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Stream 4 - MPAs & sustainable livelihoods

Example of MPA impact assessment on shellfish

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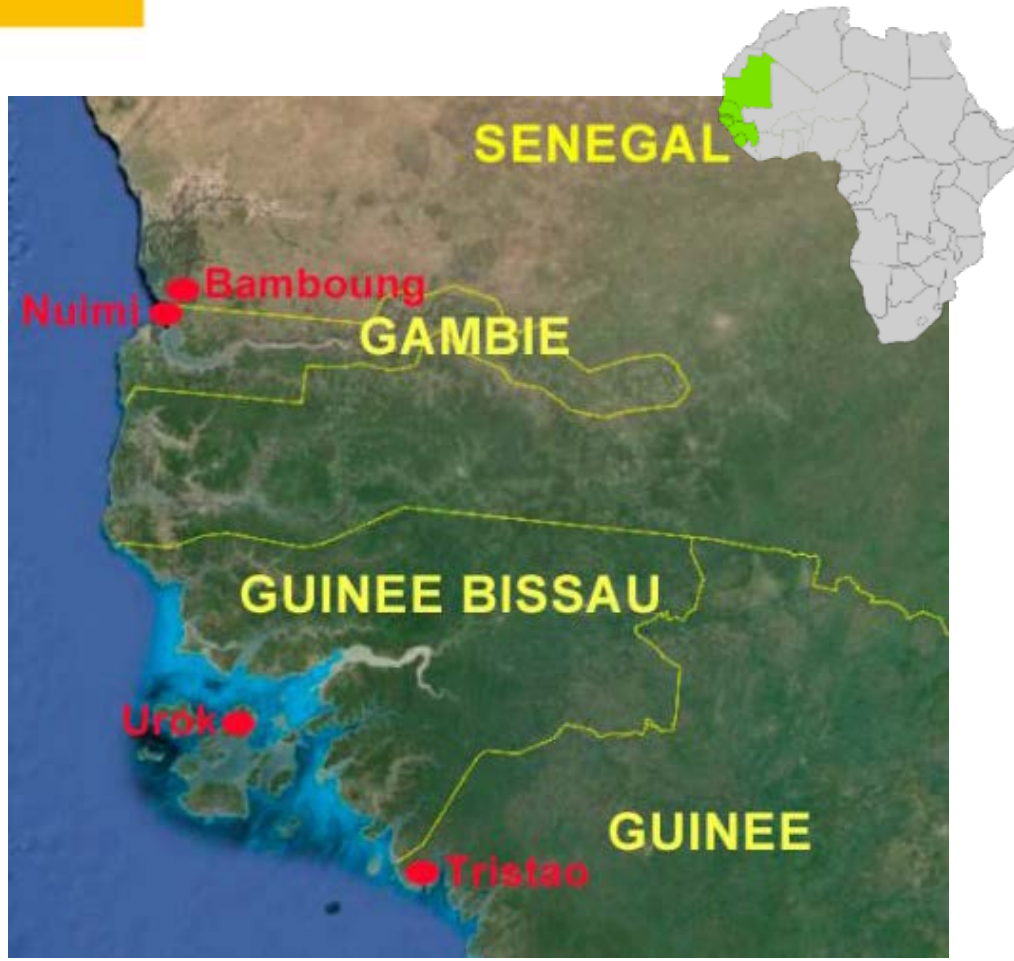
Context

Project Biocos « *management of West African marine and coastal biodiversity through support for conservation and monitoring initiatives in MPAs* » - Component 2: establish reliable systems for monitoring the ecological and socioeconomic impacts of MPAs, using simple, realistic and participatory methods wherever possible



Habitat: Mudflat (intertidal salt marshes) & mangrove forest/creeks

Why shellfish monitoring?

- Important contribution to food security (lean period / hunger gap)
- Source of income for women
- Major role in the culture (ceremonies / traditional cooking)
- Indicators for health of intertidal zones, areas traditionally managed by women in West Africa

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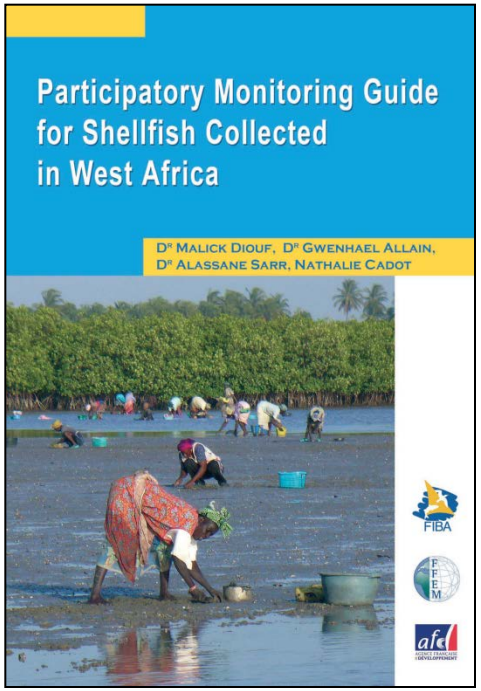
Monitoring protocols developed for each species based on traditional shellfish collection practices



The health & replenishment capacity indicators selected :

- Abundance: density or biomass;
- Individual sizes: average size & outer limits.

Supplemented with an estimate of the size structure of the population

Targeted species







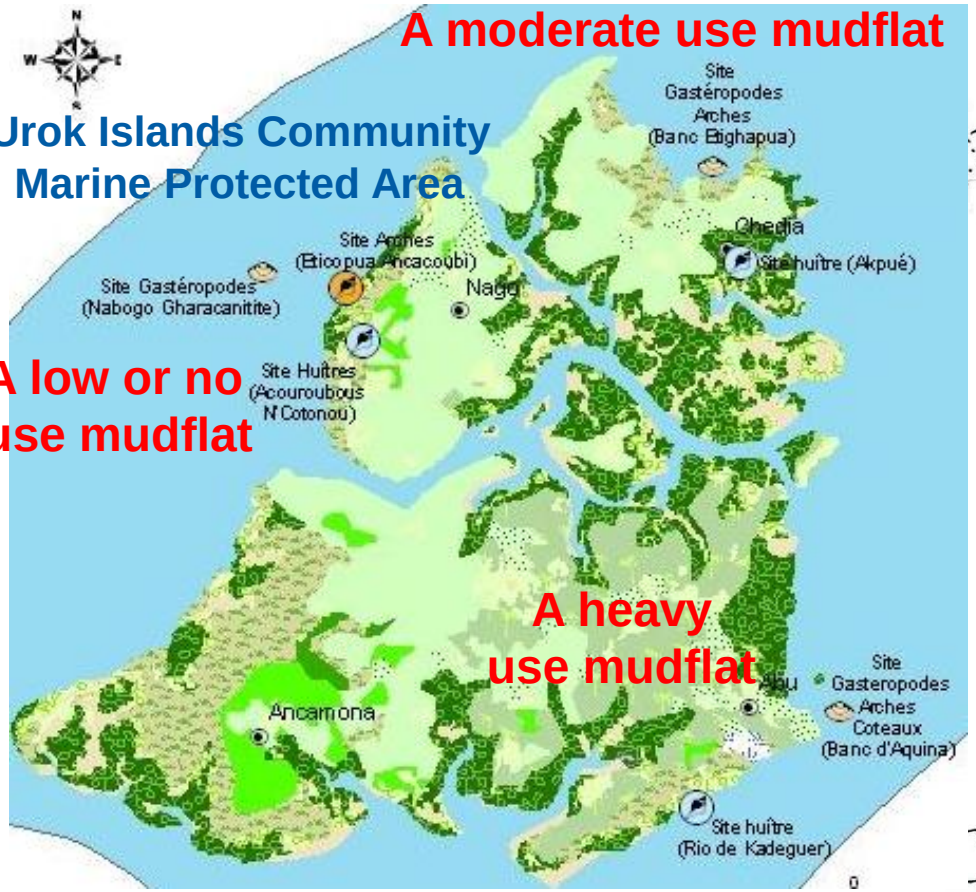


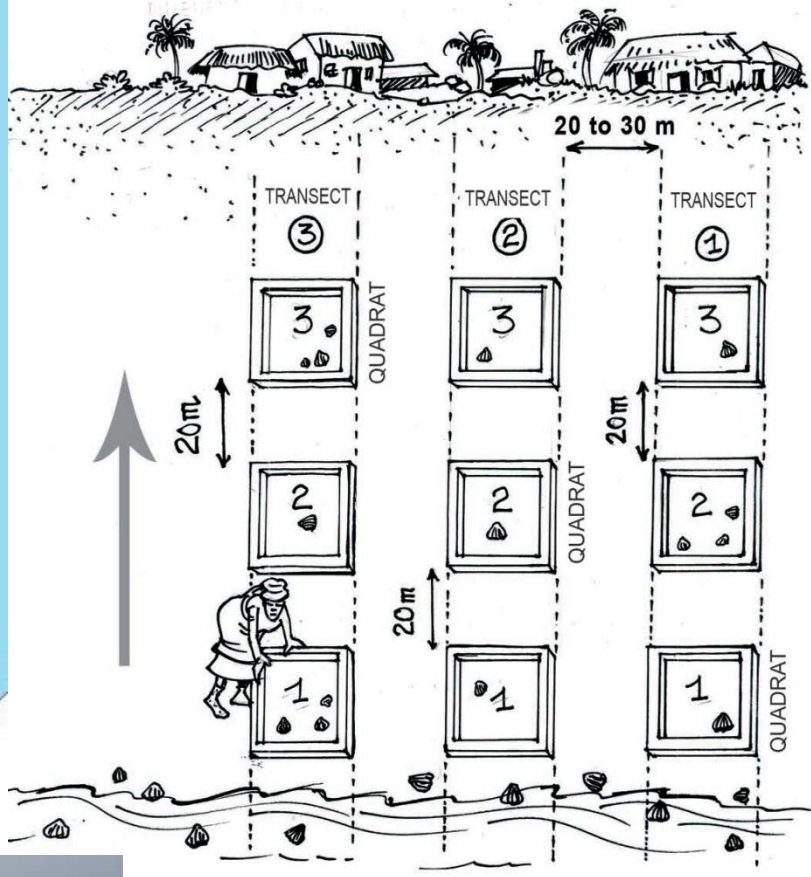


Gastropods (melongena, rock snail, cone snail, volute), arlkclam, oyster

Data collection protocol

13 Teams (T) = 150 Persons (P)
Bamboung : 4 T / 55 P - Urok : 3 T / 25 P
Tristao: 3 T / 40 P - Niumi : 3 T / 30 P

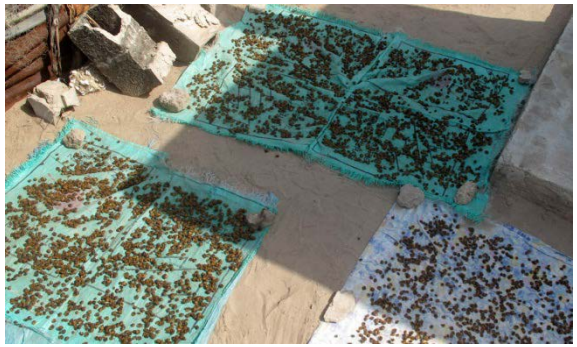




Sorting by size (for the indicator) using the stack of buckets

Results

After one year of monitoring with monthly collection of data, you obtain information to:



- know / have a global overview of the behaviour of the shellfish resource
- assess if there is a human pressure on the resource
- develop, in participative manner, several management rules like zoning, size of first collect/catch, period of collect, biological break, rotation of collection sites, etc.

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Assess MPA impact on shellfish? NOT REALLY

Sites	Date of MPA creation	Existence of shellfish management regulation in the MPA when monitoring launched	Pressure on resource by collection and impact on size and abundance	How the monitoring information will be used	MPA positively or negatively affects shellfish
Bamboung (Senegal)	2004	YES—no collection of shellfish inside MPA	Yes on mudflats close to village (outside MPA) and mostly on gastropods (strong on volute) that are rare.	Information to open or not the mangrove creek to shell collection and if so, define the collection rules / shellfish regulation	Positive on gasteropods (melogena & volute) and oysters. Negative impact on ark clams on density/abundance (high mortality) but positive impact of size.
Urok (Guinea Bissau)	2005	YES—Several : only collection for subsistence not for selling, no collection of oyster during rainy season, no collection of juvenile cymbium and melogena, no cutting of mangrove tree roots while collecting oyster	Only on ark clams— moderate pressure with impact on size and abundance	Propositions to improve management rules like minimum size for collection, rotation of collection area etc.	Positively as pressure don't increase (linked to efficient marine surveillance) and maintain good availability of shellfish (razor clams back but not sure because of MPA)
Tristao (Guinea)	2010	NO	Analysis on going	Development of the first shellfish management rules	TO BE DETERMINED
Nuimi (The Gambia)	1986	NO	Only on ark clams but moderate with impact on size and abundance	Development of first shellfish management rules	MPA don't affect shellfish— collection activities pace, number of collecting women and distance to market in favor of a certain shellfish conservation

No baseline exist before MPA creation and no monitoring taking place outside the MPA (except Bamboung)

To improve the knowledge of the pressure on the resource and have a better understanding of its health status and behavior to determine MPA impact, it will be interesting to:

- Complete with census of environmental parameters like temperature, salinity, turbidity that influence presence and growth of shellfish
- Link with effectiveness of marine surveillance / control on shellfish management regulation (when regulation exists)
- Cross data with census on how many women are collecting and the quantity collected.

In West Africa, the existence of an MPA provides the opportunity for communities to put in place management regulation for resource like shellfish and therefore regulate access to resources for improving their livelihood

For MPA to contribute positively to shellfish good health and replenishment, it is necessary to:

- Develop and adapt regulation / management rules based on scientific knowledge in a participative approach
- Have an effective marine surveillance / control with dissuasive measures when rules are broken