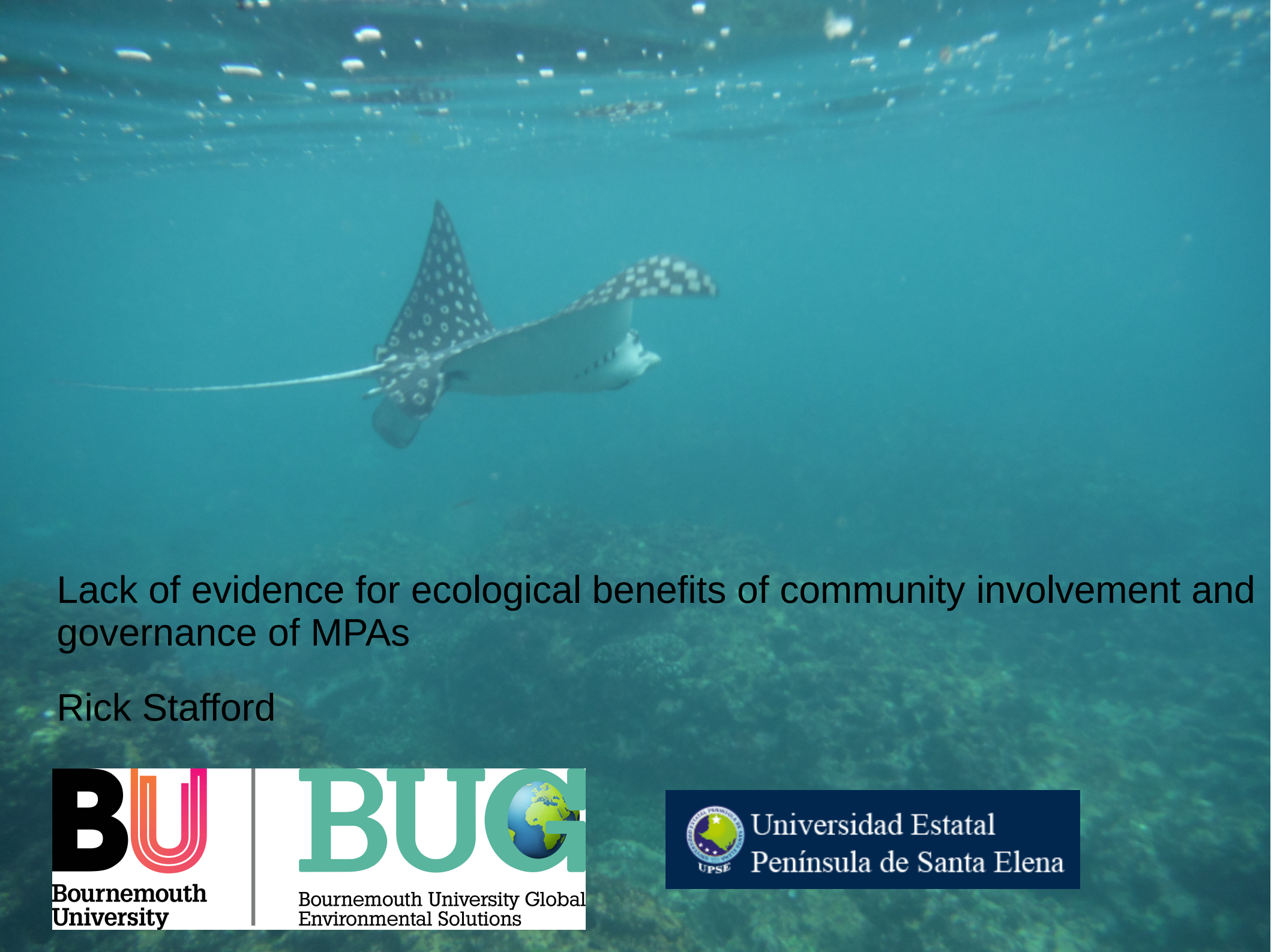


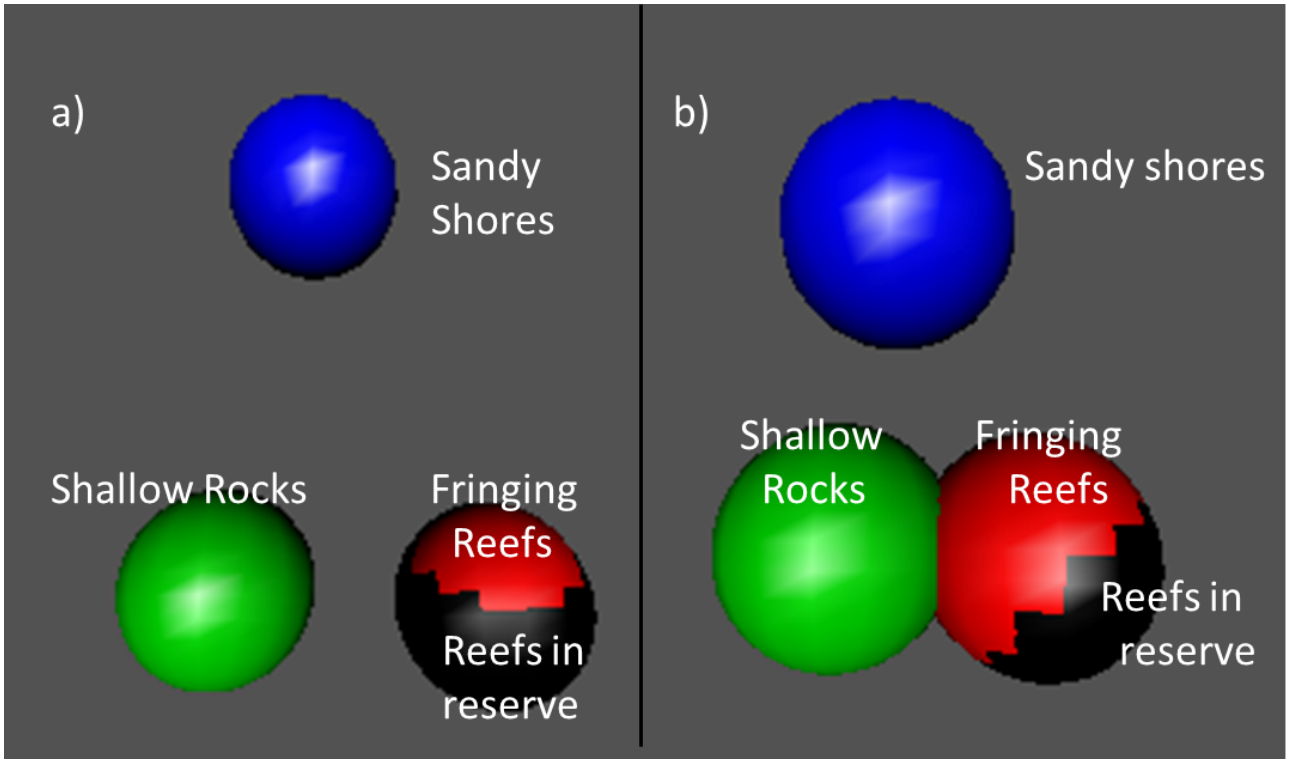
Lack of evidence for ecological benefits of community involvement and governance of MPAs

Rick Stafford

Bournemouth University

Bournemouth University Global Environmental Solutions

Universidad Estatal Península de Santa Elena



Differences in community structure in different habitats assessed by bootstrapped PCA.
a) differences at 95% confidence level. b) Differences at 99.9 % confidence level.
Overlap indicates no significant difference between communities at given confidence level.

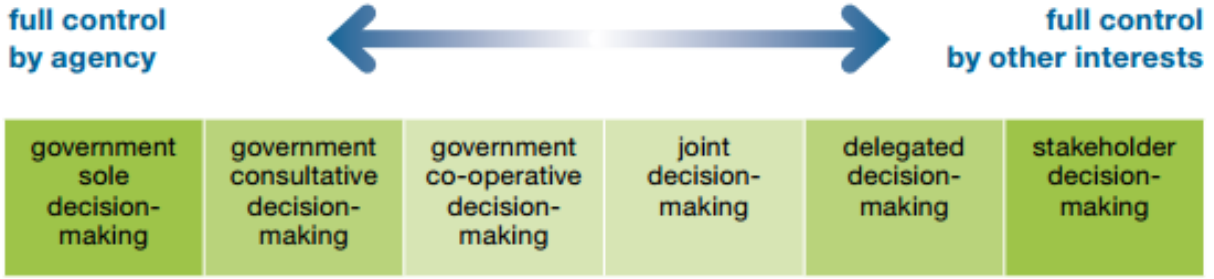
United Nations Environmental Protection – Protected Planet Report (2012)

Table 1.1 Relationship between chapters of the Protected Planet Report 2012 and elements of Aichi Target 11 and other relevant Aichi Targets.

Report chapter		Element of Target 11 and other relevant Aichi Targets
2. Global protected area coverage	→	"at least 17% of terrestrial and inland water areas, and 10% of coastal and marine areas"
3.1. Protected area coverage of biodiversity	→	"ecologically representative" and "especially areas of particular importance for biodiversity and ecosystem services"
3.2. Protected area benefits for biodiversity	→	"effectively managed" and Aichi Targets 5 and 12 on habitat and species loss
4. Management	→	"effectively managed"
5. Governance	→	"equitably managed"
6. Financing	→	"effectively managed" and Aichi Target 20 on financial resources
7. Connectivity	→	"well connected systems of protected areas, integrated into wider landscapes and seascapes"

Governance

Figure 5.1 The range of options for governing protected areas from full control by government agencies to full control by other stakeholders. Source: adapted from Dearden *et al.* 2005



Box 5.2 Summary: Governance.

Relevant elements of Target 11	Current status and trends
"equitably managed"	The global protected area network has diversified in terms of its governance approaches, with increasing involvement of different actors. However, limited information is available on the extent of other area-based conservation measures, and the equity of protected area governance and management.

Evidence for effective multi-stakeholder governance

8. DIVERSIFYING PROTECTED AREA GOVERNANCE: ECOLOGICAL, SOCIAL, AND ECONOMIC BENEFITS

Ashish Kothari
Indian environmental group Kalpavriksh, and IUCN WCPA-CEESP Strategic Direction on Governance, Equity, Livelihoods, and Communities (TILCEPA)

Increasing evidence from around the world suggests that protected areas are not only established as a key strategy for conservation of nature and wildlife, but are also becoming important for addressing poverty and livelihood security. One of the common features of many recent innovations is the notion of participatory or community based governance. Simply put, the focus is on greater involvement of local communities, with net benefits for both conservation and people. This article explores the potential of new kinds of protected area governance, moving away from the conventional government managed model, and towards more collaborative and community based models.

- Two marine PAs in Indonesia (Bunaken), and in the Philippines (Apo Islands), are managed through collaborative arrangements with local communities. In both, people have benefited substantially in terms of poverty reduction, through improved fish catches, more jobs, greater empowerment, and benefits to health. Women too have visibly benefited. Amongst the key ingredients resulting in their success are co-management institutions involving local community representatives, participation of entire communities in management, legal backing to participation, and understanding and respecting customary use and access rights (Leisher et al 2007).

Protected areas in today's world report, UNEC, 2008

Leisher et al. 2007

The findings show that marine protected areas can effectively contribute to poverty reduction. *"People in the community are now better off and this is because of the marine protected area,"* as one local person explained.

For the residents of Navakavu and Apo Island, their marine protected area contributed to poverty reduction in very substantial ways (though both sites have fewer than 700 people). In the Arnavons and Bunaken, with populations of 2,200 and 30,000 respectively, the marine protected area has also clearly contributed to poverty reduction, though by no means eliminated it. Across all the study sites, over 95% of local people support the continuation of their marine protected area.

How did the marine protected areas contribute to poverty reduction?

Improved fish catches. Fish are now "spilling over" from the no-fishing zones of the four marine protected areas, and improved fish catches contributed greatly to poverty reduction at three of these sites. People in Navakavu fish just outside the marine protected area, and 80% of the people there say fish catches are better than before the marine protected area was established. The spillover effect is also strong in Apo Island but slightly less so in Bunaken. It is present as well in the Arnavons but with minimal impact. These findings support the increasingly well-documented perception of spillover effects from marine protected areas.

In detail:

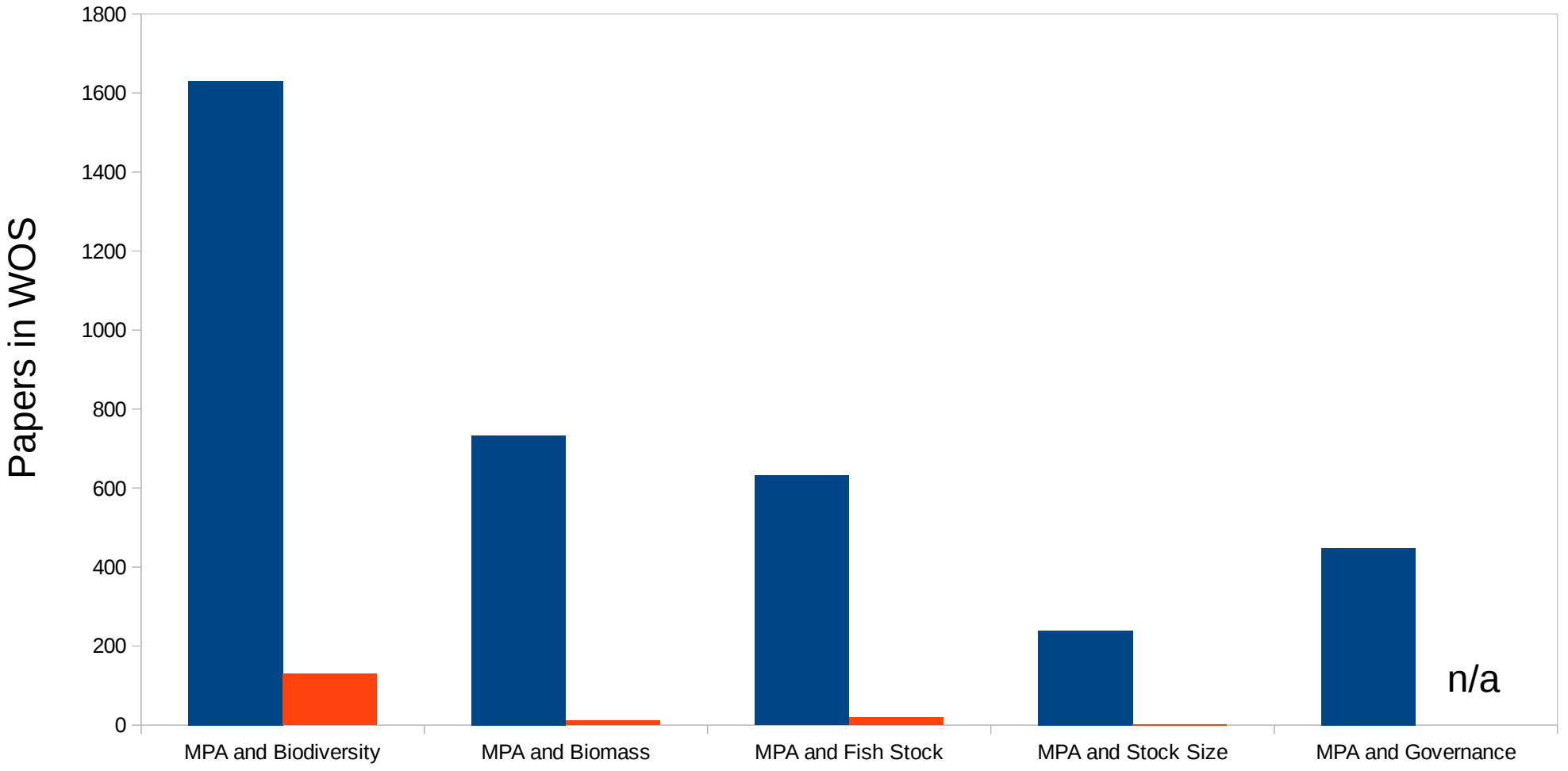
The evidence in Leisher et al. (2007) is primarily from a different reserve - Navakavu in Fiji

Data are based on hearsay from the local community, rather than scientific surveys

Leisher et al. (2007) do mention the reserves in UNEC report, but with no reference or data to support the claims - “The spillover effect is also strong in Apo Island but slightly less so in Bunaken”

There are documented studies of spillover in Apo Island (e.g. e.g. Russ et al. 2003), but little hard evidence to support improved fish stocks in Bunaken (Christie 2004)

Apo Island did have community based governance until the mid-1990s, now it has a more ‘top down’ government controlled governance approach (Hind et al. 2010)



Number of papers in Web of Science with ‘Marine Protected Area*’ and the additional search term in all of the record – blue, just the two search terms – orange, including ‘governance’

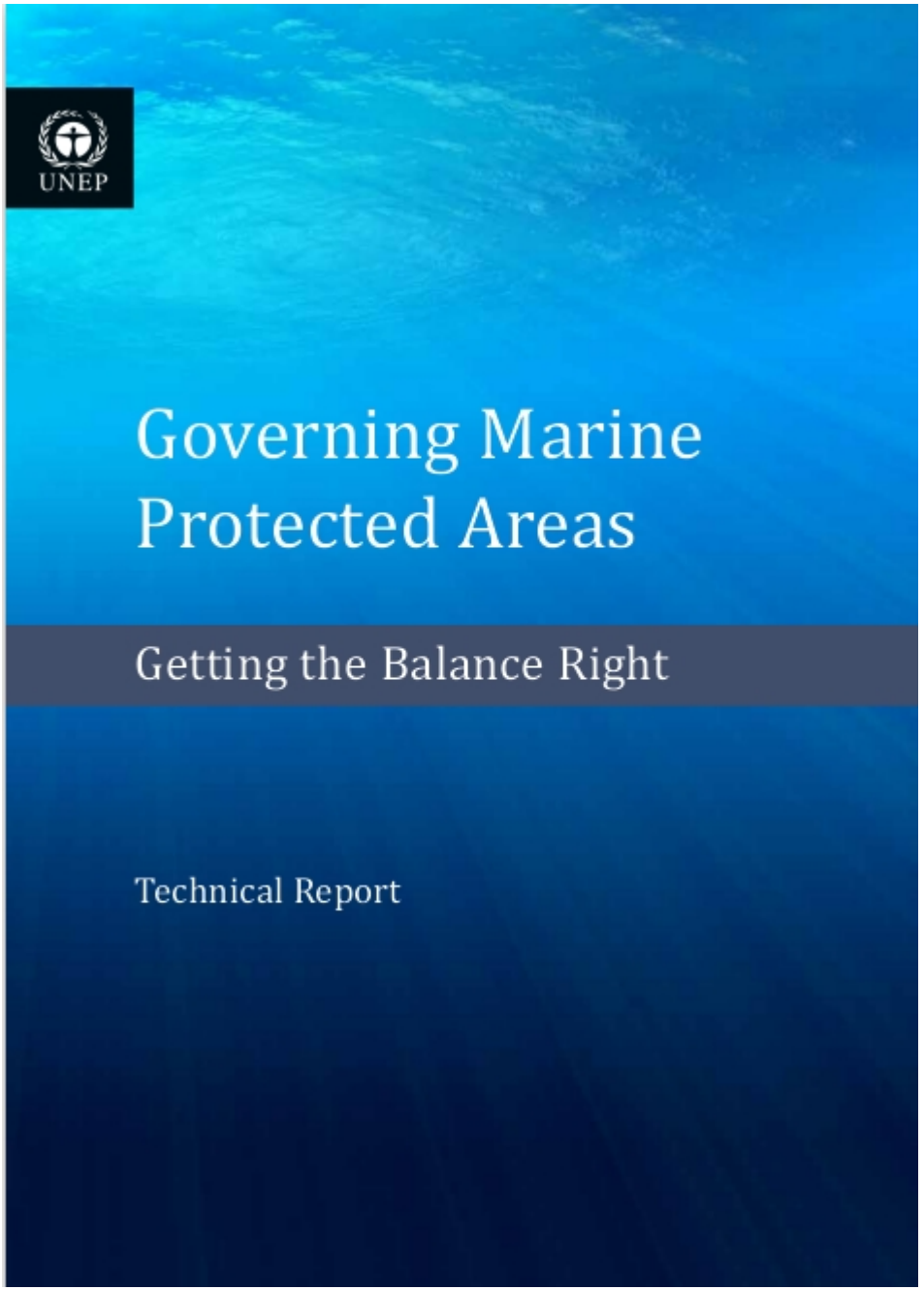
Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Details of Governance Structure	+	+	+	+		+	+	+		+	+	+	+	+	+	+	+	+	+			+	+		+
Site to country level study of Governance	+	+	+		+		+	+	+	+	+	+	+	+	+	+	+	+	+		+			+	+
Review of Governance				+		+																+	+		
Evidence of equitable governance (stake holder engagement)	+				+							+			+	+	+				+				
Social Benefits (+ improved, - worse)					+			-				+			+										
Identified issues with Governance Structure		+	+		+					+			+	+				+				+			
Discussion of ecological benefits						+					-*			?		+				+					
Year of study	2017 - 2016					2014				2013						2012		2010		2009		2007		1999 - 1997	

* Reference given in paper to report indicating decline -
? Methods indicate data on fish catch were taken, but no results of this
6 – review, so no direct link between sites
16 – voluntary reserve no in top-down governance
20 – more related to seabird ecology than governance

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Details of Governance Structure	+	+	+	+		+	+	+		+	+	+	+	+	+	+	+	+	+			+	+		+
Site to country level study of Governance	+	+	+		+		+	+	+	+	+	+	+	+	+	+	+	+	+		+			+	+
Review of Governance				+		+																+	+		
Evidence of equitable governance (stake holder engagement)	+				+							+			+	+	+				+				
Social Benefits (+ improved, - worse)					+			-				+			+										
Identified issues with Governance Structure		+	+		+					+			+	+				+				+			
Discussion of ecological benefits						+					-*			?		+				+					
Year of study	2017 - 2016					2014				2013						2012		2010		2009		2007		1999 - 1997	

No papers directly address both governance and ecological indices

* Reference given in paper to report indicating decline -
? Methods indicate data on fish catch were taken, but no results of this
6 – review, so no direct link between sites
16 – voluntary reserve no in top-down governance
20 – more related to seabird ecology than governance



20 case studies considered from around the world.

8 provide no evidence or mention of ecological indicators
(i.e. increases in stock sizes, biomass or biodiversity)

2 indicate it is too early to assess ecological effects

4 only supply anecdotal information.

Only 6 of the 20 sites provide evidence of ecological indicators with data or references to published studies

5 of these 6 reporting benefits to at least one species or group of species in the reserve.

ARTICLE

doi:10.1038/nature21708

Capacity shortfalls hinder the performance of marine protected areas globally

David A. Gill[1,2†], Michael B. Mascia[3], Gabby N. Ahmadia[4], Louise Glew[4], Sarah E. Lester[5], Megan Barnes[6,7], Ian Craigie[8], Emily S. Darling[9], Christopher M. Free[10], Jonas Geldmann[11,12], Susie Holst[13], Olaf P. Jensen[10], Alan T. White[14], Xavier Basurto[15], Lauren Coad[16,17], Ruth D. Gates[18], Greg Guannel[19], Peter J. Mumby[20], Hannah Thomas[21], Sarah Whitmee[22], Stephen Woodley[23] & Helen E. Fox[4,24]

589 MPAs studied worldwide

62 had both ecological (fish biomass) and management data associated with them

~10.5%

The issues:

Do not know if equitable governance is really good for MPAs

+ve likely to lead to greater acceptance of MPAs

-ve likely to lead to fewer no take MPAs or greater zoning

- Evidence this can still lead to increased fish stock
- But may not protect biodiversity

Need to integrate studies – governance studies AND ecological indices

Time series data during management and governance changes

Establish what works for fish stocks and biodiversity
- As these are the purpose of MPAs

Contents lists available at ScienceDirect

Ocean & Coastal Management

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

An integrated evaluation of potential management processes on marine reserves in continental Ecuador based on a Bayesian belief network model

Richard Stafford [a, b, *], Theodore J. Clitherow [b], Samantha J. Howlett [c], Elisabeth K.A. Spiers [b], Rachel L. Williams [d], Belen Yaselga [a], Sofia Zeas Valarezo [a], Douglas F. Vera Izurieta [a], Mariaherminia Cornejo [a]

[a] Facultad Ciencias del Mar, Universidad Estatal Penisula de Santa Elena, Avda. Principal La Libertad, Santa Elena, Ecuador
[b] Centre for Conservation Ecology and Environmental Sustainability, Department of Life and Environmental Sciences, Bournemouth University, Fern Barrow, Poole, UK
[c] Silava, Latvian State Forest Research Institute, 111 Rigas Iela, Salaspils, Latvia
[d] Kingston Maurward College, Dorchester, UK

Legislation banned commercial fishing from MPAs
But over 160,000 artisanal fishing boats
Can not fish within 200m of shore in MPA
Compared to 500m outside MPA
No restriction on catches
Pelagic fishing preferred to demersal trawls

Equitable and status quo:

Contents lists available at ScienceDirect

Ocean & Coastal Management

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

Are fisheries-dependent communities in Scotland really maritime-dependent communities?

Estelle Victoria Jones [a,b,*,1], Alex James Caveen [a,b,2], Tim Stuart Gray [b,3]

[a] Department of Marine Science and Technology, Newcastle University, UK
[b] Department of Politics, Newcastle University, Newcastle Upon Tyne, UK

A real need to investigate effectiveness of equitable governance structures

Could maritime based communities replace fishing communities?

e.g. tourism – at a local level?

Does equitable governance continue the status quo – and prevent transformation to a more sustainable future?

Bournemouth University

Bournemouth University Global Environmental Solutions

Universidad Estatal Península de Santa Elena