Vulnerability in small-scale coastal fisheries from Ubatuba, Sao Paulo state, in face of global environmental change

Luziana Garuana

luzianagaruana@gmail.com

Supervisor: Cristiana Seixas

Center for Environmental Studies and Research – NEPAM

UNIVERSIDADE ESTADUAL DE CAMPINAS – UNICAMP

Workshop Community-based Coastal
Resource Management
December 8-9 th, 2010
Paraty – RJ – Brasil

What's vulnerability?

- Multiple interpretations , different areas of knowledge
(economy, anthropology, ecology, geography, medicine, engineering).

- In the global environmental change science:

    "Vulnerability is the state of susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt " (Adger, 2006).

- The concept includes biophysical and social aspects.

Vulnerability and Global Environmental Change

- Frequency and intensity of the natural events (high temperatures, storms, flood, landslides)

- Impacts on people and places

- Vulnerable communities

Landslides in Almada beach-Ubatuba/SP (Dez/09 e Jan/10)

Pictures: L.G.Araújo

Vulnerability in Coastal Ecosystems

- Fisheries: provides 20% of animal protein and feeds around 1.5 billion people worldwide (FAO, 2009).

- Environmental change in coastal areas: habitat loss and changes in marine fauna.

- Influence of human activities (overfishing, pollution, urbanization).

Picture: L.Garuana

Objectives

- **To investigate if artisanal fishermen in the Northern coast of Sao Paulo perceive environmental change.**

- To analyze vulnerability in two small-scale coastal fisheries communities in face of environmental change.

- To analyze if local ecological knowledge (LEK) of artisanal fishermen is used in the adaptation to environmental change.

- To analyze whether the adaptations to environmental change have contributed or not to reduce vulnerability of fishery social-ecological systems.

Objectives

- To investigate if artisanal fishermen in the northern coast of Sao Paulo perceive environmental change.

- To analyze vulnerability in two small-scale coastal fisheries in face of environmental change.

- To analyze if local ecological knowledge (LEK) of artisanal fishermen is used in the adaptation to environmental change.

- To analyze whether the adaptations to environmental change have contributed or not to reduce vulnerability of fishery social-ecological systems.

Objectives

- To investigate if artisanal fishermen in the northern coast of Sao Paulo perceive environmental change.

- To analyze vulnerability in two small-scale coastal fisheries in face of environmental change.

- To analyze if local ecological knowledge (LEK) of artisanal fishermen is used in the adaptation to environmental change.

- To analyze whether the adaptations to environmental change have contributed or not to reduce vulnerability of fishery social-ecological systems.

Objectives

- To investigate if artisanal fishermen in the northern coast of Sao Paulo perceive environmental change.

- To analyze vulnerability in two small-scale coastal fisheries in face of environmental change.

- To analyze if local ecological knowledge (LEK) of artisanal fishermen is used in the adaptation to environmental change.

- To analyze whether the adaptations to environmental change have contributed or not to reduce vulnerability of fishery social-ecological systems.

Vulnerability Analysis Framework
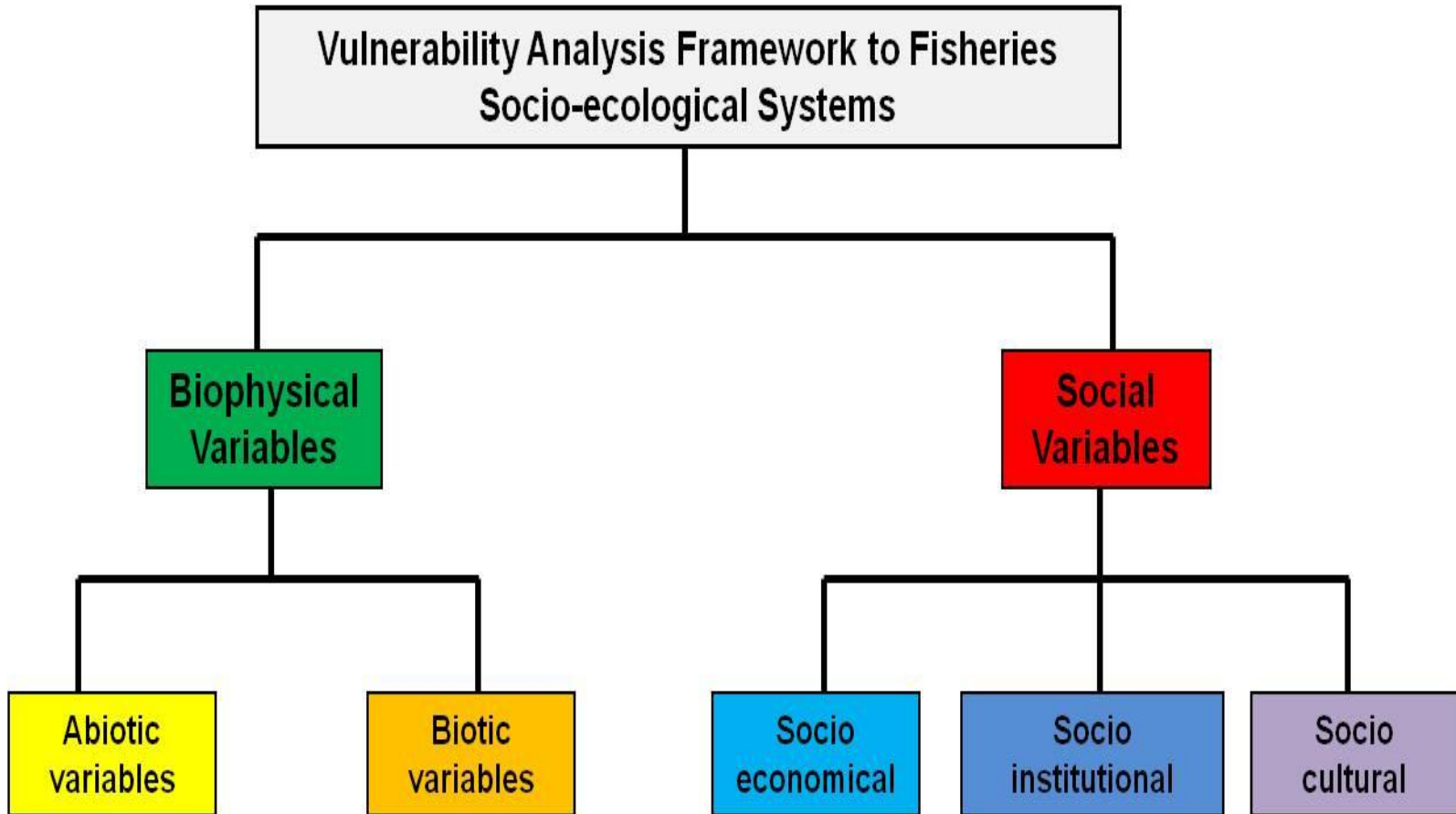
Biophysical Variables

Abiotic Variables (secondary data)

- Meteorological/climatological variables
- Water quality of beaches
- Topography
- Land cover

Biotic variables

- Fish species (richness and diversity)
- Local disappearence of species
- Emergence of exotic species
- Toxicological analysis of species

Social Variables

Socio economical variables

- Fish catch for sale/consumption
- Value assigned to the fish
- Fish catch distribution
- Average income from fishing
- Economic activities besides fishing
- Own vessel or employee
- Types of government aid
- Nº of people in family/nº dependents
- Health (chronic diseases/epidemics)
- Education (schooling)
- Health infrastructure and housing
- Access to media (internet, radio, TV)

**Social Variables**

Socio institutional variables

- Local and community organizations

- Representativeness of local groups and institutions

- Arenas

- Local demand and capacity for fishing

- Legislation related to fishing

Social Variables

Socio cultural variables

- Fishing methods
- Fishing gears
- Fishing vessels
- Fishing spots
- Transmission of fishing knowledge
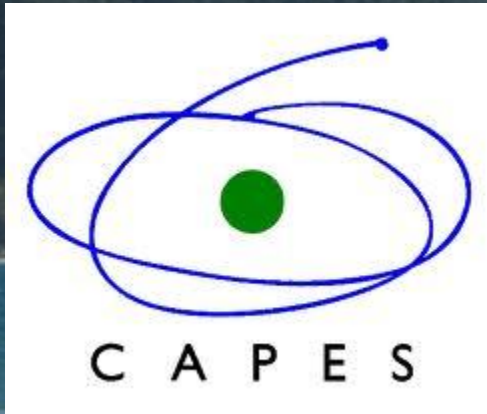
Study area
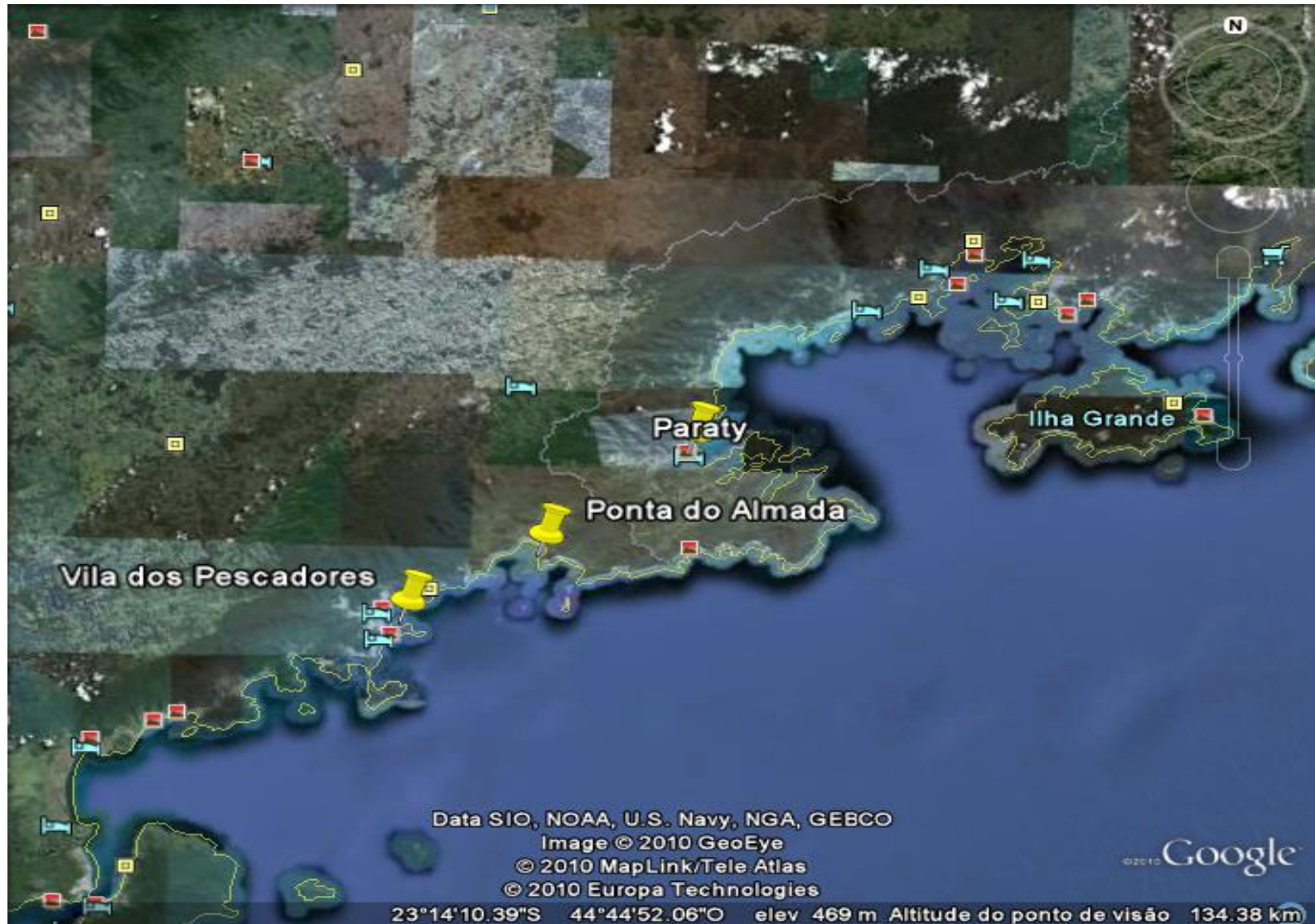
Fieldwork

• Seasonal fishing landings: 11 days in every 2 months (jun/2010-mai/2011)

• Semi-structured interviews

• Collection of secondary data

• Identification of species

• Toxicological analysis

Picture: L.Garuana

Acknowledgements

Fapesp: 08/58159-7

Picture: V. Greer