

Oceans at Rio+20

Lisa M. Campbell¹, Noella J. Gray², Luke W. Fairbanks³, Jennifer J. Silver⁴, & Rebecca L. Gruby⁵

¹ Nicholas School of the Environment, Duke University, 135 Duke Marine Lab Road, Beaufort, NC 28516, USA

² Department of Geography, University of Guelph, 50 Stone Road East, Guelph, ON, N1G 2W1, Canada

³ Nicholas School of the Environment, Duke University, 135 Duke Marine Lab Road, Beaufort, NC 28516, USA

⁴ Department of Geography, University of Guelph, 50 Stone Road East, Guelph, ON, N1G 2W1, Canada

⁵ Nicholas School of the Environment, Duke University, 135 Duke Marine Lab Road, Beaufort, NC 28516, USA

Keywords

Global environmental governance; high seas; ocean acidification; ocean policy; small-scale fisheries.

Correspondence

Lisa M. Campbell, Nicholas School of the Environment at Duke University, 135 Duke Marine Lab Rd., Beaufort, NC 28516, USA.
Tel: 252-504-7628; Fax: 252-504-7648.
E-mail: lcampbe@duke.edu

Received

29 October 2012

Accepted

2 May 2013

Editor

Ashwini Chhatre

doi: 10.1111/conl.12035

Abstract

In this article, we examine oceans outcomes from the Third United Nations Conference on Sustainable Development (or Rio+20) in relation to how ocean problems and solutions were defined and by whom. We highlight the extent to which problem and solution definitions were shared among participants, in relation to three specific issues on the agenda at Rio+20: conservation and sustainable use of biodiversity in areas beyond national jurisdiction, small-scale fisheries, and ocean acidification. We find that discussions about each of these issues reflect three challenges recognized as complicating oceans management: mismatches between ecological and governance scale, homogeneity among interest groups advocating for ocean conservation, and increased interest in both protection and exploitation of ocean resources. Overall, we found little evidence of constructive dialogue at Rio+20, where participants focused on advancing predefined positions, and we consider the implications of our analysis for ultimately addressing our three focal issues and for oceans management more generally.

The Third United Nations (UN) Conference on Sustainable Development (UNCSD, or Rio+20, June 20–22, 2012) produced an outcome document “The Future We Want” (UN General Assembly, 66th Session 2012) that offers few new tangible commitments (Halle 2012; Monbiot 2012). International environmental regimes are more than meeting decisions or texts, however, and events like Rio+20 are important in framing environmental problems and solutions (Young 2011; MacDonald & Corson 2012). Here, we examine such framings for oceans. Problem definition is critical for policy-making, which can be constrained when participants assume a shared understanding of problems. Adams *et al.* (2003: 1915) argue that the most productive policy dialogue occurs “precisely when different stakeholders (of different sizes and operating at different levels) reveal different interpretations of key issues.” Rio+20’s 45,381 attendees included 12,000 delegates from 188 countries (UN Department of Public Information 2012), represent-

ing governments, business, and civil society, and theoretically provided an opportunity for such dialogue. Here, we use negotiations over the “oceans and seas” section of the outcome document (see Table 1), and discussions of oceans issues at side events, to analyze how ocean problems and solutions were defined, by whom, and with what consequences for Rio+20 outcomes and for oceans governance more generally. We use the term participants to describe observers and delegates generally, and advocates to describe participants promoting particular oceans outcomes.

Policy-makers, scientists, and conservation groups are paying increased attention to oceans and its problems (Williams *et al.* 2010; Veitch *et al.* 2012), including the high seas (beyond national jurisdictions; Gjerde *et al.* 2008). This was evident at Rio+20, dubbed by some the “oceans summit” (Table 2, no. 20), due to exposure (Howard 2012; Table 2, no. 22) both on the formal agenda and via high-profile ocean side events, like the

Table 1 Outcomes from Rio+20: the high seas, small-scale fisheries, and ocean acidification in The Future We Want (UN General Assembly, 66th Session 2012).

Topic	Text
High seas (¶ 162)	We recognize the importance of the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. We note the ongoing work under the General Assembly of an ad hoc open-ended informal working group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. Building on the work of the ad hoc working group and before the end of the sixty-ninth session of the General Assembly we commit to address, on an urgent basis, the issue of the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, including by taking a decision on the development of an international instrument under the United Nations Convention on the Law of the Sea.
Small-scale fisheries (¶ 175)	We commit to observe the need to ensure access to fisheries and the importance of access to markets, by subsistence, small-scale and artisanal fisherfolk and women fish workers, as well as indigenous peoples and their communities, particularly in developing countries, especially small island developing States.
Ocean Acidification (¶ 166)	We call for support to initiatives that address ocean acidification and the impacts of climate change on marine and coastal ecosystems and resources. In this regard, we reiterate the need to work collectively to prevent further ocean acidification, as well as enhance the resilience of marine ecosystems and of the communities whose livelihoods depend on them, and to support marine scientific research, monitoring and observation of ocean acidification and particularly vulnerable ecosystems, including through enhanced international cooperation in this regard.

launch of the World Bank's Global Partnership for Oceans (Table 2, no. 20). However, advocates had mixed success regarding specific objectives for language and commitments in the outcome document. Our analysis finds the debate at Rio+20 reflected three broad challenges for oceans management: mismatch between ecological and governance scale, with governance often occurring at scales inappropriate to the ecological system (Berkes 2006; Crowder *et al.* 2006); homogeneity among interest groups advocating on ocean issues, where nonstate participation in ocean governance is dominated by NGOs, foundations, and scientists (Steinberg 2008; Campbell *et al.* 2009) in part because of the difficulties of associating human communities with ocean spaces (St. Martin 2001); and increased interest in conservation and exploitation of ocean resources, spurred in part by new technological capability (Douvere & Ehler 2008; Van Dover 2011). These issues complicate efforts by the international community to reach agreement on ocean issues.

We focus our analysis on three ocean issues discussed at Rio+20: conservation and sustainable use of biodiversity in the high seas, small-scale fisheries (SSF), and ocean acidification (OA; Table 1). These issues illustrate the diversity of: participants advocating for oceans at Rio+20, the extent to which advocates' objectives were achieved, and the ways in which the three challenges listed above were reflected in discussions. We consider prospects for improved oceans management following Rio+20 and relate these to the policy dialogue we witnessed during the conference.

Methods

We treat meetings like Rio+20 as important policy-making field sites that can be studied. Such study is difficult, however, as meetings are "complex and fragmentary" (Little 1995), with concurrent events spread out over multiple venues. In response, we employ Collaborative Event Ethnography (CEE; Brosius & Campbell 2010), using a research team to cover and make sense of meetings. The analysis here is based on 72 hours of observations at 37 events over 11 days at Rio+20 and related venues, including all but two events related to oceans (Table 1). We analyzed all notes, audio files, photos, and collected documents, focusing first on how problems and solutions were defined and by whom, and second on how scale, homogeneity of interests, and conservation versus exploitation were reflected in the related discussions. Although CEE allows for both broad coverage and rich description of meetings like Rio+20, in this article we highlight the former.

Results

The high seas "failure"

There is currently no coherent global governance framework for conservation and sustainable use of biodiversity in the high seas (Gjerde *et al.* 2008; Ban *et al.* 2013). The Convention on Biological Diversity (CBD) has a relevant mandate, but limited authority on the high seas. The United Nations Convention on the Law of the Sea

Table 2 Ocean events attended at Rio+20.

No.	Date	Event	Sponsor
Outcome document negotiations (individual sessions 1–4 hours long)			
1	13-Jun	Oceans and seas contact group	
2	14-Jun	Oceans and seas contact group	
3	15-Jun	Oceans and seas contact group	
4	18-Jun	Oceans and seas contact group	
Side events at Rio+20 conference center (individual events 1.5–2 hours long)			
5	13-Jun	High Seas Alliance: Towards an Agreement for Protecting the High Seas	Ocean Care, with 22 High Seas Alliance partners
6	14-Jun	Greenpeace: An Oceans Rescue Plan for Rio	Greenpeace
7	15-Jun	TEEB for Water and Wetlands ^a	Ramsar Convention on Wetlands, with Norway, Switzerland, and Finland
8	17-Jun	Ocean in Google Earth as an Environmental Educational Tool: The Dominican Perspective	Global Foundation for Democracy and Development, with Ocean in Google Earth and Mission Blue
9		Achieving a Sustainable Future in Rio: What can do a "Blue Economy" ^a	Vital Actions for Sustainable Development, and 9 partners
10	18-Jun	Mainstreaming Biodiversity for a Sustainable Future ^a	Canadian Environmental Network, with Senda Foundation, and Protect our Water and Environmental Resources
11		Sustainable Food, Energy, Water, and Oceans ^a	International Atomic Energy Agency
12	19-Jun	Sustainable Fisheries in the Commonwealth	Commonwealth Human Ecology Council, with NEPAD, Afri-FishNet, University of West Indies Center for Resource Management and Environmental Studies
13		Pacific Islands: Applying the Green Economy in a Blue World	Secretariat of the Pacific Regional Environmental Programme, with 14 Pacific Island countries, and 6 Pacific Island organizations
14		Oceans at Rio+20: Toward Implementation of the Rio Ocean Commitments	International Coastal and Ocean Organization, Secretariat of the Global Ocean Forum, with 3 country partners and 4 institutional partners
15	20-Jun	Know our Ocean, Protect our Marine Treasures, Empower Ocean Citizens	Intergovernmental Oceanographic Commission, with World Meteorological Organization, Fond Tara, Sandwatch Foundation, UNESCO World Heritage Centre, Denmark
16		Building Marine Ecosystem Resilience to Ocean Acidification	Federated States of Micronesia, with Pacific Small Island Developing States, and Earthjustice
17		Securing the Island Future We Want - Enabling Steps Towards Achieving a Green/Blue Economy at Regional Scale ^a	Global Island Partnership
18		Sustainable Maritime Development - The Contribution of Maritime Transport to Green Growth and Inclusive Development	International Maritime Organization, with 9 institutional partners
19		Across the Regions: SIDS Solutions for Sustainable Development ^a	Commonwealth Secretariat, with 3 regional partners
20	21-Jun	Global Partnership for the Oceans: Coming Together for Healthy and Productive Oceans	Monaco, with Republic of Kiribati and the World Bank Group
21		Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security	WWF International, with 6 institutional, and 8 country partners
22	22-Jun	Blue Economy Leadership Event: Showcasing Efforts to Achieve a Blue Economy	Indonesia, with Australia
Side Events at Pavilions in Athletes Park (1.5–3 hours long)			
23	14-Jun	Greening the Blue World	UNEP
24	15-Jun	Managing Fisheries Sustainably	US
25		Coastal Climate Change Solutions	UNEP
26		Capacity Building to Implement MEAs in SIDS ^a	UNEP
27	16-Jun	High Seas Tuna Management	US
28	17-Jun	TEEB: From Analysis to Action ^a	UNEP
29		Making the Invisible Visible: Ocean Acidification	US

Continued

Table 2 Continued

No.	Date	Event	Sponsor
30		Valuing Ecosystem Services ^a	US
31	18-Jun	Eye on Oceans and Blue Carbon	UNEP
32		Hot, Sour, and Breathless: Oceans Under Stress	EU
Special Ocean Events (2–10 hours in length)			
33	12-Jun	Oceans in Focus: Science and Governance for Global Sustainability, at Forum on Science, Technology, and Innovation for Sustainable Development	International Council for Science, and IOC
34	16-Jun	The Oceans Day at Rio+ 20	Global Ocean Forum
35	18-Jun	Ombudsman of the Sea, at the Peoples Summit	Cúpula Peixeira
36	19-Jun	Oceans Dialogue	Government of Brazil
37	20-Jun	Blue Pavilion	Tara Expeditions

^aEvents where ocean issues were part of a broader agenda.

(UNCLOS) provides a governance framework, but is sector-based, fragmented, and spatially incomplete (Ban *et al.* 2013). The draft of the Rio+20 outcome document included text that would commit governments to negotiate a high seas implementing agreement under UNCLOS to address this “governance gap” (draft outcome document, June 2, 2012), something advocates saw as necessary for establishing marine protected areas (MPAs) and facilitating integrated management. The final outcome document (¶ 162, see Table 1) commits parties to decide whether to develop such an agreement, and disappointed advocates (Howard 2012).

When discussing the high seas during side events, advocates, mostly from environmental NGOs affiliated with the “High Seas Alliance” (<http://www.highseasalliance.org/>) and supportive states (Table 3), agreed on the problem; high seas biodiversity is under threat and a legal governance gap prevents the problem from being addressed (Table 2, nos. 5, 6). The EU negotiator insisted “we need an implementing agreement, including MPAs” (Table 2, no. 2), while the Australian negotiator asked for text that would note “the absence of a multilateral legal regime agreed at a global level for the establishment of MPAs in areas beyond national jurisdiction” (Table 2, no. 3). However, the United States, Canada, the Russian Federation, and Venezuela opposed text that would initiate UNCLOS negotiations. They rejected “a formal recommendation that starts another negotiating process” (U.S. delegate, Table 2, no. 4), noted the recommendation was unacceptable in its current form (Russian Federation delegate, Table 2, no. 4), and indicated that it needed further discussion by the United Nations General Assembly (UNGA; Venezuela delegate, Table 2, no. 4). Thus, they did not question the nature of the problem, but the authority to solve it.

Efforts to protect high seas biodiversity floundered previously on questions of governance authority. At the 10th

Conference of the Parties to the CBD, advocates sought to translate CBD support for identifying ecologically and biologically significant areas (CBD Decision IX/20 and Decision X/29) in the high seas into a commitment to protect them. This failed when several member countries resisted the extension of CBD authority into the high seas. The job was seen as one for the UNGA. However, returning the issue to the UN means dealing with the United States (not a CBD signatory) and a domestic political climate at times hostile to the UN (Walker & Hurley 2004). For many Americans, the question is not the scale of government, but of government versus alternative institutions (e.g. markets).

At Rio+20, advocates speculated about the motives of oppositional countries, assumed to be economic and political (e.g. changing Arctic environments and implications for territorial claims by Arctic nations, protecting interests of domestic companies; personal communication, Table 2, no. 4). Advocates took the logic of the UNCLOS implementing agreement as given, and paid little attention to other options. For example, during one side event (Table 2, no. 5), panelists from Pew and IUCN struggled to answer whether a “payment for ecosystem services” scheme might work on the high seas, a moment particularly notable given the overall emphasis on the “Green Economy” at Rio+20. Failure to consider alternatives was in part due to the homogeneity of interests among those promoting the implementing agreement (Table 3). Although few countries resisted the implementing agreement outright, it is likely that for many others, the issue was not “make or break.” Biodiversity is often marginal on the priorities list of developing country (Jinnah 2011) and in the oceans it is often remote and accessible only to countries with technology to exploit it (Arnaud-Haond *et al.* 2011). Although advocates attempted to make the high seas agenda resonate broadly, e.g. by including a representative of the International Collective in Support

Table 3 Summary of analysis of oceans issues at Rio+20.

	High Seas	Small-Scale Fisheries (SSF)	Ocean Acidification (OA)
Problem	Biodiversity under threat; legal gap in governance	Food security, livelihoods, and rights of small-scale and artisanal fishers are threatened	OA (reduced ocean pH result of increased atmospheric CO ₂) threatens biodiversity, food security, and economic development
Solution	Implementing agreement under UNCLOS	Support small-scale fishers through resource access, participatory governance, monitoring and prosecution of IUU fishing, and property rights	Reduce global CO ₂ emissions, while recognizing local initiatives may be more feasible
Supporting interests active at Rio+20	Environmental NGOs, especially The Pew Charitable Trust, Greenpeace, IUCN, as part of the High Seas Alliance; supportive governments, especially the EU, but also Australia, New Zealand, Micronesia	Commonwealth Human Ecology Council, World Fishermen Forum, Icelandic National Association of Small Boat Owners, International Collective in Support of Fish Workers, FAO, World Bank, UNEP, Small Island Developing States, New Zealand	Scientists from the US (e.g. Scripps, NOAA) and the UK (e.g. Plymouth Marine Lab); International Atomic Energy Agency, Natural Resources Defense Council, UNEP, governments of Monaco, the US, the EU, Small Island Developing States
Implications and limitations	Exploitation interests (and related Access and Benefit Sharing) and alternatives forms of governance, e.g. through payments for ecosystem services, not considered	Environmental concerns about global impacts of SSF mostly ignored; SSF framing likely to be contested as advocates make efforts to translate to policy	Debates over policy responses need to include broader range of interests, including industry (e.g. fishing and aquaculture), policy makers, and impacted communities

of Fish workers on a panel (Table 2, no. 6), NGOs dominated side events and a few states dominated negotiations (Table 3).

This homogeneity meant that participants considered conservation via MPAs was the assumed goal, and when advocates discussed the productive potential of ocean biodiversity (e.g. as food, minerals, or energy), they treated this as a threat or, less frequently, as something developing countries were concerned to access and benefit from (Table 2, no. 13). An access and benefits sharing (ABS) agreement will be critical to any UNCLOS implementing agreement (Arrieta 2010; Arnaud-Haond *et al.* 2011), and given that it took the CBD 20 years to reach an ABS agreement, advocates' claims that an implementing agreement could be "imminent" once countries agree to negotiate (Table 2, no 5) seem optimistic. As efforts to protect biodiversity in the high seas continue, via an implementing agreement or other means, ocean advocates will need to confront alternative visions for use and governance of ocean resources.

The small-scale fisheries "success"

Industrial fisheries were the focus of formal negotiations and dominate the ocean and seas section of the outcome document (9 of 20 paragraphs). In contrast, SSF were

addressed in one paragraph that received little attention (¶ 175; Table 1). The outcome document also identifies SSF as critically important in four paragraphs related to food security that were negotiated in other contact groups. At side events, advocates from the Commonwealth Human Ecology Council, Food and Agriculture Organization (FAO) and various fisher organizations (Table 3) described SSF as supplying protein to the world's poor, employing the majority of fishers, providing income and employment to women, and being environmentally preferable to industrial fisheries (Table 2, nos. 12, 34, 35, 36). SSF advocates claimed the recognition of SSF in the outcome document as a success and a direct result of their lobbying efforts (Table 2, nos. 12, 34).

SSF advocates defined the SSF problem in terms of food security and fisher livelihoods, which are threatened by industrial, often foreign and illegal, fishing fleets. Thus, the SSF problem is one of constrained development rather than environmental impacts, and SSF advocates took it for granted that resources would be exploited; the question was of ensuring the benefits were captured by SSF. Advocates emphasized policy solutions to support SSF through resource access, participatory governance, prosecution of illegal fishing, and securing property rights (Table 2, nos. 12, 34), though the latter were sometimes assumed to be communal and sometimes individual.

Although advocates drew on meta-data compiled by the FAO (2008) to support this depiction of SSF, they also invoked a decidedly local scale in describing the problems of individual fishers, fleets, and communities.

In spite of FAO efforts, SSF are data poor, with information on governance regimes (Chuenpagdee & Jentoft 2009), fish stocks (FAO 2008; Pauly & Froese 2012) and the environment (Peckham *et al.* 2007) lacking. Recent reports are pessimistic about the global status of SSF (CEA 2012). This scalar mismatch, between the role of SSF in local livelihoods and concerns about their global environmental impacts, suggests the depiction of SSF at Rio+20 will sit uneasily with some marine scientists and environmental NGOs, whose stated policy preferences are mostly at odds with those promoted at Rio+20 (e.g. Jackson *et al.* 2001; Pauly *et al.* 2002; Campbell *et al.* 2009).

However, marine scientists and environmental NGOs were mostly absent from SSF discussions at Rio+20. SSF advocates dominated related side events, and on occasions when contrary visions of SSF were presented, there was no attempt to debate or reconcile them, with one exception. During the "Oceans Dialogue," when SSF advocates and marine scientists participated together on a panel, marine scientist Sylvia Earle challenged the dominant SSF representation, by questioning the sustainability of most wild capture fisheries. Panelist Jean Michel Cousteau supported Earle, describing how he increasingly does not eat fish. However, the dominant SSF framing's emphasis on food security, rights, and poverty made such challenges difficult. Earle's critique during the Dialogue, a large public event with a diverse audience, was more muted than during a side event where marine conservation was the focus. There, Earle spoke against eating wild caught fish and of the need for society to develop a new emotional relationship with fish (Table 2, no. 31).

The few instances that brought marine scientists and SSF advocates together at Rio+20 suggest the dominant Rio+20 SSF representation may be challenged, partly on questions of scalar mismatch and conservation versus exploitation. This will make it difficult for advocates to translate SSF "success" at Rio+20 into policy initiatives (e.g. the FAO's international guidelines on sustainable SSF, currently under development; FAO 2012).

Ocean acidification made visible

OA, a topic recently confined to "a small group of scientists" (Ahmad & Opschoor 2009), was highlighted at Rio+20 as a critical and emerging issue for science and global ocean health. OA was the focus of four side events (Table 2, nos. 16, 29, 32, 34), acknowledged in many others, and the subject of one paragraph in the outcome document (Table 1, ¶ 166). Two previous UNCSD meetings

made no mention of OA, and advocates saw Rio+20 as an opportunity to address this. Prominent scientists, often appearing in multiple events, defined and explained the OA problem and were largely in agreement; increased atmospheric CO₂ has reduced ocean pH, potentially interfering with the physiology of marine organisms, including calcification processes. During side events, advocates described the threat of OA—to biodiversity, food security, and economic development—as global and urgent (Table 2, nos. 16, 29, 32, 34), and a political spokesperson, usually a Small Island Developing States delegate, often spoke of how OA threatens island livelihoods and culture.

The concerns of OA advocates are well-reflected in literature, although some details remain uncertain (Doney, Balch *et al.* 2009). A recent meta-analysis showed aggregate negative physiological effects of acidification on marine life, but variable effects among organisms (Kroeker *et al.* 2010). Some species may actually benefit from a lower seawater pH (Hendriks *et al.* 2010; Pandolfi *et al.* 2011), and full population- and ecosystem-level impacts of OA remain unclear, including for many commercially valuable species (Le Quesne & Pinnegar 2012). This variability may reflect broader uncertainties in OA research (Andersson & Mackenzie 2012), where a disconnect between chemists and physiologists has potentially resulted in "an incomplete view of how OA will influence calcifiers" (Roleda *et al.* 2012). Advocates acknowledged such uncertainty at Rio+20, but their focus was on the aggregate negative effects OA will have on the global marine environment (Table 2, no. 32).

Scientific uncertainty, however, complicates choices regarding the scale and venue of policy solutions. Although global seawater pH depends on CO₂ levels, local OA "hot spots" can be caused or exacerbated by upwelling events, hypoxia, and eutrophication (Kelly *et al.* 2011; Andersson & Mackenzie 2012; Table 2, no. 16). As a result, some advocates promoted local responses to regional stressors, such as overfishing and coastal development, as a means to ameliorate OA impacts (Table 2, no. 16). Others asserted a global policy instrument is necessary, and hinted at a strategic value in focusing on OA as "the other CO₂ problem" (Doney, Fabry *et al.* 2009b) in order to move a global CO₂ reduction agreement forward (Table 2, no. 16). They were not specific about how such an agreement would arise or its relationship to the UNFCCC or UNCLOS, topics being discussed in literature (e.g. Harrould-Kolieb & Herr. 2011; Lamirande 2011; González 2012; Kim 2012; Turley & Gattuso 2012)). The Rio+20 outcome document provides little guidance on these issues. The OA paragraph includes no commitments and no mention of CO₂, though text supporting the latter was suggested (by the EU and Monaco) and then deleted

(by the United States and the G77). The paragraph focuses primarily on increased research, and mirrors discussions at side events, where global research initiatives were highlighted.

The lack of attention OA advocates paid to the details of policy action in part reflects the homogeneity of interests at events, where science and scientists dominated. Overall, participants reflected a shared understanding of the OA problem, and although they articulated preferences for different scales of policy intervention, little debate emerged around these issues. Further debate is needed. If both local and global policy interventions are to play a role in ameliorating OA impacts, these will need to be integrated into a broader policy instrument and account for a greater range of perspectives—including those of coastal policy-makers and residents. While participants recognized that a global solution was politically problematic, their portrayal of local solutions—MPAs, reduced fishing fleets, adaptation and mitigation strategies—as more feasible overlooks challenges experienced in practice (Jentoft *et al.* 2007; Agardy *et al.* 2011). Although OA advocates appreciated the speed at which the issue has gained attention, further exploration and debate of solutions is needed if OA is to move beyond the “success” of recognition.

Discussion

Our analysis reveals the varied extent to which ocean advocates at Rio+20 realized their objectives in relation to three ocean issues. Although OA and SSF advocates can count inclusion of language in the outcome document toward “success,” the text makes no tangible commitments. In the case of the high seas, the tangible commitment to establish an implementing agreement was transformed into a commitment to decide whether or not to establish one. The UN system requires consensus among states, and Rio+20 occurred at a time of global economic stress and low levels of trust (Halle 2012), so failure to deliver new, tangible commitments is not altogether surprising. However, as we argued at the outset, meeting decisions and texts are only a part of governance regimes. In using CEE to study policy-making processes at Rio+20, we seek to better understand outcomes, the processes through which they arise, and what those processes reveal. Here, we focus on two interlinked points of discussion: first, the ocean-specific challenges that complicate efforts to find agreement on ocean issues, and second, the role of international meetings like Rio+20 in facilitating productive policy dialogue.

For each ocean issue we examined, we find tensions associated with scalar mismatch, be it national versus

international interests in the high seas, the state of global fisheries versus their role in local livelihoods, or the global versus local impacts of OA and how these map onto policy interventions. These mismatches are familiar in debates about the global commons, but take on a particular relevance in oceans because of current governance gaps that make competing claims to ocean resources difficult to resolve. At Rio+20, the question of conservation versus exploitation received little attention. For high seas advocates, conservation via MPAs was the goal. SSF advocates assumed exploitation would continue and were concerned to capture its benefits. For OA, the question is less direct, but still relevant. For example, local efforts to increase resilience to OA include limiting fishing and establishing MPAs. One of the reasons the conservation versus exploitation question was seldom addressed is because of homogeneity of interests. Although the UN promotes UNCSD as a venue for nonstate actors to influence UN policy processes, and it theoretically provides a platform for productive dialogue, we found this not to be the case. State positions were defended, rather than negotiated. Side events showcased preformed positions and were attended by those with similar interests. Different understandings of problems were seldom expressed in the same venue, much less debated.

The lack of constructive dialogue is in part a function of how such meetings are organized (Brosius & Campbell 2010). High seas sessions were separate from those on SSF, and although many of the NGOs advocating on the high seas would likely take issue with some claims made by SSF advocates, they were not in the same room at Rio+20. OA sessions were multiple, but generally attended by the same group of people often listening to the same speakers. With no SSF advocates in their audience, OA panellists could reflect without challenge on the merits of MPAs and reducing fishing effort as a response to OA hotspots.

Though meeting structure limits the possibility for productive dialogue, structure is not the only constraint. When different understandings of problems were revealed, participants made few attempts to recognize these, much less engage with them. During “Oceans Day,” when the Global Oceans Forum hosted a full day of panels addressing diverse issues in a packed Rio Conventions Pavilion, there was little debate. Rather, the mood was congratulatory, with speakers acknowledging the progress ocean advocates have made in getting oceans on the agenda. This is an interest that brings diverse ocean advocates together, and given the relative lack of attention at previous UNCSDs, it is understandable. However, the challenges for developing shared understanding of ocean problems and solutions, as reflected in discussions at Rio+20, are unlikely to be resolved without more

constructive policy dialogue, if not at UNCSD, then elsewhere.

Acknowledgments

This research relies on collaboration, in coordinating field-work, collecting and analyzing data, and thinking through meaning. This article results from the combined efforts of the authors, who all worked on each of these tasks. The authors acknowledge funding from the University of Guelph, Duke University, and the Oak Foundation.

References

- Adams, W., Brockington, D., Dyson, J. & Vira, B. (2003). Managing tragedies: understanding conflict over common pool resources. *Science*, **302**, 1915-1916.
- Agardy, T., di Sciara, G.N. & Christie, P. (2011). Mind the gap: addressing the shortcomings of marine protected areas through large scale marine spatial planning. *Mar. Pol.*, **35**, 226-232.
- Ahmad, I.H. & Opschoor, J.B. (2009). Reaching a climate deal in Copenhagen. UN-DESA Policy Brief No. 17, New York. <http://www.un.org/esa/policy/policybriefs/policybrief17.pdf> (visited Oct. 20, 2012.)
- Andersson, A.J. & Mackenzie, F.T. (2012). Revisiting four scientific debates in ocean acidification research. *Biogeosciences*, **9**, 893-905.
- Arnaud-Haond, S., Arrieta, J. & Duarte, C. (2011). Marine biodiversity and gene patents. *Science*, **331**, 1521-1522.
- Arrieta, J.M., Arnaud-Haond, S. & Duarte, C.M. (2010). What lies underneath: conserving the oceans' genetic resources. *Proc. Acad. Nat. Sci. USA*, **107**, 18318-18324.
- Berkes, F. (2006). From community-based resource management to complex systems. *Ecol. Soc.*, **11**(1), 45.
- Brosius, J.P. & Campbell, L.M. (2010). Collaborative event ethnography: conservation and development trade-offs at the Fourth World Conservation Congress. *Conservat. Soc.*, **8**, 245-255.
- Campbell, L.M., Gray, N.J., Hazen, E. & Shackeroff, J.M. (2009). Beyond baselines: rethinking priorities for ocean conservation. *Ecol. Soc.*, **14**(1), 14.
- CEA California Environmental Associates (CEA). (2012). Charting a course to sustainable fisheries. <http://www.chartingacourse.org/>. Accessed 22 May 2013.
- Chuenpagdee, R. & Jentoft, S. (2009). Governability assessment for fisheries and coastal systems: a reality check. *Hum. Ecol.*, **37**, 109-120.
- Crowder, L.B., Osherenko, G., Young, O.R. et al. (2006). Resolving mismatches in U.S. ocean governance. *Science*, **313**, 617-618.
- Doney, S., Balch, W., Fabry, V. & Feely, R. (2009a). Ocean acidification: a critical emerging problem for the ocean sciences. *Oceanography*, **22**(4), 16-25.
- Doney, S.C., Fabry, V.J., Feely, R.A. & Kleympas, J.A. (2009b). Ocean acidification: the other CO₂ problem. *Annu. Rev. Mar. Sci.*, **1**, 169-192.
- Douve, F. & Ehler, C. (2008). Introduction. *Mar. Pol.*, **32**, 759-761.
- Food and Agriculture Organization (FAO). (2008). Small-scale capture fisheries: a global overview with emphasis on developing countries. World Fish Center. Working Paper 37878. <http://www.worldfishcenter.org/resource/centre/BigNumbersProjectPreliminaryReport.pdf> (visited Oct. 20, 2012).
- Food and Agriculture Organization (FAO). (2012). International guidelines on securing sustainable small-scale fisheries. <http://www.fao.org/fishery/ssf/guidelines/en> (visited Oct. 18, 2012).
- Gjerde, K., Dotinga, H., Hart, S. & Molenaar, E. (2008). *Regulatory and governance gaps in the international regime for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction*. IUCN, Gland. www.iucn.org/dbtw-wpd/edocs/EPLP-MS-1.pdf (visited Oct. 20, 2012).
- González, V. (2012). An alternative approach for addressing CO₂-driven ocean acidification. *Sustainable Dev. L. & Pol'y.*, **12**(2), 45-69.
- Halle, M. (2012). *Life after Rio. IISD Commentary*. International Institute for Sustainable Development, Winnipeg. [http://www.iisd.org/pdf/2012/com/life'after'rio.pdf](http://www.iisd.org/pdf/2012/com/life%20after%20rio.pdf) (visited Oct. 20, 2012).
- Harrould-Kolieb, E.R. & Herr, D. (2011). Ocean acidification and climate change: synergies and challenges of addressing both under the UNFCCC. *Clim. Policy*, **12**(3), 37-41.
- Hendriks, I.E., Duarte, C.M. & Álvarez, M. (2010). Vulnerability of marine biodiversity to ocean acidification: a meta-analysis. *Estuar. Coast. Shelf Sci.*, **86**, 157-164.
- Howard, B.C. (2012). Ocean advocates find silver linings after Rio+20 disappointment. National Geographic Daily News. <http://news.nationalgeographic.com/news/2012/06/120622-rio-20-oceans> (visited Oct. 20, 2012).
- Jackson, J.B.C., Kirby, M.X., Berger, W.H. et al. (2001). Historical overfishing and the recent collapse of coastal ecosystems. *Science*, **293**, 629-637.
- Jentoft, S., Son, T.C. & Bjørkan, M. (2007). Marine protected areas: a governance system analysis. *Hum. Ecol.*, **35**, 611-622.
- Jinnah, S. (2011). Marketing linkages: secretariat governance of the climate-biodiversity interface. *Global Environ. Polit.*, **11**, 23-43.
- Kelly, R.P., Foley, M.M., Fisher, W.S. et al. (2011). Mitigating local causes of ocean acidification with existing laws. *Science*, **332**, 1036-1037.

- Kim, R.E. (2012). Is a new multilateral environmental agreement on ocean acidification necessary? *Rev. Eur. Commun. Int. Environ. Law*, **21**, 3, 243-258.
- Kroeker, K.J., Kordas, R.L., Crim, R.N. & Singh, G.G. (2010). Meta-analysis reveals negative yet variable effects of ocean acidification on marine organisms. *Ecol. Lett.*, **13**, 1419-1434.
- Lamirande, H.R. (2011). From sea to carbon cesspool: preventing the world's marine ecosystems from falling victim to ocean acidification. *Suffolk Transnat'l. L. Rev.*, **34**, 1, 183-217.
- Le Quesne, W.J.F. & Pinnegar, J.K. (2012). The potential impacts of ocean acidification: scaling from physiology to fisheries. *Fish Fish.*, **13**, 333-344.
- Little, P.E. (1995). Ritual, power and ethnography at the Rio Earth Summit. *Crit. Anthropol.*, **15**, 265-288.
- MacDonald, K.I. & Corson C. (2012). 'TEEB begins now': a virtual moment in the production of natural capital. *Dev. Change*, **43**, 159-184.
- Monbiot, G. (2012). *After Rio, we know. Governments have given up on the planet.* The Guardian, London. <http://www.guardian.co.uk/commentisfree/2012/jun/25/rio-governments-will-not-save-planet> (visited Oct. 20, 2012).
- Pandolfi, J.M., Connolly, S.R., Marshall, D.J. & Cohen, A.L. (2011). Projecting coral reef futures under global warming and ocean acidification. *Science*, **333**, 418-422.
- Pauly, D., Christensen, V. & Guénette, S. (2002). Towards sustainability in world fisheries. *Nature*, **418**, 689-695.
- Pauly, D. & Froese, R. (2012). Comments on FAO's state of fisheries and aquaculture, or 'SOFIA 2010'. *Mar. Policy*, **36**, 746-752.
- Peckham, S.H., Diaz, D.M., Walli, A., Ruiz, G., Crowder, L.B. & Nichols, W.J. (2007). Small-scale fisheries bycatch jeopardizes endangered Pacific loggerhead turtles. *PLoS One*, **2**(10), e1041.
- Roleda, M.Y., Boyd, P.W. & Hurd, C.L. (2012). Before ocean acidification: calcifier chemistry lessons. *J. Phycol.*, **48**, 840-843.
- Steinberg, P. (2008). It's so easy being green: overuse, underexposure, and the marine environmentalist consensus. *Geogr. Compass*, **2**, 2080-2096.
- St. Martin, K. (2001). Making space for community resource management in fisheries. *Ann. Assoc. Am. Geogr.*, **91**, 122-142.
- Turley, C. & Jean-Pierre G. (2012). Future biological and ecosystem impacts of ocean acidification and their socioeconomic-policy implications. *Curr. Opin. Environ. Sustain.*, **4**(3), 278-286.
- UN Department of Public Information. (2012). Rio in Numbers. Fact Sheet Issued 22 June. <http://www.uncsd2012.org/content/documents/784rio20%20in%20numbers'final2.pdf>. Accessed 22 May 2013.
- UN General Assembly, 66th Session. (2012). Resolution 66/288. The Future We Want. <http://www.uncsd2012.org/thefuturewewant.html> (visited Oct. 17, 2012).
- Van Dover, C.L. (2011). Tighten regulations on deep-sea mining. *Nature*, **470**, 31-33.
- Veitch, L., Dulvy, N.K., Koldewey, H. et al. (2012). Avoiding empty ocean commitments at Rio+20. *Science*, **336**, 1383-1385.
- Walker, P.A. & Hurley, P.T. (2004). Collaboration derailed: the politics of "community-based" resource management in Nevada County. *Soc. Nat. Resour.*, **17**, 735-751.
- Williams, M.J., Ausubel, J., Poiner, I. Garcia, et al. (2010). Making marine life count: a new baseline for policy. *PLoS Biol.*, **8**(10), e1000531.
- Young, O.R. (2011). Effectiveness of international environmental regimes: existing knowledge, cutting-edge themes, and research strategies. *Proc. Acad. Nat. Sci. USA*, **108**, 19853-19860.