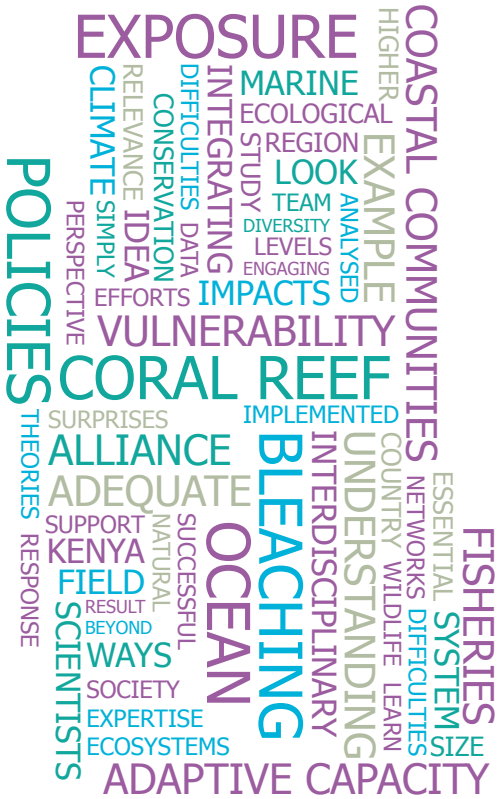
Mapping vulnerabilities

With expertise in coastal resources and an interdisciplinary background in marine biology and social science, Tim Daw joined a team of natural and social scientists to study how coastal communities are affected by the impacts of climate change on coral reefs.

What was the impetus for this project? What was the main objective of the work at the beginning of the project?
This project was a response to the catastrophic coral bleaching experienced in the western Indian Ocean region during the 1998 El Niño. Tim McClanahan, of the Wildlife Conservation Society in Kenya, contacted ecologists who had studied reefs in the region before El Niño occurred, and asked them to repeat their surveys five years after 1998 to evaluate the impact. In addition to the ecological impacts, we also looked at the effects on human communities in the region, particularly in relation to the impacts of coral bleaching on fisheries. We compared the exposure of 29 coastal communities to coral bleaching, their sensitivity to coral bleaching in terms of their dependence on fisheries and finally their ability to adapt to changes in available resources. The combination of these three dimensions allowed us to identify sites that are particularly vulnerable, an important result to design adequate policies in these coastal communities.



How did you go about finding suitable collaborators?
This study is the most recent outcome from a group of interdisciplinary researchers who have been working together since 2005. It started as an ecological team and then the social science component was developed to look into issues of social vulnerability and adaptation. The team was built from researchers that had worked together for the Wildlife Conservation Society, and through professional networks of colleagues known to each other through departments at Newcastle University or interdisciplinary networks such as the Resilience Alliance.

Did you encounter any difficulties in working with a team of experts with different research backgrounds?
We didn't find difficulties especially, because the people involved enjoy the challenges and relevance of interdisciplinary research. I think a genuine interest in others' disciplines is necessary for this kind of work. Also, the kind of social science used in this study — highly quantitative — allowed for more straightforward integration with ecological research.

What was the highlight of working with an interdisciplinary team?
We had the opportunity to ask questions relevant to real-world policy decisions, such as what we can do about the effects of climate change on poor people that rely on ecosystems impacted by a changing climate. This is an issue that simply can't be understood or resolved from a single-discipline point of view — it requires integrating perspectives from economics, social science, policy, ecology and environmental studies.

Any surprises?
We were surprised by the diversity of ways in which these communities are vulnerable to climate change and by the heterogeneity within countries. Some communities in Kenya, for example, had adaptive capacity higher than some communities in Seychelles and Mauritius, but other Kenyan communities were the most vulnerable we found in the region. It was also surprising that the east and west coasts of Madagascar had completely different exposure levels. This range of vulnerability within a country made it clear to us why the 'one size fits all' solutions that are often implemented don't work.

Did you learn any lessons about interdisciplinary collaboration from this project that would benefit others trying to do similar work?
We really benefitted from engaging new researchers in the work as it developed and as the issues become larger and more inclusive. Beyond the core team, we brought in different people at different stages; for example, Kate Brown joined us after data collection with a really interesting perspective. She provided a conceptual basis for integrating our data through developing theories of vulnerability. Also, it is important to have a clear idea of what the links are between the different parts of the system analysed by the different disciplines.

Was it difficult to get financial support and what would you suggest to researchers looking for funding to carry out interdisciplinary work?
We were fortunate to receive money from the Western Indian Ocean Marine Science Association, which has a highly successful policy to promote interdisciplinary research in the region. There was also support from other sources, and it helped that people were willing to contribute their efforts and funding to a goal that was considerably larger than what was originally proposed.

Any final thoughts?
Although good disciplinary work is essential to understanding the impacts of climate change on ecosystems and people, it is only problem-focused interdisciplinary research that can inform how our societies should respond to them.

INTERVIEW BY MONICA CONTESTABILE

This Beyond Boundaries *is based on the work by Joshua Cinner* et al., *published in* Glob. Environ. Change *http://dx.doi.org/10.1016/j.gloenvcha.2011.09.018 (2011).*

Corrected online: 25 May 2012

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Correction

In the Beyond Boundaries 'Mapping vulnerabilities' (*Nature Clim. Change* **2,** 58; 2012), in the PDF and print versions the reference should have read: *Glob. Environ. Change* http://dx.doi.org/10.1016/j.gloenvcha.2011.09.018 (2011). Corrected after print, 25 May 2012.

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