Governance of Marine Ecosystem-Based Management: A Comparative Analysis

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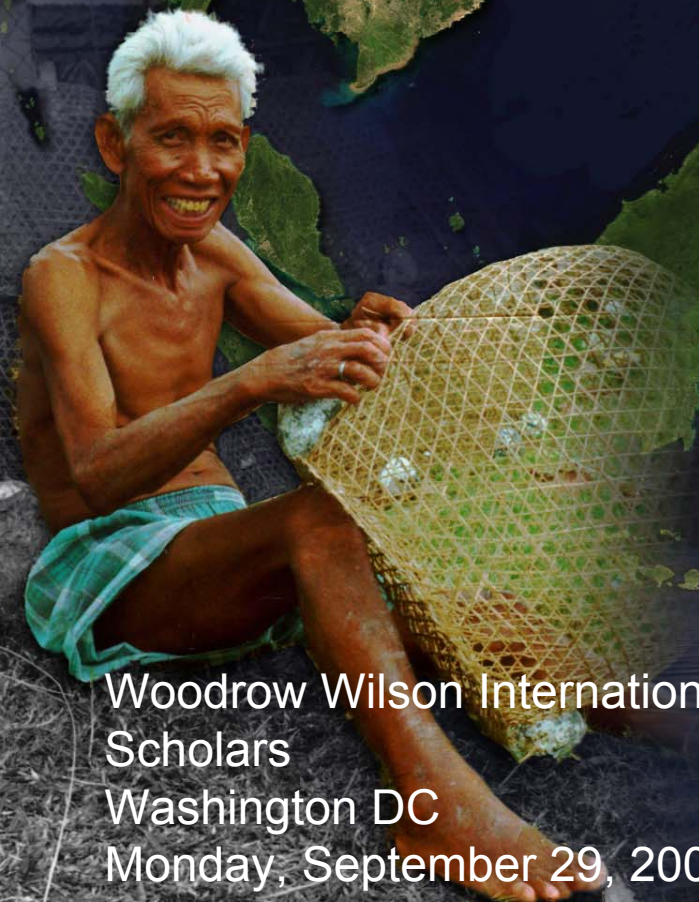

Woodrow Wilson International Center for Scholars
Washington DC
Monday, September 29, 2008

NCEAS EBM Feasibility Working Group

- 3 Main Goals
  - Assessing how to modify governance structures to facilitate effective EBM in developing & developed contexts
  - Generating practical ecological & social indicators for EBM
  - Producing analysis & planning materials for EBM scientists, practitioners, and policy makers

NCEAS EBM Feasibility Working Group

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Patrick McConney, University of the West Indies
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Alan White, The Nature Conservancy
Various University of Washington Marine Affairs students

Informing EBM Design

- What are attainable first steps to establishing EBM?
- What are appropriate and feasible socio-ecological indicators?
- What structures must be in place to improve the inclusion of relevant ecological and social information into decision making?
- What are appropriate EBM management tools for different contexts including MPA networks, zonation, habitat restoration, traditional single-stock fisheries management?

Ecosystem-based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to **maintain an ecosystem** in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from current approaches that usually focus on a single species, sector, activity or


Released on March 21, 2005

Scientific Consensus Statement on Marine Ecosystem-Based Management

Prepared by scientists and policy experts to provide information about coasts and oceans

The following scientists and policy experts have approved this statement. All hold either Ph.D. or J.D. degrees and are based at U.S. academic institutions

Evolving EBM

- Evolution of models & efforts
  - Ecological → Ecological + social + economic
- EBM includes for this working group:
  - Large marine ecosystems
  - Ecosystem-based fisheries management
  - Ecosystem approach to fisheries (FAO)
- EBM models rely on common management techniques
  - MPA's, fisheries management, coastal management
  - With emphasis of scaling up to ecologically relevant scales

NCEAS Working Group findings based on:

- Comprehensive literature review
- Intensive analysis of Philippine examples
  - Detailed data sets based on years of field research involving thousands of interviews, multi-year stock assessments and underwater visual reef surveys
  - Experience derived from two USAID projects and one NGO working in 14 municipalities on 21 MPAs
- Collective experience of practitioners from around the world with decades of experience

Governance Focus

"the formal and informal arrangements, institutions, and mores which determine how resources or an environment are utilized; how problems and opportunities are evaluated and analyzed, what behavior is deemed acceptable or forbidden, and what rules and sanctions are applied to affect the pattern of resource and environmental use"

(Juda 1999)

Key motivations behind our working group

- Much of the literature lacks a true management dimension
  - Focus toward an idealized version of how the results of management “should” be accomplished
- How the developing country context will influence ecosystem approaches is poorly understood
- Desire to shape future EBM efforts, especially those working to improve the management of coral reefs and associated fisheries

Site selection criteria

- Mix of well established and emerging EBM efforts
  - Philippines: Well established
  - Caribbean LME: emerging
- Mainly coral reef sites
  - comparable ecology and fisheries, with Benguela LME as unique
- Mix of approaches
  - bottom-up/organic to modular/planned
- Mix of management tools
  - MPA networks as focus
  - Including fisheries management
- Mainly tropical, developing countries
- Data rich

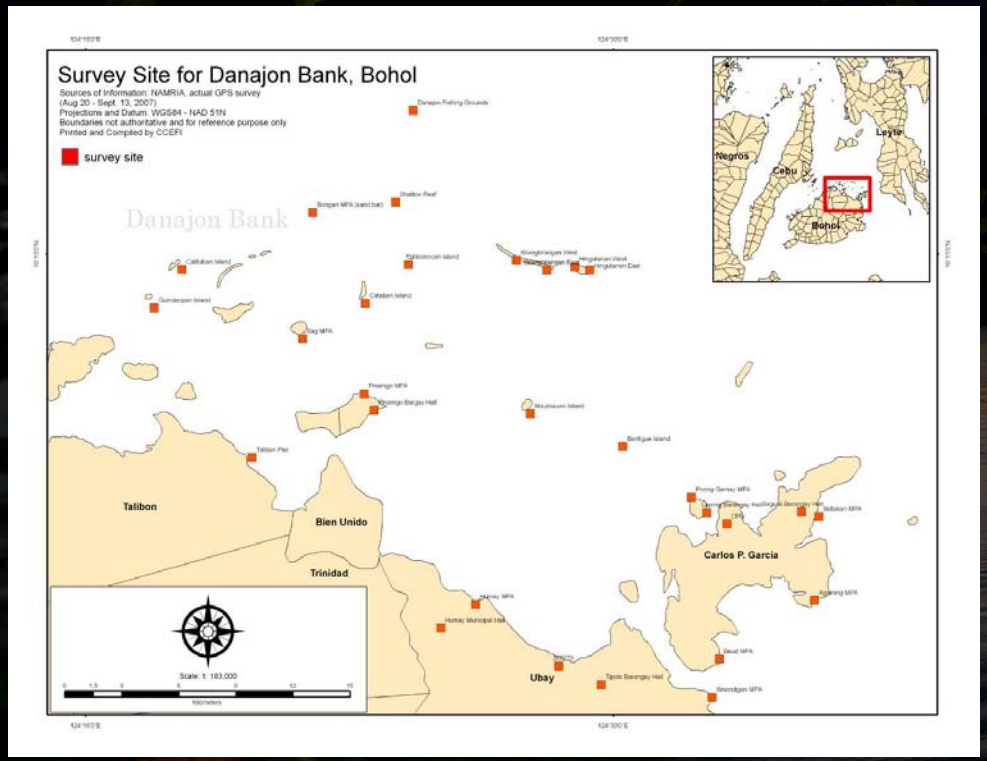
Applying multiple methods to develop varied outputs

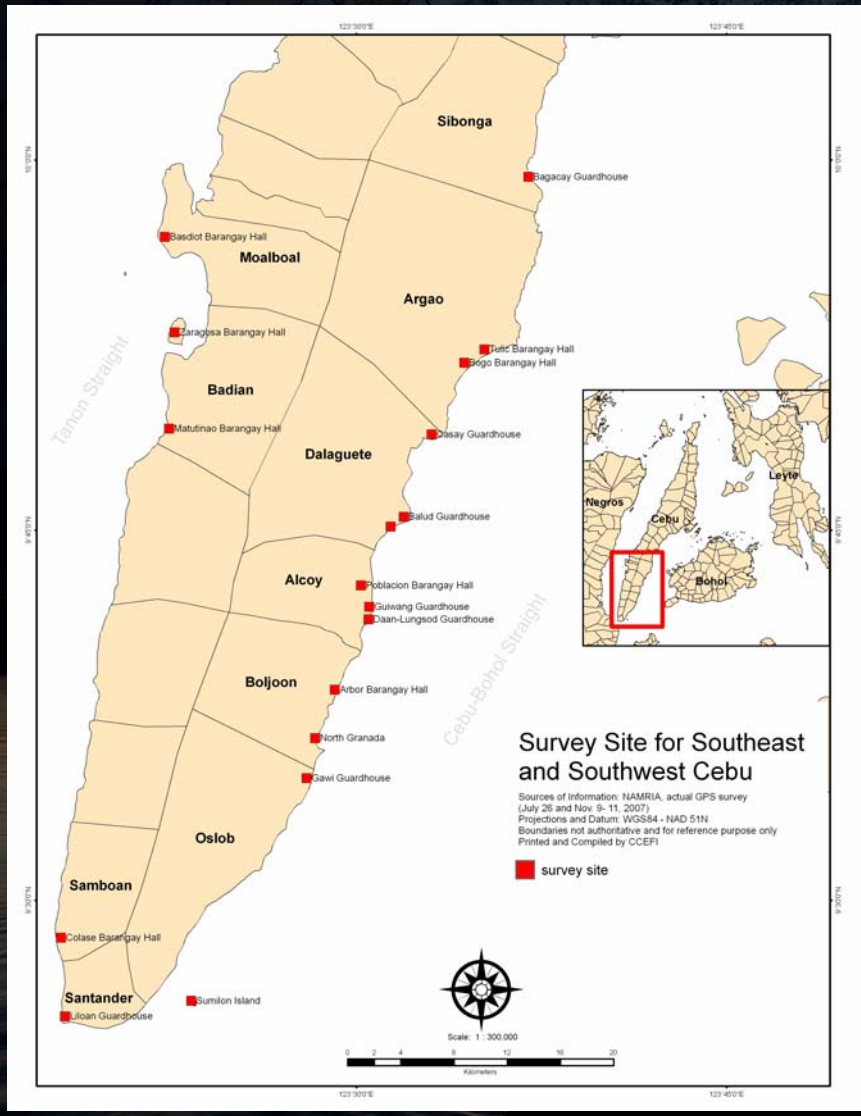
- Quantitative analysis of structured interviews
- Qualitative analysis of in-depth, semi-structured interviews in overlapping sites
- Triangulation of methods

- Development of detailed, practical case studies and comparative analyses
- Development of educational materials

MPA networks in the Philippines

36 MPA Research Sites

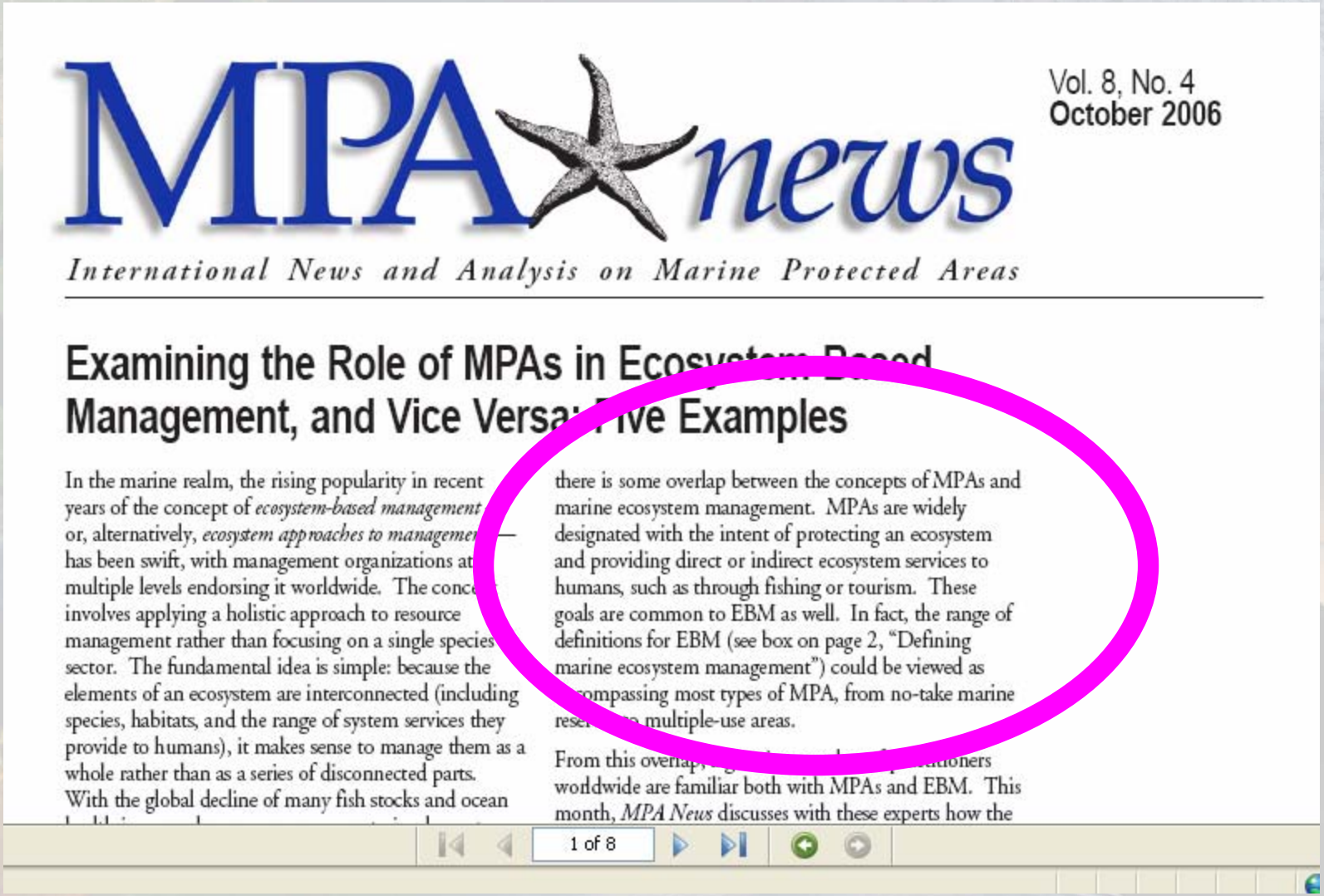




www.oneocean.org

http://www.coast.ph/projects/lgcmp.htm

Linkage between EBM (framework) and MPAs (tool)



MPA news

Vol. 8, No. 4
October 2006

International News and Analysis on Marine Protected Areas

Examining the Role of MPAs in Ecosystem-Based Management, and Vice Versa: Five Examples

In the marine realm, the rising popularity in recent years of the concept of *ecosystem-based management* or, alternatively, *ecosystem approaches to management* — has been swift, with management organizations at multiple levels endorsing it worldwide. The concept involves applying a holistic approach to resource management rather than focusing on a single species or sector. The fundamental idea is simple: because the elements of an ecosystem are interconnected (including species, habitats, and the range of system services they provide to humans), it makes sense to manage them as a whole rather than as a series of disconnected parts. With the global decline of many fish stocks and ocean

there is some overlap between the concepts of MPAs and marine ecosystem management. MPAs are widely designated with the intent of protecting an ecosystem and providing direct or indirect ecosystem services to humans, such as through fishing or tourism. These goals are common to EBM as well. In fact, the range of definitions for EBM (see box on page 2, "Defining marine ecosystem management") could be viewed as encompassing most types of MPA, from no-take marine reserves to multiple-use areas.

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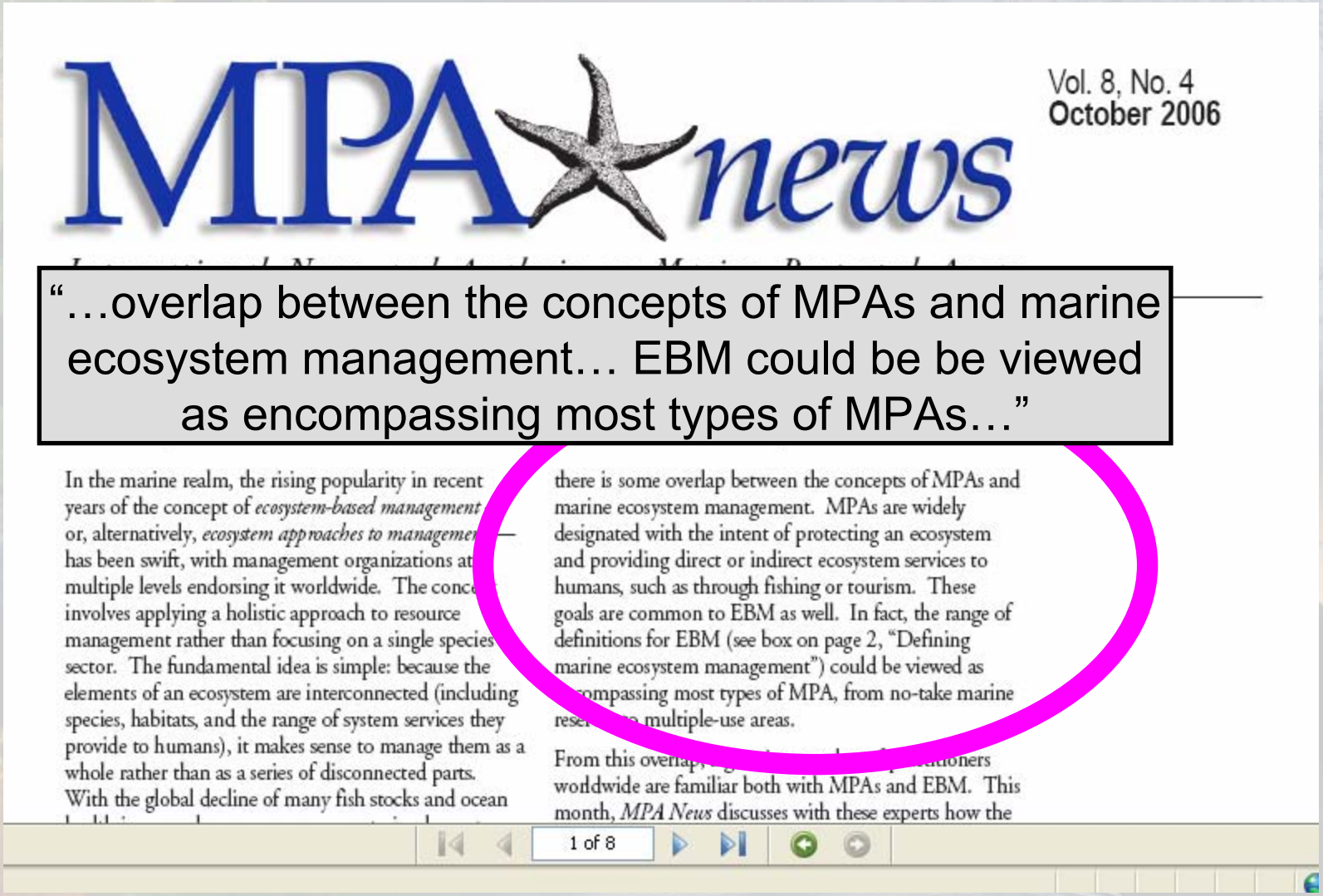

MPA news

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1 of 8

Perceived increase in number of fish by fishers in MPA area is significantly correlated to:

CONTEXT

- Fishing grounds threatened by illegal commercial fishing (.38*)
- Distance from municipal center (.40*)
- Clear leader for MPA (.42**)
- Population size (-.45**)

MPA MANAGEMENT

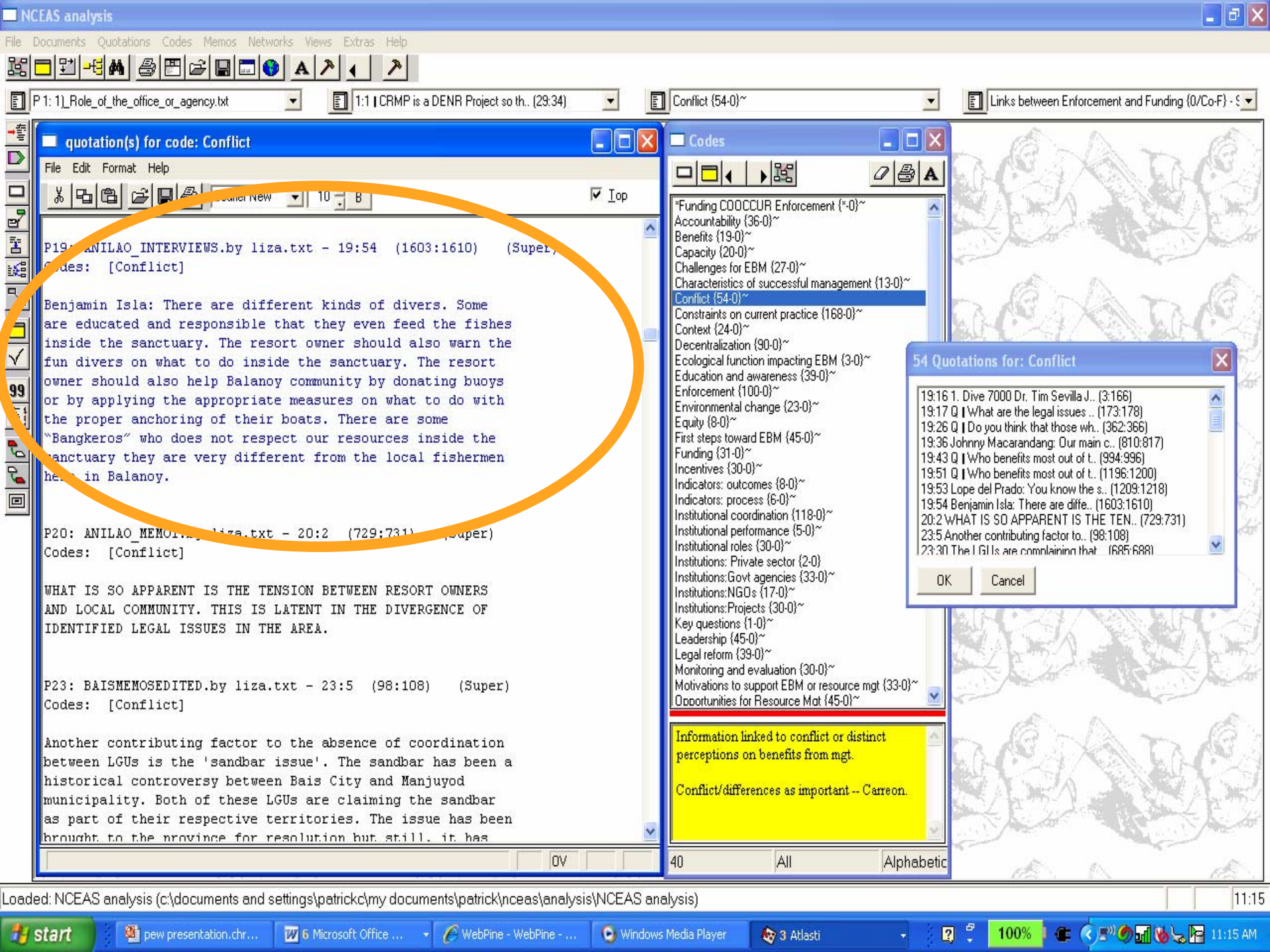
- Increased compliance (.39*)
- Improved enforcement (.36*)
- Strict punishment for rule infraction (.39*)
- Local community enforcement group strength (.34*)
- Municipal govt. skill level (.34*)
- NGO skill level (.36*)
- Increased intra-community conflict (.38*)
- Increased seriousness of conflict (.37*)

n=36; p<.05 = *; p<.01=**

Dependent Variable: Perceived increase in number of fish by fishers in MPA area

Significant independent variables	Coeff	t	p 2-tail
Clear leadership for MPA	.30	2.0	.05
Bantay dagat strength	.43	3.0	.01
Threat from commercial fishing	.41	2.6	.01

R=0.66 R2= 0.44 Adj R2=0.38 F=8.0 p<0.001 n=33


NCEAS analysis
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P 1: 1)_Role_of_the_office_or_agency.txt
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Conflict {54-0}~
Links between Enforcement and Funding {0/Co-F} - S
quotation(s) for code: Conflict
File Edit Format Help
Top
P19: ANILAO_INTERVIEWS.by liza.txt - 19:54 (1603:1610) (Super)
Codes: [Conflict]
Benjamin Isla: There are different kinds of divers. Some are educated and responsible that they even feed the fishes inside the sanctuary. The resort owner should also warn the fun divers on what to do inside the sanctuary. The resort owner should also help Balanoy community by donating buoys or by applying the appropriate measures on what to do with the proper anchoring of their boats. There are some "Bangkeros" who does not respect our resources inside the sanctuary they are very different from the local fishermen
in Balanoy.
P20: ANILAO_MEMO
Codes: [Conflict]
WHAT IS SO APPARENT IS THE TENSION BETWEEN RESORT OWNERS AND LOCAL COMMUNITY. THIS IS LATENT IN THE DIVERGENCE OF IDENTIFIED LEGAL ISSUES IN THE AREA.
P23: BAISMEMOSEDITED.by liza.txt - 23:5 (98:108) (Super)
Codes: [Conflict]
Another contributing factor to the absence of coordination between LGUs is the 'sandbar issue'. The sandbar has been a historical controversy between Bais City and Manjuyod municipality. Both of these LGUs are claiming the sandbar as part of their respective territories. The issue has been brought to the province for resolution but still, it has
OV
Codes
Funding COOCCUR Enforcement {-0}~
Accountability {36-0}~
Benefits {19-0}~
Capacity {20-0}~
Challenges for EBM {27-0}~
Characteristics of successful management {13-0}~
Conflict {54-0}~
Constraints on current practice {168-0}~
Context {24-0}~
Decentralization {90-0}~
Ecological function impacting EBM {3-0}~
Education and awareness {39-0}~
Enforcement {100-0}~
Environmental change {23-0}~
Equity {8-0}~
First steps toward EBM {45-0}~
Funding {31-0}~
Incentives {30-0}~
Indicators: outcomes {8-0}~
Indicators: process {6-0}~
Institutional coordination {118-0}~
Institutional performance {5-0}~
Institutional roles {30-0}~
Institutions: Private sector {2-0}
Institutions:Govt agencies {33-0}~
Institutions:NGOs {17-0}~
Institutions:Projects {30-0}~
Key questions {1-0}~
Leadership {45-0}~
Legal reform {39-0}~
Monitoring and evaluation {30-0}~
Motivations to support EBM or resource mgt {33-0}~
Opportunities for Resource Mgt {45-0}~
Information linked to conflict or distinct perceptions on benefits from mgt.
Conflict/differences as important -- Carreon.
40 All Alphabetic
54 Quotations for: Conflict
19:16 1. Dive 7000 Dr. Tim Sevilla J.. (3:166)
19:17 Q | What are the legal issues .. (173:178)
19:26 Q | Do you think that those wh.. (362:366)
19:36 Johnny Macarandang: Our main c.. (810:817)
19:43 Q | Who benefits most out of t.. (994:996)
19:51 Q | Who benefits most out of t.. (1196:1200)
19:53 Lope del Prado: You know the s.. (1209:1218)
19:54 Benjamin Isla: There are diffe.. (1603:1610)
20:2 WHAT IS SO APPARENT IS THE TEN.. (729:731)
23:5 Another contributing factor to.. (98:108)
OK
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Dependent Variable: Perceived increase in number of fish by fishers in MPA area

De la Victoria: “I’ll be six (6) years in this job by October – my work is difficult because of the hazards that goes with it. When we do market denial, one box, for example coming from Zamboanga which we are able to confiscate will cost Ps100,00.00 to Ps150,00.00. About 100 kilos of dynamited fish. I received many death threats but I never carried a firearm even if I am authorized. For me, its enough that I am doing my job well and I have a clear conscience…”

Dependent Variable: Collaboration of Communities, Mayors and MPA Management Committees

Significant independent variables	Coeff	t	p 2-tail
NGO technical skill level	.60	4.33	<.001
Training involvement	.50	3.70	.001
Consultation with community during planning	.46	3.43	.002

R=0.74 R2= 0.55 Adj R2=0.50 F=10.55 p<0.001 n=30

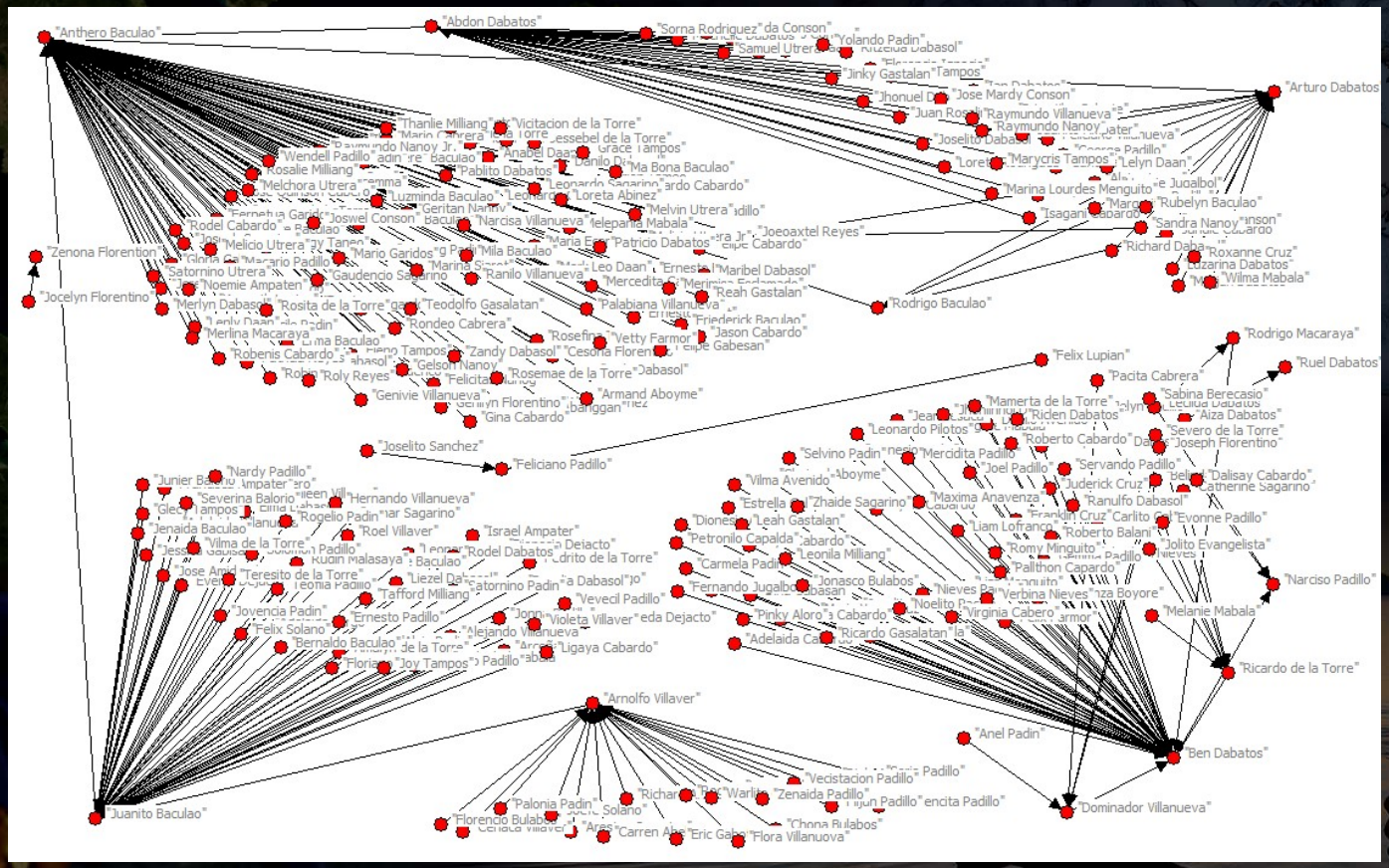
Dependent Variable: Collaboration of Communities, Mayors and MPA Management Committees

"… because of the support of the cluster they are now more encouraged to conduct the patrolling and apprehending of illegal fishers in the area."

"Every month, our [cluster representative] is attending the meeting, and when he [is] back, no nothing, nothing at all."

Clear leadership for MPA

Social network analysis for a successful MPA

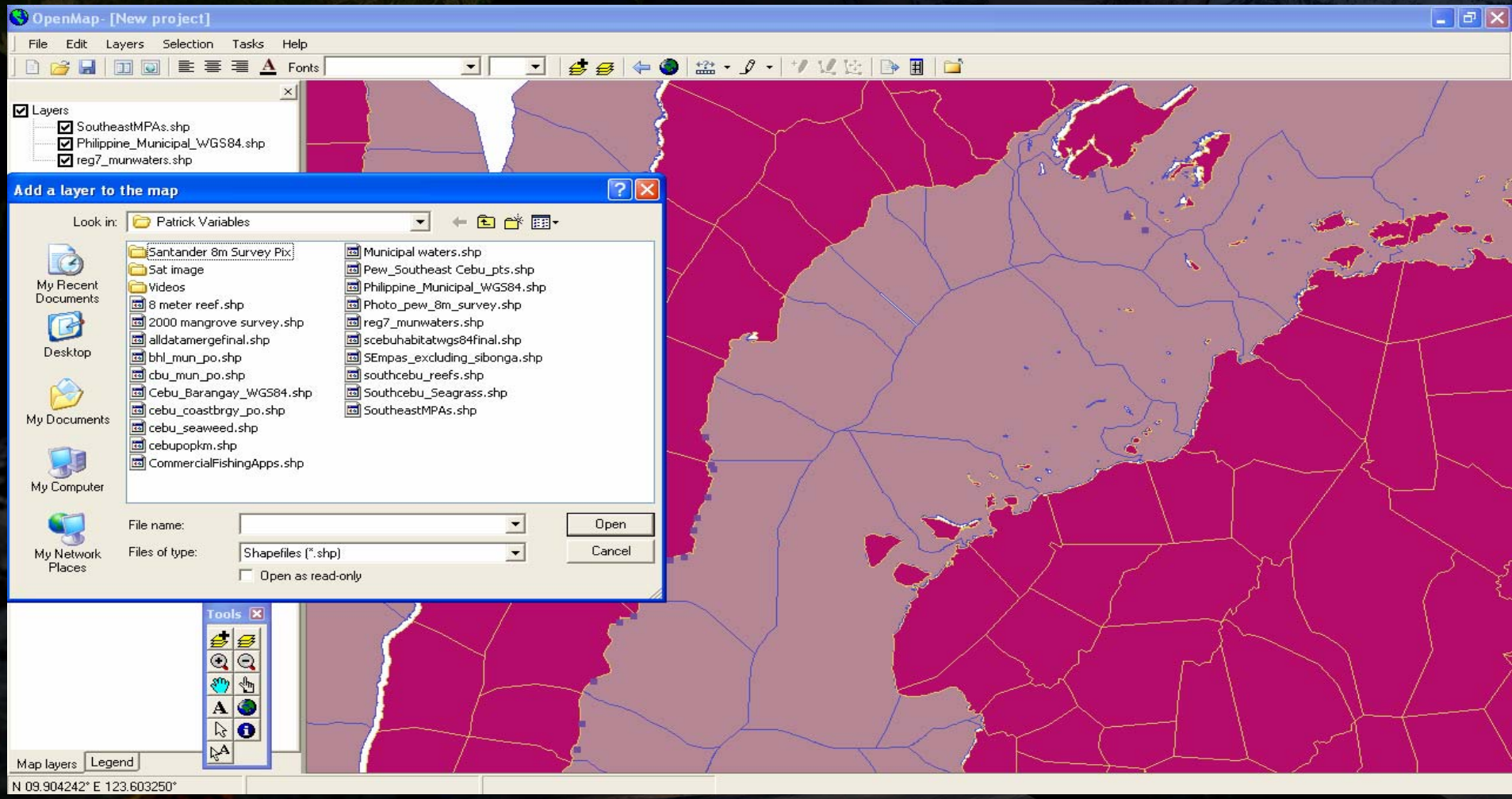


There are clear MPA leaders that need support!!!

Supporting the South Cebu EBM planning process

- EBM Educational Toolkit
  - 1-2 day training module
  - Interactive “how to” workbook for EBM governance
  - PowerPoint presentations
  - Embedded GIS tool for governance and monitoring data: easy to use, free ware
- Monitoring process over time (2006-2010) to describe trade-offs in field context
- Hoping to inform the Coral Triangle Initiative

GIS decision support tool



Metrics to track progress

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Marine Policy 31 (2007) 239–250

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Assessing the feasibility of ecosystem-based fisheries management in tropical contexts

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[c]*Tetra Tech EM Inc. and Fisheries Improved for Sustainable Harvest (FISH) Project, 5th Floor, CIFC Towers, North Area, Cebu City, Philippines*

[d]*Coastal Conservation and Education Foundation, Inc. (CCEF), Executive Director, Room 302, PDI Condominium, Banilad, Cebu City, 6000 Philippines*

Received 17 March 2006

Metrics to track progress

Process Criteria

1. Transparent & participatory planning process
2. Social & natural science generated information influencing planning
3. Local knowledge of resources & patterns of resource use influencing planning
4. Ecological knowledge of some form utilized in planning
5. Monitoring information used adaptively
6. Education program in place to encourage policy makers & resource users to adopt EBFM

Metrics to track progress

Output Criteria

1. Fish biomass measured in and near management areas
2. Reference points for catch per unit effort are established at a precautionary level
3. Reduced or managed fishing effort
4. Threatened species and habitats are protected
5. Habitat and biodiversity protection with establishment of no-take MPA networks
6. Critical habitat protection from pollution, coastal development and other externalities
7. Management of ecologically defined assemblages of fish rather than single species
8. Multi-sectoral planning organizations established and functional
9. Establish legal/policy frameworks that foster EBFM

Thank you

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Synthesis
Coastal Management theme issue

- There are successes and EBM is possible. Documenting biophysical improvements. Improved management due to collaborative approach.
- EBM is fragile, and requires a long-term commitment
- Compatibility of scale of governance and ecosystem/ resource use patterns is important
- Discovering what institutions are working in distinct contexts – e.g., clusters of municipal governments in the Philippines addressing a common suite of issues and sharing resources

Synthesis

- Many means to reach success and resolve inevitable dilemmas. No one template. There are many appropriate forms of EBM governance that must be context appropriate.
- Start with seed(s) and build out to bring on other issues/sectors. In highly complex contexts like the Caribbean, may need use a network approach to coordinate efforts.
- Incremental change is important. Build from previous efforts and frameworks such as sustainable fisheries management and ICM.

Synthesis

- Must be attentive to local management/community processes. Not a luxury. Has implications for which organizations to support and how to allocate funds.
- Empirically based key conditions/factors identified:
  - identification of a common issue/threat as impetus for change
  - clear leadership
  - capable implementation and enforcement organizations
  - fair and participatory planning processes
  - effective use of education to create awareness and demand
- Objective and external social and natural scientific community has a key role to play in supporting EBM

Future steps

- Determine how to realign current investments and efforts to establish and maintain EBM and networks
- Identifying feasible means by which EBM can effectively respond to large-scale, diffuse changes such as climate change and ocean acidification
- Developing educational tools and workshops to assist the Coral Triangle Initiative and interested LMEs

Acknowledgements

- USAID and Woodrow Wilson Center
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- Working group members' home institutions: TNC, UW, URI, UWI, UH, WSU, FISH, CCEF, FAO
- Coastal inhabitants and practitioners who willingly participated in this study