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The EBM Toolbox: Achieving regional objectives, country by country: A Coral Triangle example

Editor's note: The goal of The EBM Toolbox is to promote awareness of tools and methods for facilitating EBM and MSP processes. It is brought to you by the EBM Tools Network (www.ebmtools.org), a voluntary alliance of tool users, developers, and training providers.

EBM often involves coordinating the actions of multiple jurisdictions to achieve shared goals. A recent study published in *Nature Communications* introduces a new framework for how to do this, applying it to conservation objectives of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security. (The Coral Triangle Initiative is a partnership between Malaysia, the Philippines, Indonesia, East Timor, Papua New Guinea, and the Solomon Islands.) We spoke with Maria Beger, a conservation biologist with the *ARC Centre of Excellence for Environmental Decisions* at the University of Queensland in Australia and the lead author of this study, about how countries can work towards regional and national goals simultaneously and in a transparent and equitable manner.

MEAM: First of all, why is regional conservation planning so different than national or local conservation planning?

Beger: Effective conservation efforts often require “sub-setting”, that is, implementing common conservation goals at different scales. This could involve implementing national goals at a municipal scale or implementing regional conservation goals in different countries. And while collaborating countries may agree on multilateral conservation goals, sovereign nations still need to make conservation decisions and investments for their own jurisdiction. These decisions and investments need to reflect their national goals and contexts including local resource bases, cultures, resource usage, threats, stewardship, national incomes, country sizes, and local expertise.

MEAM: So what does your framework help conservation planners do?

Beger: Our work addresses how to incorporate regional priorities into national decisions. Specifically, we evaluate trade-offs that arise when we use a number of Coral Triangle Initiative objectives to identify places where marine protected areas (MPAs) would be most beneficial. The objectives we used are: (1) representing all habitat types, (2) protecting fish spawning aggregations, (3) improving the status of threatened sea turtles, (4 and 5) maximizing larval dispersal connectivity for coral trout and sea cucumbers, respectively, and (6) protecting places less affected by climate change.

We developed two strategies that countries can apply (often simultaneously): protecting multi-objective hotspots, and protecting complementary top priority areas. Establishing new MPAs in multi-objective hotspots would provide good conservation benefits for all six objectives at the same time. Establishing new MPAs in complementary top priority areas would provide high conservation benefit for one or two of the objectives. When employing this second strategy, countries need to coordinate regionally to ensure protection of complementary areas for all of the objectives.

MEAM: Why not just protect the “multi-objective hotspots”?

Beger: While concentrating protection efforts in places where multiple conservation benefits can be achieved simultaneously is intuitively appealing, it is not always politically equitable or ecologically appropriate. Not all countries have multi-objective hotspots, so focusing on this strategy alone concentrates the conservation burden and benefits unfairly. Also, conserving only hotspots cannot maximize conservation benefits for all of the objectives.

For example, the most important areas for connectivity and turtles in the Coral Triangle are not in multi-objective hotspots. Papua New Guinea, which does not have as many conservation resources as some of the other countries in the Initiative, has some of the most essential areas for meeting the turtle objective and can make an important contribution by working in one of the top-priority turtle areas.

MEAM: What sort of tools did you use for this work?

Beger: We used the decision support tool *Marxan* and its extension *Marxan with Connectivity* – as well as a host of new techniques to represent fish migrations, turtle nesting and foraging areas, turtle connectivity patterns, and climate-related coral reef decline - to identify multi-objective hotspots and complementary priority areas for the Coral Triangle region. Coral Triangle Initiative partners can now use these analyses (see figure below) for incorporating regional priorities into their planning and determining if the partnership is on track to achieving regional objectives.

MEAM: Is your framework only applicable to multinational efforts or would it help in other situations as well?

Beger: Our framework is also applicable to national goals which are often implemented at provincial or municipal levels. For example, in Indonesia, marine spatial planning is occurring at the province level with the national planning body providing the overarching goals and criteria. Our framework could be beneficial in this sort of situation to create a formal way for local implementing agencies to include broader goals and priorities into their decision making.

Read/download the full article for free at <http://www.nature.com/ncomms/2015/150914/ncomms9208/full/ncomms9208.html>.

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