

Policy Workshop

- Environment for Development Tanzania
 - EfD-Tanzania
- *Managing Tanzania's Marine Protected Areas*
 - By
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Outline of the Talk

- Conceptual Models of MPAs
- Discussion of the Conceptual Models
 - Regulated Open Access
 - Marine Reserve Creation
- Views on Marine Reserves
- Key Conclusions on Marine Reserves
- Managing Marine Protected Areas (MPAs)
- Case Study of Key Policies in MPAs
- Key issues raised
- Conclusion

Conceptual models of MPA management (1)

- Pure Open Access or Optimized Rent Maximizing
 - Simply call this *Open Access*
 - Free entry and exit
 - Not subject to regulations
 - Dissipate (drive away) potential rents (profits)
- Virtually no fisheries operate under this in the modern world!
- Can you think of any example of pure open access?

Conceptual models of MPA management (2)

- Regulated Open Access
 - Participants are fee to enter but subject to certain regulations imposed by management agency
 - Gear Restrictions
 - Area Closures
 - Season length restrictions
 - Restricted access setting that uses a license limitation scheme
 - Other forms of closure to entry
 - Captures some features of modern fisheries

Which model do Marine Protected Areas fit?

- Marine Reserve Models
- MPAs are areas protected to some degree from fisheries exploitation and other consumptive uses
 - Designed to protect unique examples of marine habitat
 - Provide laboratories within which to study relatively un-disturbed marine ecosystems
- In Tanzania marine protected areas are managed in different ways

Discussion of the Conceptual Models

- Model of a Regulated Open Access Fishery
 - Captures some features of modern fisheries.
 - Predictive rather than normative model
 - Used to understand implications of structures that exist in real world.
- The Model has three (3) Components
 - Industry component: Fishermen Behaviour
 - Regulatory Component
 - Biological Component

Assumptions for the Components

- Industry component
 - Fishing industry commits a given amount of ***fishing capacity each season***, based upon anticipated prices, costs, biomass level and regulations set by the agency
- Regulatory Component
 - Select ***regulations*** based upon specific biologically oriented goals and anticipated fishing capacity level of the industry
- Biological Component
 - Biomass evolves b/n seasons: how much have been ***harvested*** each season and the initial biomass level

Model of Marine Reserve Creation

- There is a growing support for an expansion of the use of marine reserves or areas of protected fisheries exploitation (Davis, 1989; Allison et al 1998;)
- Many natural extension of the terrestrial park system, designed to protect unique examples of marine habitat from particular type of degradation and to provide laboratories to study undisturbed marine ecosystems.
- There are many examples of areas of special interest indentified in various costal zones around the world
 - Examples in Tanzania? Kenya? South Africa?

Views on Marine Reserves

- *Proponents of Marine Reserves*
 - Likely to generate **new consumptive** and non consumptive **benefits**.
 - **Research and education** benefits and some existence values
 - Within the boundaries of reserves, populations grow to a **larger sizes**, attain **broader age and size distributions** and achieve more diverse assemblages (groups/collection).
 - Productive **quality** of the habitat increases especially where bottom trawling and dredging were destructive of the substrate

Proponents views ctd.....

- What is the key challenges on the benefits of protected areas?
- *A major challenge that exists is how to evaluate and quantify the net benefits from these beneficial ecosystem changes within newly established and potential reserves*
- Not everyone supports a major expansion of marine reserves of course!
- ***Who are these? Why? Where?***

Views on Marine Reserves....

- Opponents of Marine Reserves
- Fishermen have been among the most vocal skeptics!!! Why?
 - Significant costs in the form of lost access to areas of traditional use.
 - Impact on livelihoods especially of the fishermen who entirely depends on the ocean for their current income. i.e **those *employed by the ocean!***
 - Gear exchange associated with protected areas is imperfect. ***How? Why?***

Key Question.....

- Whether reserves are likely to be costly to fishermen is a complicated issue!!! Why?
 - Closing all coastal habitat would essentially cost fishermen all of their current income!
 - Doing nothing leaves us with the *status quo* in fisheries management.
- What should be the position then?
- ***Any suggestion?***

Key Question Ctd...

- Several arguments have been put forward the above reserves would benefit fishermen
 - Status quo of management methods are not safe enough and are destined to fail over the long run.
 - Reserves are the only way to ensure protection of marine populations from the management process itself.
 - Closing some areas may actually enhance fisheries productivity
- What else?

Key Conclusions on Marine Reserves....

- The most vocal objections to reserve have come from fishermen presently exploiting areas under consideration as set-asides.
- Marine reserve proposals are akin to asking them to give up harvesting rights.
- It may be possible to increase both aggregate biomass and harvests under some circumstances.
 - This “double payoff” issue is both biological and an economic problem

Key Conclusions on Marine Reserves....

- Closing an area in an exploited open access system always increases aggregate system biomass.
- It also increases aggregate harvests the remaining open areas are large relative to forgone harvest.
- In more general density dependent case, aggregate harvests may increase under certain specific conditions. When cost/price ratios in reserve are low – over harvesting; a low biomass and a low sustained harvests.

Example of Key Policies in MPAs

- MBREMP's Policy for Management
 - Facilitating compliance with, and enforcement of regulations against
 - Fishing technologies
 - Mangrove cutting for commercial sale
 - Defining the net mesh sizes (>2.5" not allowed)
 - Permit systems for fishing within the MBREMP protected area (is it effective?)
- Primary activities of the Park Managers
 - Enforcement: Type of fishing gears
 - Gear Exchange: Exchange of illegal fine mesh nets
 - Alternative income generating projects

Primary activities of MBREMP

- **Enforcement**

- Enforce regulations on the type of fishing gear vs size of fish caught or on size of landing
- Regulations: dynamite fishing, Minimum mesh size
- Confiscation of illegal gears
 - Loosing a boat is a significant cost to any MBREMP villager!
- Challenge: Low cost of fine mesh and low patrol rates discourage/limit the incentive of using of legal gears
- Mangrove Extraction permit issuance by VEC:
Probability of detection is high causing deterrent to such forest!

Primary activities of MBREMP

- **Gear Exchange:** villagers trade in illegal Vs Legal gears
 - Number of nets did not cover all households!
 - Main Incentive to gear exchange relates to the perceived **enforcement probability**
 - **Disincentives:** There are several of these
 - Difficulties in using new gears;
 - loss of fine mesh nets for use elsewhere for illegal use
 - Limited fish harvest due to small size of fish in the bay

Primary activities of MBREMP

- **Alternative Income Generating Projects**

- Variety of projects have been offered including beekeeping and fish ponds

- **Limitations**

- Many have been located in villages with little or no dependence on fishing. This limits the project's ability to:

- ✓ induce further reductions in fishing

- ✓ Encourage legal fishing gear

- ✓ Compensate fisherfolk for lost of resource access

Some Key Issues Raised

- MPAs need to change fishers behaviour with a combination of ***“carrots” and “sticks”***
- These changes are hardest in the initial years when stocks are low
 - Suggests transition in programs such as gear exchange (slowly increase required mesh size)
 - “Big push” effort in these years is needed (compensation)
- If insider and outsider villagers are treated the same, this can cause resentment and reduce likelihood of success
- If villages more reliant on fishing are treated same as those less reliant then conflict is more likely
 - But in some MPAs, no differentiation
 - Reduces likelihood of ownership and local enforcement by insider villagers

Key issues raised in Mnazi

- Most enforcement is over gear exchange
 - Mesh size too large for fishing in the bay?
- No differentiation between “insider” villagers and “outsiders”
- Fishermen feel that they have been harmed disproportionately by the MPA
- Unequal cost burdens across villages with equal projects: Ignore the diversity of cost burdens!!!
Fishery dependent villages require larger projects
- Uniform projects does not address unequal cost burdens across villages

Key issues raised in Mnazi

- Within village project benefit disparities
 - Benefiting small groups!!
 - Project do not address cost of compliance!
- Livelihood projects only benefit a few, and were first adopted by villages least reliant on fishing
- Low level of patrolling and enforcement
 - Inability of MPA to patrol often. Why??
 - Generate low probability of detection for use of illegal gears

Key issues raised in Mnazi

- Park managers are not development experts
 - Face both conservational and Rural Development Goals, ie a dual role
 - Rural Poverty aspect is significant in MBREMP!
 - Create conservation incentives without undermining rural welfare
 - Know how resource dependent people make decision! Use of Malaria nets for fishing... **can't protect against malaria when hungry!!!**

Conclusion

- Can incentive to the fishermen change behavior?
- MPA can only protect resources when they implement policies that change the behavior of resource users. How?
 - Alternate fishing gears!
 - Offering livelihood projects that limit the labor available for fishing
 - Different packages of gear exchange and livelihood projects depending on village location
 - Tailoring incentives and programs to each village opportunity costs
 - Address the dual role on Administration of Marine Parks

Marine Parks in Tanzania....



End.....

- Thanks for your attention