruguay was developed in Piriápolis (Fig. 1), one of the main landing sites of small-scale fisheries on the Río de la Plata coast (see Trimble and Johnson, 2013 for a description of this fishery). Fieldwork in Piriápolis spanned over two field seasons: from May to August 2010, and from March 2011 to March 2012. The number of small-scale fishers in Piriápolis varies greatly throughout the year (e.g. from 30 to 150 fishers) mainly due to resource availability. About 20–25% of small-scale fishers are youth. Large-scale fishing boats do not operate from Piriápolis. In the first field season, semi-structured interviews were conducted with 16 small-scale fishers of the four landing sites comprised in the Piriápolis area (Pesquero Stella Maris, Puerto de Piriápolis, Playa Hermosa and Playa Verde). Interviews were recorded by note taking. Fishers were selected purposively to ensure diversity in terms of age and years of experience in the fishery. The age of the fishers interviewed ranged between 24 and 73; most of the interviewees were in their 40s–50s, with only two younger than 30. Topics addressed during these interviews included fishers’ satisfaction with their job; aspirations for their future and for their children; differences in the social norms followed by young and adult fishers; and fishers’ interest in participating in resource management. Additional data for these topics came from informal conversations with young and adult fishers, while participating in fishers’ daily activities. In the second field season, the main topic addressed was the low number of participating fishers during a multi-stakeholder participatory research initiative that was being carried out in Piriápolis. The seven fishers who participated actively (all adult) were interviewed to gather their opinion about the reasons why their fellows were not participating; four of these participants had been interviewed during the first season. In addition, informal conversations were held with 31 non-participants (i.e. fishers who did not

¹ In September 2013, searches were conducted using various academic search engines (Scopus, Google Scholar, Ebscohost) with keywords (youth, young people AND collaboration/natural resources/management/co-management/governance/participation) that would link us to peer reviewed articles relating to our topic.

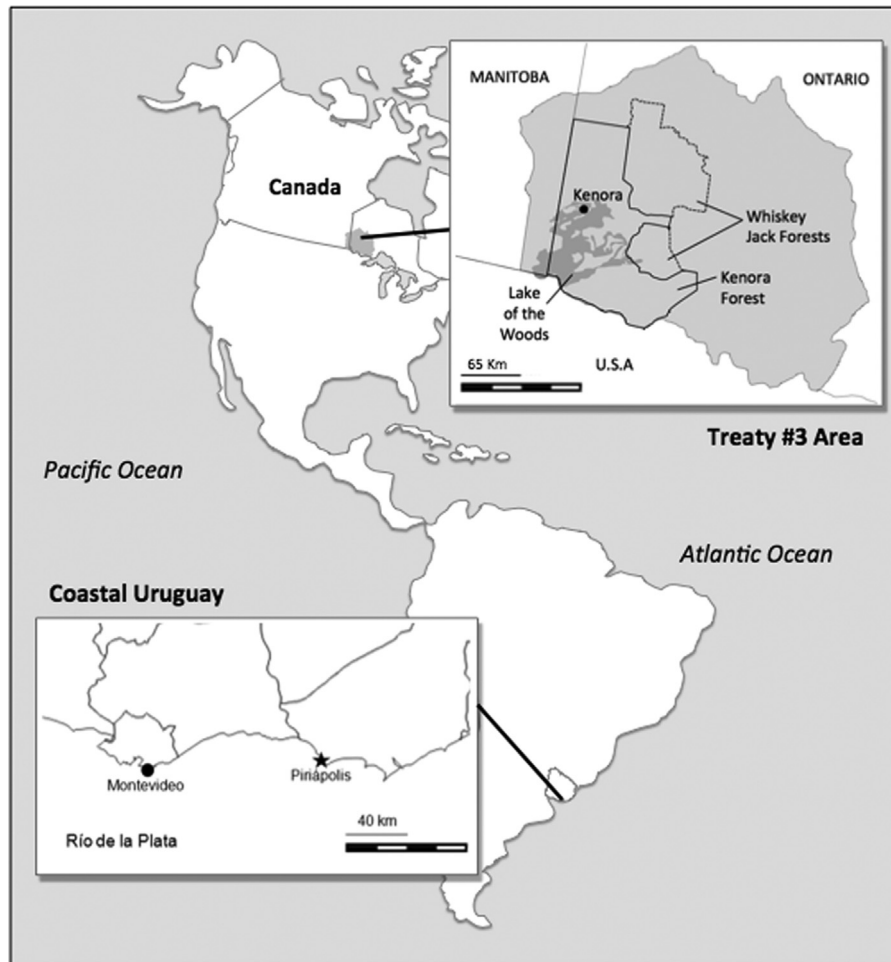


Fig. 1 – Map of the study areas

become engaged in the participatory research initiative), five of whom were youth.

In Canada, the case study included interconnected collaborative governance arrangements for forests in Northwest Ontario/Treaty #3 area. The area designated as Treaty #3 covers 55,000 square miles of land encompassing a large part of Northwest Ontario, as well as a small portion of Southeast Manitoba (Fig. 1). The first collaborative governance arrangement is Wincrief Forestry Products, a corporation that is 49 per cent owned by Moncrief Construction and 51 per cent owned by Wabaseemoong Independent Nations (hence the name: WIN + crief). Moncrief Construction was formed in 1967, and is a family owned business. Wabaseemoong Independent Nations encompass One Man Lake, Swan Lake, and Whitedog communities. The three communities became amalgamated as one band following flooding from hydroelectric development in the 1950s. The second collaborative governance arrangement is the Miitigoog General Partnership Inc. The partnership includes multiple forestry companies (inclusive of Wincrief) and First Nations. Miisun Integrated Resource Management Company was formed to oversee Miitigoog's Kenora Forest Enhanced Sustainable Forestry License (Enhanced SFL), and to direct the management activities in southern portions of the Whiskey Jack Forest (under contract from the OMNR which continues to hold the Whiskey Jack SFL).

The fieldwork period for Northwest Ontario/Treaty #3 area spanned from April 2012 to October 2013, with the highest concentration of interviews being conducted in the North American Summers – being late-May to early-September. Interview participants were selected based on the criteria that they had direct learning experiences within or in relation to Wincrief, Miitigoog, or Miisun. Such participants were found using the snowball approach until possibilities were exhausted. Participants included past and present board members from Miitigoog ($n = 12$); Miisun ($n = 5$), and Wincrief ($n = 5$); band council employees managing the coordinating Miitigoog files ($n = 2$); land managers from the [First Nations] Grand Council of Treaty #3 ($n = 2$); and Ontario Ministry of Natural Resources (OMNR) managers ($n = 7$) who were either directly or indirectly involved in learning and interacting with Miitigoog or Wincrief; private consultants ($n = 2$); Miisun and Wincrief management employees ($n = 8$); labourers from First Nations ($n = 3$); the Miisun Aboriginal Liaison; one industry manager not party to the board; and the Executive Officer of Shoonyaa Wa-Biitong training and employment centre for the Treaty #3 area. Some of the participants fulfilled more than one of these roles (i.e. were on more than one board). Of the 43 participants interviewed for the research in Northwest Ontario/Treaty #3 area, 19 were from First Nations, and 4 were community elders. Topics addressed during these interviews included perspectives on

collaborative governance cases; learning coming from past and present engagement in collaboration; and the present and future engagement of the youth from communities in forestry and forest management. Data was recorded and transcribed verbatim prior to analyses.

The fieldwork protocols for the cases studies in Uruguay and Canada were developed independently. For the purpose of this research, the emergent data on youth was handled according to protocols that were developed post hoc so that we could investigate the topic in a systematic fashion. In order to account for the emergent data on youth within both pools of data, free and axial (e.g., youth, employment, wellbeing) coding were applied to all transcripts so that data could be systematically retrieved and analyzed in order to meet our objectives. Each author analyzed their respective case since they had the greatest knowledge in terms of the overall context in which they were working. Our assessments of the data were qualitative and were dependent on relationships between the emergent themes, as well as the general context of the case study. We used computer aided qualitative data analysis software (CAQDAS) in order to facilitate this process. Document analyses were conducted in order to obtain data relating to the different forms of crises affecting the case studies. This included analyses of academic, government, and community literature, and resulted in the critical historical accounts that we present here in order to frame our discussion about youth (Dressler et al., 2010).

The three-dimensional social wellbeing approach was used as a tool to understand the findings during the qualitative analysis; it did not guide data collection. This 3-D wellbeing approach posits that there are two other dimensions, subjective and relational, interconnected with the more traditional material dimension (e.g. financial resources, a healthy environment). The subjective or cultural dimension is about the beliefs, norms and values shaping people's feelings about their quality of life, whereas the relational dimension comprises the social interactions influencing people's wellbeing (Coulthard et al., 2011; Armitage et al., 2012).

3. Case study areas and crises

3.1. Coastal Uruguay: social-ecological crisis affecting the fisheries system

Fisheries in Uruguay are State property. DINARA (the National Directorate of Aquatic Resources), within the Ministry of Livestock, Agriculture and Fisheries (MGAP), is the agency in charge of fisheries management and enforcement. Its mission is to regulate and promote the sustainable use of fishing resources and aquaculture. Considering the small- and large-scale sectors, Uruguayan fisheries catch about 120,000 tonnes/year from its exclusive economic zones (EEZ), and the majority of the catch from both sectors is exported (Mikkola and Montiel, 2008). Artisanal or small-scale boats (estimated at 1364 in all the country, Puig et al., 2010) fish off the coast of the Río de la Plata and Atlantic Ocean, but also in coastal lagoons and inland water bodies. Industrial or large-scale boats (94 in total) operate in the Río de la Plata, Atlantic Ocean, international

waters, and EEZ of other countries (upon authorization). Most of the total landed catch comes from the large-scale sector (97%). Even though artisanal fisheries represent only a small amount (approximately 3%) of the total landed catch, they employ many more people than the industrial sector (e.g. Defeo et al., 2011) and they are one of the main livelihoods of many small communities in coastal and inland Uruguay.

Different phases can be identified in fisheries development in Uruguay (Astori and Buxedas, 1986; Bértola and Bermúdez, 1996; Amestoy et al., 2007). In the pre-industrial phase, until the beginning of the 1970s, artisanal fisheries were prevalent and were totally oriented towards domestic consumption. Later on, in the 1970s, when Uruguay was facing an economic downturn, non-traditional exports (including fish) were encouraged by the government. Under UNDP and FAO support, this period represented the emergence of the industrial fisheries sector in Uruguay, which peaked until 1981. The development of this sector, by few private companies, was encouraged by the law “Wealth of the sea” (N° 13.833, 1969) and the Fisheries Development Plan. Fishing resource availability and international markets were also key factors for the emergence of the industrial fisheries sector in Uruguay (Astori and Buxedas, 1986).

However, around 1985 a fisheries crisis began to be evident in the country due to the decline of international prices of fish products and the status of fishing resources. The three main species, common hake (*Merluccius hubbsi*), whitemouthcroaker (*Micropogonias furnieri*) and striped weakfish (*Cynoscion guatucupa*), were close to their maximum sustainable yield. In the 1990s, large-scale fisheries policy was directed towards the diversification of both captures and fish products. Even though artisanal fisheries were re-oriented towards international markets, this sector has been historically neglected by the government (Astori and Buxedas, 1986; Galli, 2008; Puig et al., 2010). During 2001–2006, the number of artisanal boats boomed due to several factors: national economic crisis, rising prices since 2004, weak enforcement, and *de facto* open-access regime (Puig and Grunwaldt, 2008).

Several sources support that Uruguay is facing a fishing resources crisis. Official data from DINARA show that all five of the most important species of Uruguayan fisheries (common hake; white mouth croaker; striped weakfish; Argentine croaker, *Umbrina canosai*; and long-tailed hake, *Macrurus magellanicus*) are fully exploited or overexploited (Mikkola and Montiel, 2008). Of these, the white mouth croaker and striped weakfish are targeted by the artisanal and large-scale sectors. Based on information from stock assessment, both species have been catalogued as fully exploited, although with signs of overexploitation (Defeo et al., 2011). Landings of white mouth croaker and striped weakfish have been declining since the early 1990s (DINARA, 2009). The resource crisis in coastal Uruguay is a matter of concern of artisanal fishers, large-scale fishers, the national union of seamen (SUNTMA), DINARA members, among others. These different stakeholders considered that coastal trawling, the main fishing gear used by the large-scale sector, was the major cause of resource decline (Trimble, 2013).

As a consequence of the resources crisis, and following the FAO Code of Conduct for Responsible Fisheries, in 2009

DINARA developed a new Fisheries Law, which after revisions in the Parliament, was passed in December 2013 (Law N° 19.175). Its goal is to ensure resource conservation and sustainable development, rather than to promote resource use and fisheries development – aims of the previous law (ROU, 2009). One of the innovations is that the new law includes articles about stakeholder participation in fisheries management, inexistent in previous legislation. First, a national advisory board – the Fisheries Consultative Council, will be formed by representatives of DINARA, additional ministries (Defense; Foreign Affairs; Ministry of Housing, Planning and Environment), owners of industrial fishing boats, artisanal fishers, companies dedicated to the processing of fish products, fisheries labour sector, and Society of Veterinary Medicine of Uruguay. Second, regional advisory boards will be formed in DINARA zones of artisanal fishing – thus named Fisheries Zonal Councils, for artisanal fisheries co-management. They will be integrated by representatives of DINARA, local and departmental governments, Coast Guard, and artisanal fishers. Fisheries Zonal Councils started to be implemented (sometimes as Fisheries Local Councils) in pilot areas of the country in 2012.

3.2. Northwest Ontario/Treaty #3 Area, Canada: social-economic crises affecting the forest industry

Treaty #3 includes twenty-eight First Nation communities. The overall First Nations population is approximately 25,000 people, with more than half of the population under eighteen years old. Youth unemployment continues to be an issue for many of the First Nations communities that have been actively engaged in developing youth employment strategies (Shooniyaa Wa-Biitong, 2014). However, the desire to participate in resource extraction activities such as forestry has been variable among the Treaty #3 communities. Several communities have protested against forestry through social (i.e., blockades and protest) and legal action. Notably, the Grassy Narrows First Nation was the longest standing blockade in history of Canada (Willow, 2013), beginning in 2002 with actions continuing in response to on-going court proceedings. Conflict as such, is the first “crisis” leading to governance reforms through new forms of partnerships, learning, and action.

Davidson-Hunt (2003) describes the beginnings of industrial forestry in the Lake of the Woods (northwest Ontario) area from colonial historical and Indigenous perspectives. The forestry industry formally began in the late 1870s to early 1880s with the building of the Keewatin sawmills. This development facilitated the arrival of the Canadian Pacific Railway in Kenora in 1882, and the forestry industry subsequently experienced a boom. Forests have continued to be the centre of industry in this part of Northwestern Ontario and have shaped the economy, allocation of lands, and the relationships between Indigenous peoples and settler populations since colonization. Several pulp and paper companies developed mills in the Kenora region, especially in the second half of the 20th century. However, the culmination of regional disputes over wood allotments and the collapse of the North American housing industry created a

situation of overall economic downturn. Year 2005 marked a significant shift in development and the regional forestry economy when Abitibi Consolidated announced the permanent closure of its mill – the largest in the region. This second “crisis” created the potential for drastic change in the relationships in the governance of forests. It meant that “business as usual” was no longer continuing, giving the opportunity to reconsider resource relationships in the region.

In the Province of Ontario, the regulatory relationships affecting forests are primarily administered by the Ontario Ministry of Natural Resources (OMNR), which is vested with the authority to manage Crown forests through the *Crown Forest Sustainability Act* (CFSA). This Act came into effect in 1995 and guides forest planning, operations, information, licensing, trust funds, facilities, and remedies and enforcement (Ontario Ministry of Natural Resources, 2006). Sustainable Forest Licenses (SFLs) are given to forestry companies to manage Crown Forests on a five-year renewable basis for up to twenty years. The OMNR is also legally required to consult with First Nations on behalf of the Crown as part of the procedures outlined in the department’s forest management planning process. Through the Crown, the OMNR has the regulatory power and ultimate control over what is possible in terms of regional collaboration. In response to the crises mentioned above, the OMNR developed and forwarded forest tenure modernization through the *Ontario Forestry Modernization Act*, 2011. Through the Act, Enhanced Sustainable Forestry Licenses (Enhanced SFLs) were established as the main tool for tenure modernization. These Enhanced SFLs are held by Local Forestry Management Corporations (LFMCs), which are made up of local stakeholders including First Nations (Ontario Ministry of Natural Resources, 2011) – Miitigoog is an example.

Miitigoog was established in 2010, and currently holds an Enhanced SFL for the 1.2 million-hectare Kenora Forest. The SFL was formally the responsibility of the Trus Joist Kenora operations branch of Weyerhaeuser. However, following negotiation, it was transferred to Miitigoog in 2010. The *Miitigoog Shareholder Agreement* describes the company structure as well as the types of shareholders, their roles, and the terms of their shares. *Class A Common Shares* are unlimited, are redeemable and retractable, and are to only be issued to the First Nations Trust. The First Nations Trust, which also makes up the Miisun board membership, is a partnership of First Nations that have individual claims to the Kenora and/or Whiskey Jack Forests. The founding members of the First Nations Trust are Wabaseemoong Independent Nations, Naotkamegwaning First Nation, and Ochiichagwe’ Babigo’ining Ojibway Nation. The trust has goals of expanding within the Treaty #3 area, and has been increasing membership accordingly. *Class A shares* must at all times be equal to *Class B Common Shares*, which belong to and are issued to parties that hold a Forest Resource Planning Facility License issued by the Minister of Natural Resources. These are the larger industry partners, namely Weyerhaeuser, Kenora Forest Products, and Wincrief. *Class C Common Shares* are issued to those who have overlapping licenses on the Kenora Forest, namely those companies represented by the Kenora Independent Loggers Association. The Miitigoog and Wincrief boards are both based on egalitarian models,

meaning they have equal representation of First Nations and industry partners.

4. The futures of the youth as the inheritors

4.1. Coastal Uruguay

All artisanal fishers in Piriápolis stated that they want to participate in fisheries management. They would like DINARA to take into account their knowledge about the resources (e.g. catch decline; decreased species diversity; increased unpredictability of the occurrence of certain species). However, some fishers are inclined to not participating in meetings with DINARA because of several reasons, including previous unsatisfactory experiences and conflictual relationships with the agency. The fishing resource crisis has led to increased fishers' need for alternative or additional sources of income, although they wished they could continue working in the fishery – the way of life they chose. Moreover, due to catch decline, increased unpredictability of the fishing activity, and fishers' hopelessness about a possible recovery of the resources (e.g. due to the historical government support to the large-scale fishing sector), the majority of fishers do not want their children to become fishers (Trimble and Johnson, 2013). In this scenario, and considering the intended government transition of moving towards more participatory modes of decision making, it becomes relevant to understand the role and interests of the fishing youth. It is them who might interact with DINARA in a co-management process in the future.

Contrary to fishers' aspirations, their sons and daughters start working in the fishery as teenagers, after learning shore-based skills (e.g. to prepare and bait long-lines) while they are children. Like their fathers, fishers' sons usually like fishing because of its flexibility, the money they make, and their love for the sea. The youth working in the fishery often drop out secondary school, although their parents would prefer them to study. In fact, even youth who quit school and have no family members in the fishery have the “door open” to enter the fishery as apprentices. Adult fishers explained that this is because it is better for them to learn the profession and start making a living in the fishery, instead of taking a wrong track in life.

Nevertheless, in general adult fishers were concerned about an apparently unsuccessful transmission of the “social codes” of the fishery to the youth. For example, most fishers stated that young fishers have less respect towards other fishers than old ones do, arguing that the youth were not well educated at home, even if they were raised in a fishing family. For instance, one fisher stated, “Young fishers have no social codes. They do not know what these codes are because you have to learn them at home.”

However, other fishers highlighted that “the youth always want to learn” in the fishery, and explained that the decreased respect observed among fishers, and more markedly among the youth, is happening in the entire society. Some adult fishers stated that young fishers are not interested in participating in meetings where fishery issues are addressed, because they have other interests.

A multi-stakeholder participatory research initiative developed in Piriápolis since 2011 provided the opportunity to analyze, to some extent, youth participation. After an initial stage in which fishers of all ages decided that the participatory research initiative should address the problem of sea lions (which feed from their nets and long-lines), additional stakeholders were invited to participate: DINARA; National University biologists doing research about sea lions and the interaction with the fishery; and two local NGOs. Fifteen participants from four stakeholder groups (seven fishers, one artisanal fisheries manager, five university scientists, and two NGO representatives) were committed to the participatory research process in Piriápolis and formed the Group POPA – *Por la Pesca Artesanal*. Meetings and workshops have been held in Piriápolis, generally in a monthly basis (see Trimble and Berkes, 2013 for a thorough description of the participatory research initiative and its contributions to co-management).

The evaluation conducted throughout the process (Trimble and Lázaro, 2014) showed that the low number of participating fishers was a reason of concern of all POPA members. None of the seven committed fishers were youth; rather, three were in their 30s, three in their 40s, and one in his 60s, with most having 20–30 years of experience in the fishery. Why is it then that the youth did not participate? POPA fishers argued that the youth lack interest in initiatives like this one. Nonetheless, during informal conversations at landing sites, five young fishers gave several reasons for not participating in the workshops being held in Piriápolis: (i) they were working (either at sea or on shore) at the time of the meetings; (ii) they had family issues to address (e.g. to look after their children); (iii) they lacked skills to participate (either due to low level of formal education or little experience in attending meetings), and better skilled fishers were participating; (iv) previous meetings and projects involving fishers in Piriápolis did not lead to positive outcomes; and (v) they had a conflictual relationship with DINARA and thus preferred to avoid arguing with the manager who was participating. It is worth noting that these same reasons were also given by adult fishers who did not engage in the participatory research process. In addition, they explained that their dislike towards meetings in general, or the prevalent lack of fishers' unity in Piriápolis, made them not to participate, among other reasons.

4.2. Northwest Ontario/Treaty #3 Area, Canada

The First Nations and industry individuals involved in Miiitigoog and Wincrief at the board levels said that they thought that forestry related jobs would be great opportunities for First Nations youth. The jobs that were the focus of this discussion were namely those that required low levels of education and some sector specific training depending on whether they were to work in forest harvesting, mills, or construction (home building, road works, or hydro pole development). Board members stated that employment in forestry related activities would have great economic benefits for the youth as individual members of a community due to the high paying nature of the work. They also felt the jobs would become available in the near future (five years or less). Industry board members in particular expressed their understanding that the settler youth of Kenora tended to have a

desire to leave the region shortly after finishing high school. These participants stated that they were focusing on First Nations youth as their future work force because they felt that they represented the portion of the youth that would remain in the region.

Our First Nations, they're not going anywhere else. They're staying here. We'll always have a labour force so it works out good. – Industry (participant 027)

The high-level expectations for First Nations youth to participate in forestry work corresponded very closely with expectations surrounding growth of the businesses (Miisun and Wincrief) and expansion of the Enhanced SFL and management group (Miitigoog) into new territory, such as the northern Whiskey Jack Forest (Grassy Narrows and other First Nations territory). At the board level, forestry resources were perceived as being abundant and sustainable if harvested according to selective harvesting practices. Clear cutting was talked about as a past practice that was no longer suitable in the area. Some industry partners said that they felt that First Nations involvement at all levels was beneficial because it demonstrated corporate social responsibility to their consumers. However, despite the expectations and positivity around First Nations youth participation in forest industry, there is inconclusive evidence that First Nations youth will fill these roles.

The development of the 400,000 square foot Trus Joist Weyerhaeuser mill in Kenora saw the implementation of training programmes focused towards First Nations. It also implemented a thirty percent quota (60 out of 200 people) for the proportion of First Nation people to hold jobs at the facility. Shooniyaa Wa-Biitong provided the training for the Trus Joist First Nations employment scheme, and is expected to be a major partner in facilitating First Nations youth training for the industry partners involved in Miitigoog. They offer other skills and certifications including high school equivalencies in their offering of training to First Nations youth without expectation that the graduates take the positions that are being offered to them by industry. Instead of making employment and retention agreements with companies, Shooniyaa maintains that it is the responsibility of companies to make employment attractive enough that this is a natural occurrence. Shooniyaa's culturally sensitive training and inclusion of enhanced outcomes resulted in a largely successful training of First Nations youth. However, retention proved to be problematic, especially once the market became less stable. As of 2012, only ten percent of the work force had an Anishinaabe or Métis background. Many quit their jobs at Trus Joist for different types of employment or livelihood strategies, while others took their skills in the sector to different companies. The most startling evidence relating to the potential for First Nations youth to participate in forest industry practice relates to retention within training programmes led by other companies. Several participants with knowledge of such training programmes in the region cited extreme drop-out rates as high as ninety percent. Involvement in corporate management positions in relation to both Wincrief and Miitigoog was also discussed as being something that was greatly lacking, and likely affecting the bigger picture

through a lack of decision-making power on the ground, as well as potential mentorship.

When you go to the next facility you look and see how many First Nations you see in key positions [said with obvious sarcasm]. – Wincrief manager (participant 010)

When asked about the disparity between expectation and employment and retention, those who had the closest insights (Executive officer at Shooniyaa Wa-Biitong, forest workers from Miisun and Wincrief, and community elders) offered starting points for understanding the potential issues.

In the case of Wincrief, opportunities were coordinated with transportation to and from sites, as well as some building, harvesting, and other construction jobs being located in close proximity to the community. Wincrief jobs, however, have become increasingly sparse. The Wincrief workforce started with 20 employees from Wabaseemoong. There are now only two full-time employees. Most of the rest of the employees have been laid off. Elders and forest workers from Wabaseemoong and other communities speculated about other employment opportunities and offered explanations for a potential disinterest in forestry-related work by youth. Conflict with community lifestyle was mentioned on several occasions by such individuals who stated that it was emotionally difficult for young people to be away from their communities for long periods (several weeks at a time) while in training programmes or on work sites. One worker and the two land and forest managers from Grand Council of Treaty #3 said that they felt that youth were more interested in jobs involving computers. The two workers that maintained long-standing positions at Wincrief stated that Wabaseemoong youth did want employment, and that people in the community consistently approached them for insights about their type of employment. Despite this interest in employment, these participants also highlighted the direct disagreement of First Nations youth with harvesting practices. One worker from Wabaseemoong gave an example.

I know there was one area where they were harvesting and the lady that lives on the end - she made a roadblock because of the harvesting in that area. There was another one that crossed our reserve line there. The school kids got involved. They told them to stop harvesting there. – First Nations forestry worker (participant 039)

Several participants also explained that industrial forestry (even small-scale) was not part of the traditional customs and practices of Anishinaabe people. Anishinaabe participants spoke of a different kind of connection to the forests and to the land, which was important to maintain according to their values and culture.

Everything that we need, mother earth gives to us, and I just want her to know that I'm not just taking and taking. I guess I need to have that balance too, and it's just a constant reminder not to keep taking and taking because if you keep doing stuff without those ceremonies it just gets easier and easier to take. – First Nations Trust member (participant 041)

Based on the work in the region, a significant discord was found relating to expectations and actual youth involvement in forestry jobs. From the interviewees' perspectives, the primary areas explaining the lack of participation of First Nations youth in forestry in Northwest Ontario include: (i) the types of incentives to complete training programmes; (ii) a lack of stable employment opportunities; (iii) challenges in community life; (iv) a lack of interest in forestry activities; (v) values and cultural connections to the forest that are not aligned with industrial forestry; and (vi) a lack of First Nations people in leadership and mentorship positions.

5. Discussion

Forests and fisheries both represent complex social-ecological systems (Berkes et al., 2003), which provide unique opportunities to evaluate how crises affect change and act as ongoing factors affecting generations of people connected to the harvest of natural resources. Our case studies in coastal Uruguay and Northwestern Ontario/Treaty #3 demonstrate many parallels in regards to change, with both congruent and opposite effects on youth. The responses of the current generation involved in collaboration and that of the youth relate to the resources in question because of two separate yet connected causes. First, the resources, as natural systems, respond to economic, social and ecological forces making harvest either viable and attractive, or non-viable and unattractive in the long term. Second, the connection to harvesting of the resource as something that is either related or not related to the wellbeing of the people, including their cultural identity.

Due to catch decline and increased resource unpredictability, the small-scale fishery off the coast of Uruguay is becoming decreasingly reliable as a sole source of annual income. The fishing resource crisis led to the increased need for additional or alternative jobs, and it also led to a political action: the new fisheries law, which includes some degree of fisher participation in decision making. This is a different scenario from the one encountered in Northwest Ontario/Treaty #3 area, where scarcity of the resource is less of an issue. With regards to the forests, the crises have been economically and socially based, relating respectively to the collapse of industry and the protests against harvesting (mainly in the form of clear cutting) by First Nations communities. The expectation that forestry industry will bounce back and become a source of future employment is complemented by the belief that the resource is being harvested according to sustainable forestry practices (as outlined by Enhanced SFLs administered by the OMNR).

The fisher people of Uruguay are experiencing the social consequences of an ecological crisis – the apparent collapse of fishing resources, while the First Nations of Treaty #3 are aiming to remedy a pre-existing social-economic crisis by entering more greatly into the management and harvest of the forests. The hopes by the current generation involved in the collaborations around forests is that the youth of First Nations communities will find new skills, and forms of prosperity, leading to greater community economic development. While the crises affecting youth are quite different, both fisheries

and forestry scenarios present challenges and opportunities that will continue to cause changes for the next generation. The changes will keep creating tensions with regards to cultural identity and the meaning of the existing relationships between communities and resources (Thakadu, 2005). The social-ecological crisis (in the case of coastal Uruguay) and social-economic crises (in the case of Northwest Ontario/Treaty #3 area) have different drivers of change, yet the outcomes can be thought of as being parallel and moving in different directions in terms of the changing relationships between the community people and the resource being extracted.

In these transitional contexts, a wellbeing perspective helps us understand the connections between community members of different ages and the resource-based activities (fishery, forestry), as well as the implications of these for resource management. In our two study areas, the material dimension of wellbeing was underscored by adult community members when thinking about the future generations. In Uruguay, fishers prefer that their children did not work in the fishery mainly because it will no longer be a viable occupation due to resource decline (Trimble and Johnson, 2013). In Canada, First Nations members currently involved in forest collaborations believe that forestry-related jobs are great opportunities for the youth because of the financial benefits. Nevertheless, there is evidence that the subjective and relational dimensions of youth wellbeing affect their connection to the fishery and the forestry. Young people in Uruguay start working in the fishery after growing up in a fishing family or because they have friends or acquaintances in the sector. These young fishers value the money they make in the job but also the pleasurable aspects of the fishing activity. In Canada, according to the adult interviewees from First Nations communities, the lack of youth interest in forestry-related jobs would be associated to the emotional difficulty of being away from the community, and also to the fact that the industrial forestry is not part of the traditional customs of the Anishinaabe people.

The last point demonstrates that the cultural identity of the youth in the two study areas is important for understanding their connections to the “resource” (fish, forest) and to its use, which can shed light on the ways the youth are affected by crises. In Canada, there is a risk that the youth will not become engaged in forestry governance because of the apparent low attachment to industrial forestry. Incentives will therefore likely be purely economic for members of First Nations, rather being motivated by aspects of wellbeing that are connected to cultural identity. In Uruguay, low participation of young and adult fishers in meetings with the government (e.g. during the participatory research initiative) is not associated to a lack of attachment to the fishing activity. Rather, it is more a consequence of fishers' intense job, their negative expectations of meetings (due to unsuccessful previous experiences) and their conflictual relationship with the management agency, as reported elsewhere (Trimble et al., 2014). However, a failure to recruit young people to the activity, as observed in our forestry case, and which could have direct implications for their participation in governance, does occur in other fisheries, such as in Paraty-Brazil (Trimble and Johnson, 2013) and in Cromer-UK (White, 2013).

The economic, social and ecological forces paired with wellbeing sets the stage for the type of participation that will be desired and/or possible for the inheritors of collaboration. For the youth involved in coastal Uruguayan fisheries it is likely that a number of them will be engaged in fisheries co-management because of their strong connections to the sea. This will however be limited by factors relating to the willingness of government to include local knowledge and values into the creation of policy (Zurba, 2009; Trimble and Johnson, 2013). As youth mature, if it is an opportunity for them, they will also be learning how to engage effectively in collaboration. The same can be said in the case of First Nations youth that will eventually move into leadership roles within the collaborations managing forests in Canada. The inheritors of collaboration will be engaged in two different ways. First, they will be the harvesters and processors of the “resources”. Second, they will become the future co-managers representing their sides of the collaborative arrangement. The second type of engagement will be largely dependent upon the continued willingness of both sides to maintain and develop collaborative institutions.

Several other factors will also be important for youth to be able to collaborate at the management level. In Canada, the culturally appropriate education of youth about the different values for forest management will be necessary for maintaining effective leadership, and the building of knowledge and capacity for long-term collaboration (Parsons and Prest, 2003). It will also be important for them to learn and participate within higher-level forest management positions (Parsons and Prest, 2003). Leadership in the form of mentoring will also be important for youth to feel confident enough to participate in decision-making. In the case of coastal Uruguay, young fishers have not been participating in the multi-stakeholder participatory research initiative partly because the older generation is doing it. Capacity building of both young and adult fishers, as well as on the government side, is still required for fisheries co-management (Trimble and Berkes, 2013). Demonstration and an eventual shifting of responsibilities will therefore be needed in order to prepare youth for their future roles as co-managers and collaborative decision-makers.

6. Conclusions

Through our case studies in Uruguay and Canada we have illuminated how different forms of crises relating the local natural resources affect youth. Different forms of natural resource crises, be they social-ecological or socio-economic had had profound effects on youth. Here we have considered different factors relating to current participation of youth and their future participation in fishing and forestry practices and management. Our investigation has enabled us to connect different types of crises and their responses in terms of collaborative management systems. Youth perspectives, in both regards, is still a major gap in the literature around natural resources management as co-management and/or collaborative decision making. We encourage future researchers and policy makers to take the next step towards understanding the potential for long-term collaboration by

conducting investigations with the inheritors themselves. We believe that they will be able to provide important insights that have the potential to shape the future of how we manage natural resources and social-ecological systems.

Acknowledgements

We would first like to thank our participants for sharing their knowledge and perspectives with us about the next generation of community collaborators. We would also like to dedicate this work to Javier Chavez and Alejandro Trazenko, two young fishers who passed away during a fishing accident in Piriápolis during the course of this work. The project in coastal Uruguay (M.T.) was supported by the University of Manitoba Graduate Fellowship, Manitoba Graduate Scholarship, and the International Development Research Centre through the IDRC/CRC International Research Chairs Initiative. The project in North-west Ontario/Treaty #3 area (M.Z.) was supported by the Social Sciences and Humanities Research Council of Canada (SSHRC) Community University Research Alliance (CURA) grant, and a SSHRC Doctoral Fellowship. We appreciate the constructive comments provided by two anonymous reviewers.

REFERENCES

- Adger, W.N., Brown, K., Tompkins, E.L., 2006. The political economy of cross-scale networks in resource co-management. *Ecol. Soc.* 10 (2) 9., <http://www.ecologyandsociety.org/vol10/iss2/art9/>.
- Amestoy, F., Montiel, D., Gilardoni, D., 2007. *Innovación en la gestión del sector pesquero uruguayo: adaptándose a los nuevos paradigmas científico-tecnológicos del siglo XXI*. DINARA, Montevideo.
- Armitage, D., Béné, C., Charles, A.T., Johnson, D., Allison, E.H., 2012. The interplay of well-being and resilience in applying a social-ecological perspective. *Ecol. Soc.* 17 (4), <http://dx.doi.org/10.5751/ES-04940-170415>.
- Astori, D., Buxedas, M., 1986. *La pesca en el Uruguay. Balance y perspectivas*. CIEDUR, Ediciones de la Banda Oriental, Montevideo.
- Berkes, F., Colding, J., Folke, C. (Eds.), 2003. *Navigating Social-ecological Systems: Building Resilience for Complexity and Change*. Cambridge University Press, New York.
- Berkes, F., 2010. Devolution of environment and resources governance: trends and future. *Environ. Conserv.* 37 (4) 489–500, <http://dx.doi.org/10.1017/S037689291000072X>.
- Bértola, L., Bermúdez, L., Camou, M., 1996. *Pesca, Sinsabores y Esperanza. Síntesis de las acciones del CCU en el área de la Pesca Artesanal en los últimos 25 años*. Ediciones del Centro Cooperativista Uruguayo, Montevideo.
- Cornwall, A., 2008. Unpacking ‘participation’ models, meanings and practices. *Commun. Dev. J.* 43 (3) 269–283.
- Coulthard, S., Johnson, D.S., McGregor, J.A., 2011. Global fisheries in crisis: a social wellbeing approach to poverty and sustainability. *Global Environ. Change* 21, 453–463.
- Davidson-Hunt, I.J., 2003. Indigenous lands management, cultural landscapes and Anishinaabe people of Shoal Lake. *Environments* 31 (1) 21–41.
- Defeo, O., Puig, P., Horta, S., de Álava, A., 2011. Coastal fisheries of Uruguay. In: Salas, S., Chuenpagdee, R., Charles, A., Seijo, J.C. (Eds.), *Coastal Fisheries of Latin America and the Caribbean*. FAO, Rome, Fish. Tech. Pap. No. 544, pp. 357–384.

- DINARA, 2009. Dirección Nacional de Recursos Acuáticos. Resultados de la Encuesta de Actividad del Sistema Pesquero año 2007. MGAP-DINARA, Montevideo.
- Dressler, W., Büscher, B., Schoon, M., Brockington, D., Hayes, T., Kull, C.A., McCarthy, J., Shrestha, K., 2010. From home to crisis and back again? A critical history of the global CBNRM narrative. *Environ. Conserv.* 37 (1) 5–15.
- Galli, O., 2008. Worn-out policies. *Samudra Rep.* 49, 8–15.
- Jentoft, S., McCay, B.J., Wilson, D.C., 1998. Social theory and fisheries co-management. *Marine Policy* 22 (4) 423–436.
- Kearney, John, Berkes, F., Charles, A., Pinkerton, E., Wiber, M., 2007. The role of participatory governance and community-based management in integrated coastal and ocean management in Canada. *Coast. Manage.* 35 (1) 79–104, <http://dx.doi.org/10.1080/10.1080/08920750600970511>.
- Mikkola, H., Montiel, D., 2008. UTF/URU/025/URU. *Gestión Pesquera en Uruguay. FAN (FAO Aquacult. Newslett.)* 39, 18–19.
- Neis, B., Gerrard, S., Power, N.G., 2013. Women and children first: the gendered and generational social-ecology of smaller-scale fisheries in Newfoundland and Labrador and northern Norway. *Ecol. Soc.* 18 (4) 64, <http://dx.doi.org/10.5751/ES-06010-180464>.
- Olsson, P., Gunderson, L.H., Carpenter, S.R., Ryan, P., Lebel, L., Folke, C., Holling, C.S., 2006. Shooting the rapids: Navigating transitions to adaptive governance of social-ecological systems. *Ecol. Soc.* 11 (1), <http://www.ecologyandsociety.org/vol11/iss1/art18/>.
- Ontario Ministry of Natural Resources, 2006. State of the Forest Report 2006. http://www.mnr.gov.on.ca/en/Business/Forests/2ColumnSubPage/STEL02_179267.htm (accessed 14.6.14).
- Ontario Ministry of Natural Resources, 2011. Strengthening Forestry's Future: Forest tenure modernization in Ontario. http://www.mnr.gov.on.ca/en/Business/Forests/2ColumnSubPage/STDPROD_092054.html (accessed 14.6.14).
- Parsons, R., Prest, G., 2003. Aboriginal forestry in Canada. *Forest Chron.* 79 (4) 779–784.
- Peters, G., Pierre, J., 2004. Multi-level governance and democracy: a Faustian bargain? In: Bache, I., Flinders, M.V. (Eds.), *Multi-level Governance*. Oxford University Press, UK.
- Puig, P., Grunwaldt, P., 2008. La pesca artesanal y su desarrollo en el Uruguay. In: Programa Ecoplata. *Aportes sobre la Pesca Artesanal en la costa uruguaya*, Montevideo, Uruguay 33–51.
- Puig, P., Grunwaldt, P., González, S., 2010. *Pesquería artesanal de corvina en Uruguay*. *Frente Marítimo* 21, 23–35.
- Richards, P., 1998. *Fighting for the Rain Forest: War, Youth & Resources in Sierra Leone*. James Currey Ltd., Cape Town.
- Ross, H., Buchy, M., Proctor, W., 2002. Laying down the ladder: a typology of public participation in Australian natural resources management. *Aust. J. Environ. Manage.* 9 (4) 2005–2217.
- ROU, 2009. Comisión de Ganadería, Agricultura y Pesca. Cámara de Representantes. Versión Taquigráfica N° 2164ROU, Montevideo, Uruguay. <http://sip.parlamento.gub.uy/indexdb/Distribuidos/ListarDistribuido.asp?URL=/distribuidos/contenido/camara/D20090909-0212-2164.htm&TIPO=CON> (accessed 14.6.14).
- Shooniyaa Wa-Biitong, 2014. The history of Shooniyaa Wa-Biitong. <http://www.shooniyaa.org/about-us/the-history-of-shooniyaa-wa-biitong/> (accessed 14.6.14).
- Thakadu, O.T., 2005. Success factors in community based natural resources management in northern Botswana: lessons from practice. *Nat. Resour. Forum* 29 (3) 199–212.
- Trimble, M., 2013. Towards adaptive co-management of artisanal fisheries in coastal Uruguay: analysis of barriers and opportunities, with comparisons to Paraty (Brazil). Doctoral dissertation University of Manitoba, Winnipeg, <http://hdl.handle.net/1993/22209>.
- Trimble, M., Berkes, F., 2013. Participatory research towards co-management: lessons from artisanal fisheries in coastal Uruguay. *J. Environ. Manage.* 128, 768–778.
- Trimble, M., Johnson, D., 2013. Artisanal fishing as an undesirable way of life? The implications for governance of fishers' wellbeing aspirations in coastal Uruguay and southeastern Brazil. *Marine Policy* 37, 37–44.
- Trimble, M., Lázaro, M., 2014. Evaluation criteria for participatory research: insights from coastal Uruguay. *Environ. Manage.*
- Trimble, M., Araujo, L.G., Seixas, C.S., 2014. One party does not tango! Fishers' non-participation as a barrier to co-management in Paraty, Brazil. *Ocean Coast. Manage.* 92, 9–18.
- Wals, A.E.J., 2007. *Social Learning Towards a Sustainable World*. Wageningen Academic Publishers, The Netherlands.
- White, C.S., 2013. A future for fishing? Perspectives on becoming a fisherman today using a social wellbeing approach. In: Presented at the European Rural Sociology Conference, Florence, Italy, 30 July.
- Wiber, M., Charles, a, Kearney, J., Berkes, F., 2009. Enhancing community empowerment through participatory fisheries research. *Marine Policy* 33 (1) 172–179, <http://dx.doi.org/10.1016/j.marpol.2008.05.009>.
- Willow, A.J., 2013. *Strong Hearts, Native Lands: Anticlearcutting Activism at Grassy Narrows First Nation*. University of Manitoba Press, Winnipeg.
- Wondolleck, J.M., Yaffee, S.L., 2000. *Making Collaboration Work: Lessons from Innovation in Natural Resource Management*. Island Press, Washington, DC.
- Yin, R.K., 1994. *Case Study Research: Design and Methods, Applied Social Science Research Methods Series*, 2nd Ed., vol. 5. Sage Publications Inc., Thousand Oaks.
- Zurba, M., 2009. Bringing local synthesis into governance and management systems: the Giringun TUMRA case in Northern Queensland, Australia. *J. Royal Soc. New Zealand* 39 (4) 179–182.
- Zurba, M., Ross, H., Izurieta, A., Rist, P., Bock, E., Berkes, F., 2012. Building co-management as a process: problem solving through partnerships in Aboriginal country, Australia. *Environ. Manage.* 49 (6) 1130–1142.
- Zurba, M., 2014. Leveling the playing field: fostering collaborative governance towards on-going reconciliation. *Environ. Policy Gov.* 24 (2) 134–146.