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Ecological and social considerations for an expanding sandfish farming industry

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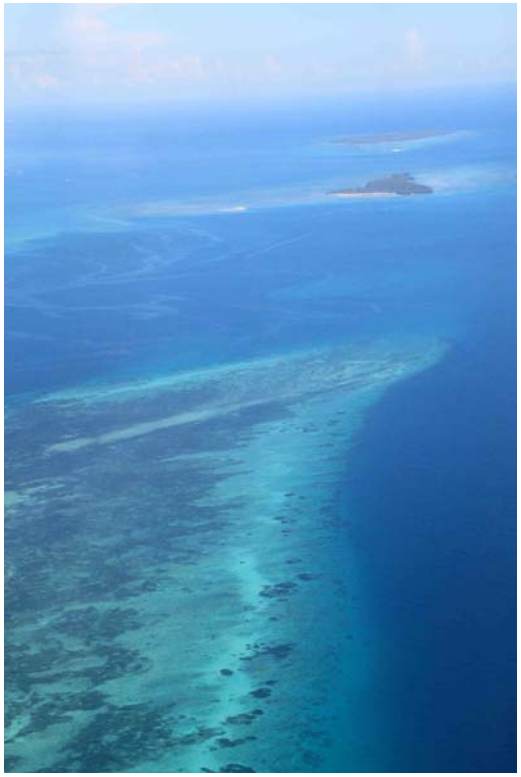
Purpose

EXPLORE AND CONTEXTUALISE



- Ecological considerations

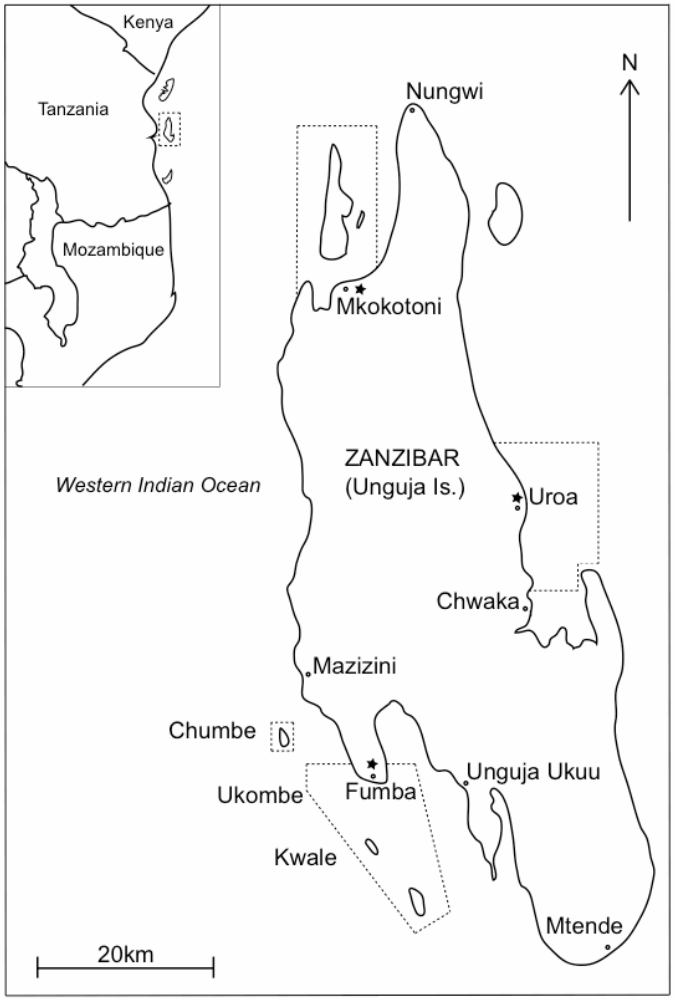
- Social considerations

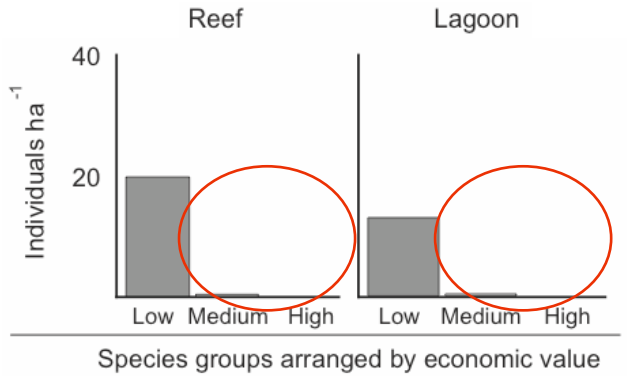
Considerations

Consideration	Description
Translocation	*Introduction of broodstock from distant areas, possibly affecting gentic integrity of local stocks*
Habitat modification	*Modification of habitats in farming areas to improve growth and survival*
Assemblage shift	*Systems effect on benthic assemblages through dense cultivation or extermination of predators*
Disease	*Establishment and introduction of pathogens in dense cultivation areas exposing wild stocks*
Industrialisation	*Increased resource use and ecosystems effects with development of the enterprise*
Affecting the wild fishery	*Undermining management/closures through possibility to sell wild products as farmed products*
Local marginalisation	*No community participation with revenues not gained by local stakeholders*
Insitutional marginalisation	*Un-regulated activity not included in formal economy with export revenue not benefitting the nation*
Access to wild stocks	*Rights to access broodstock will be misused to harvest other stocks for export*
Big promises	*The initiation of an enterprise will be based on inflated promises*
Insufficient research	*Altough hatchery techniques are developed the production line is not fool proof and much is inknown*

- Surfaced at a workshop in Tanzania last year…

Zanzibar



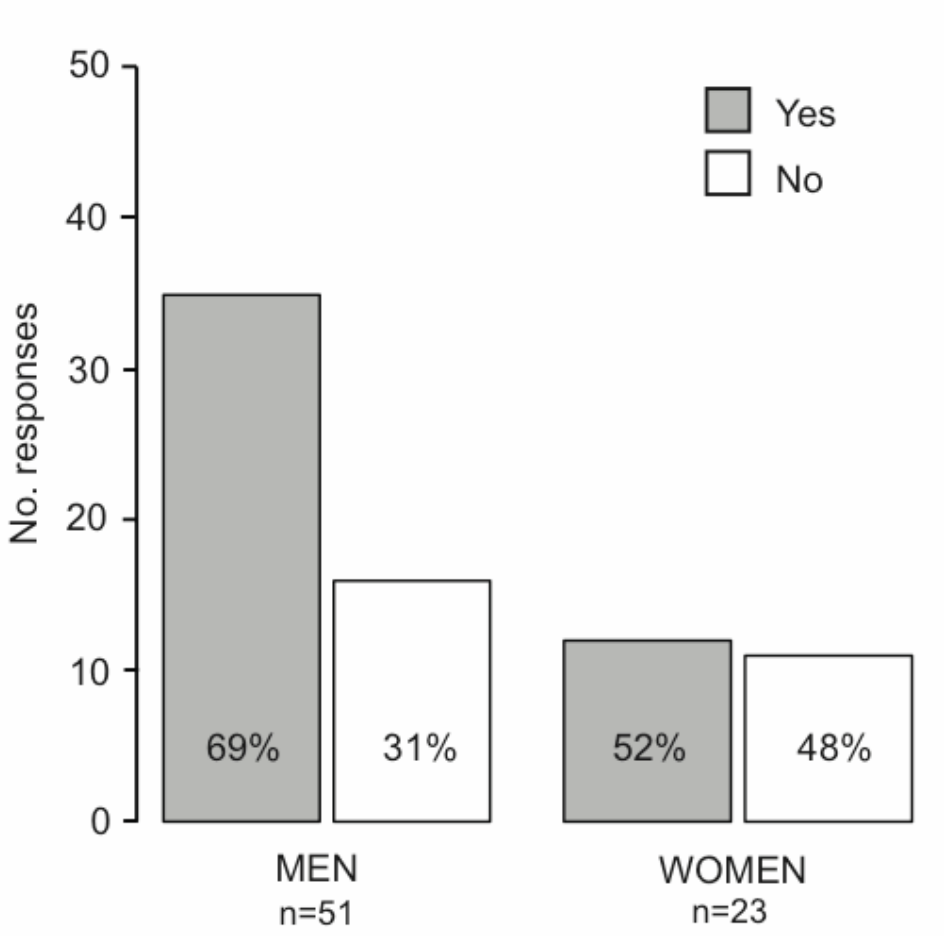


Gleaning	Breath hold diving	Scuba diving
Intertidal	Intertidal - Subtidal	Subtidal
<1m	1-10m	10-50m
Near shore shallow areas	Local fishing grounds (but may be more mobile)	Mobile, Zanzibar wide, Mafia, Pemba, mainland Tanzania and other countries of WIO
Buckets, baskets, bags, to collect catch	Mask, fins, mesh bag to collect catch, drag buoy, often use boat and sometimes speargun to catch octopus and fin fish	Boat (engine), rustic gear (single regulator, no bcd, wetsuit is rare), mesh bag to collect catch
Many	Fewer	Few (concentrated to a few villages/sites)
Mostly women, but men and children too	Men	Young men

B.H. Eriksson et al. Aquat. Living Resour. 23, 387–398 (2010)
online available via http://www.alr-journal.org/

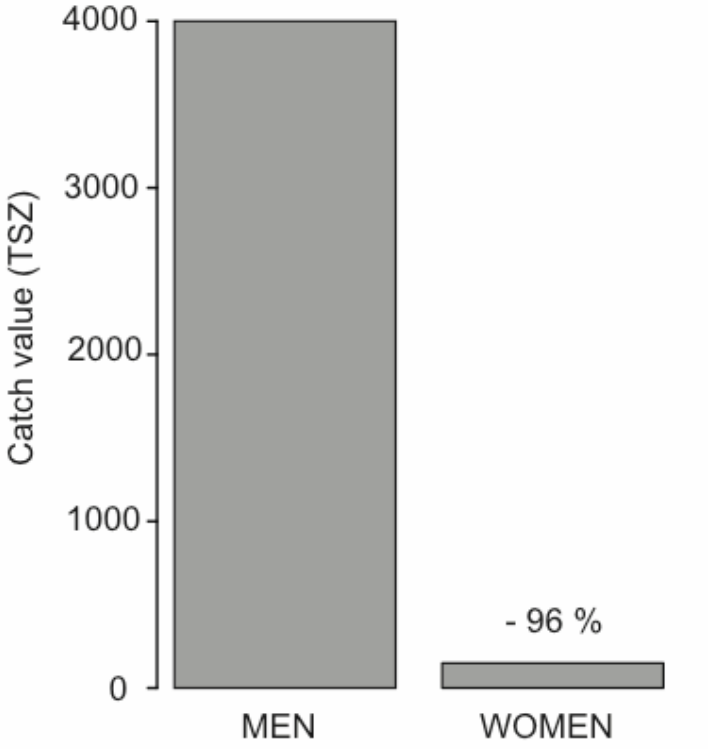
Fishers perceptions

”would you like to farm sea cucumbers?”



Catch value

Price differential between men/women for sandfish in Zanzibar



Comments / concerns

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”YES”	”I will still fish while farm - cannot wait for harvest”
	”More to sell”

-> EFFECT ON FISHERY

”NO”	”They will be stolen”
	”Need training on how to do it”
	”Cannot afford to wait for harvest”
	”Only if employed”

-> RISK

Effect on fishery

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”…increased income provided by seaweed farming may even be invested in capital improvement of fisheries businesses. Hence, the assumption that the introduction of seaweed farming alone (or any one solution) will result in reduced fishing effort or reductions in destructive fishing cannot be taken for granted.”

L. Sievanen et al. Ocean & Coastal Management 48 (2005) 297–313

1. Livelihood supporting social-ecological resilience

-> Governance

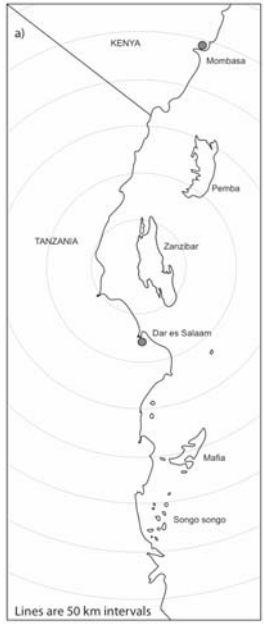
-> Functioning management

-> Learning mechanisms!

2. Economic support for further depletion

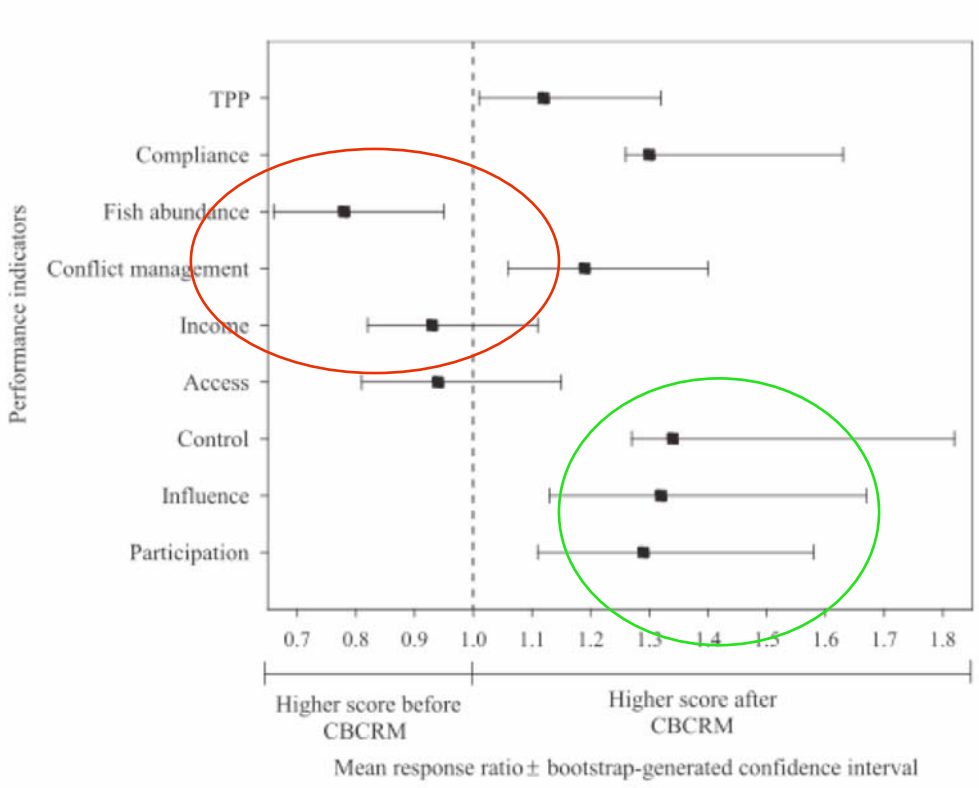
Effect on fishery

- 93 % of trade middlemen want capital for further investment
- 76 % of fishers want capital for further investment
- Bottlenecks in the diving fishery are depleted stocks and tanks…



-> Likely that investment in fishery will increase

Effect on fishery



R.J. Maliao et al. Marine Policy 33 (2009) 818–825

Risk

"Reducing the level of risk that poor rural people face and helping them improve their risk management capactiy" IFAD 2011

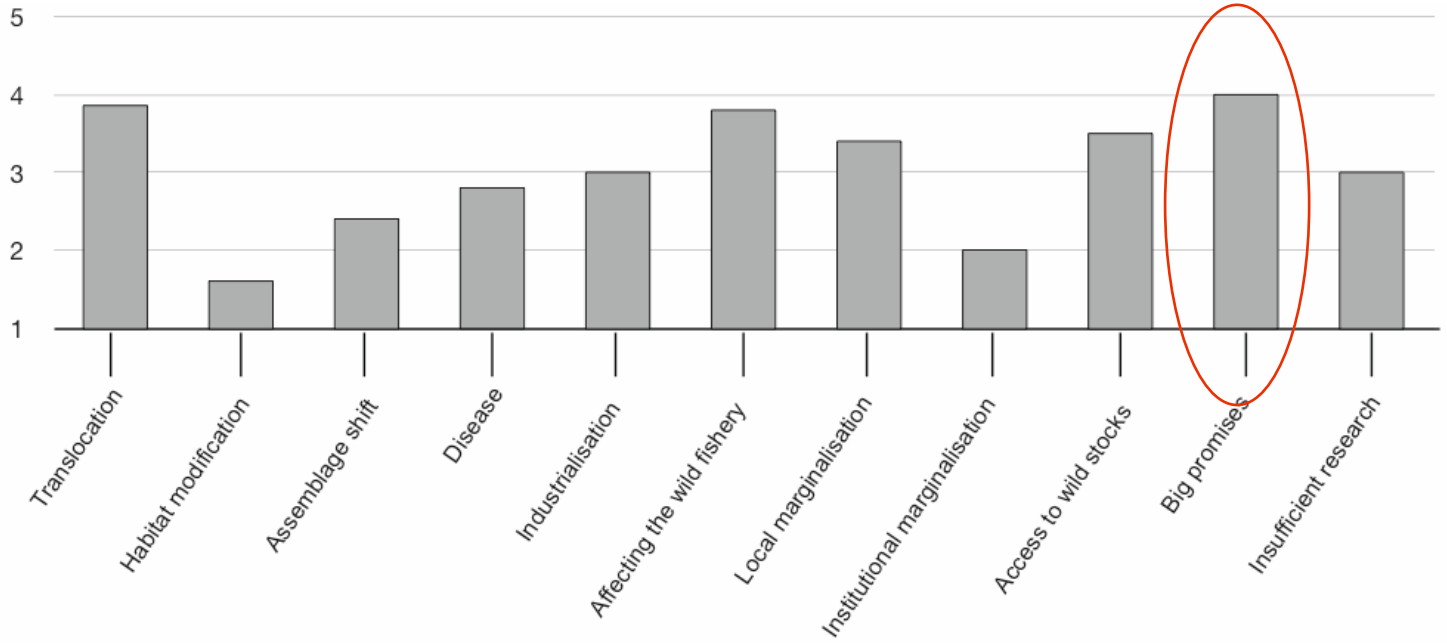
How circumvent risks for coastal poor in sandfish farming?

Risk

WHO SHOULD CARRY THE RISK?

- Academic?
- NGO’s?
- Government agencies?
- Aid agencies?
- Private investors?
- Coastal communities?

Risk



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Systems approach

- Include sandfish farming in the context of the fishery and coastal social-ecological system

"An ecosystems approach to aquaculture is a strategy for the integration of the activity within the wider ecosystem such that it promotes sustainable development and resilience of the interlinked social-ecological systems" (FAO 2006)

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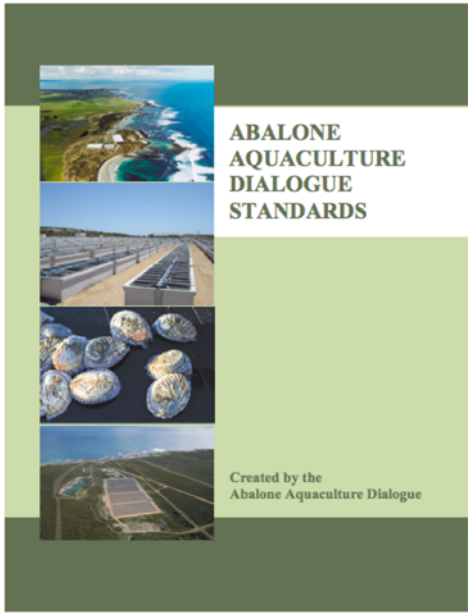
Environmental integrity and sustainability criteria

Standards

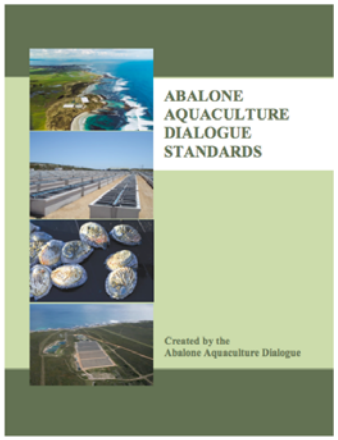


3. PRINCIPLE: AVOID AND MITIGATE DETRIMENTAL EFFECTS TO THE HEALTH AND GENETIC DIVERSITY OF WILD POPULATIONS

Criterion 3.1-5: Escapes, Genetic management, Translocated broodstock and seed, Exotics, Transgenic abalone

Summary

- Knowledge gap on governance
- Each case is unique - no blueprint
- Share knowledge and implement learning-mechanisms
- How prepare nations to minimize (or prevent) these considerations for a potentially booming activity?



Finally

Ecological concerns…

SCALE MATTERS!