

Presentation given at the Southeast Asia Katoomba meeting

## **Katoomba XVII**

# **Taking the Lead: Payments for Ecosystem Services in Southeast Asia**

June 23-24, 2010

Hanoi, Vietnam

Hosted by:

Forest Trends, the Katoomba Group, Ministry of Agriculture and Rural Development (MARD), Ministry of Natural Resources and Environment (MONRE), United States Agency for International Development (USAID) and Winrock International



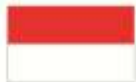
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# 2010 Katoomba Meeting XVII

HANOI, VIETNAM June 23-24, 2010

## Coastal Community Livelihoods: Implication of Intact Ecosystem Services

Don Macintosh, Mangroves for the Future



Norad



Sida

**Mangroves are more than trees and shrubs growing in the intertidal zone; intact mangrove ecosystems provide many goods and services for poor people**



**Mangrove ecosystems sustain economic activities at both subsistence and commercial levels in Southeast Asia, via:**

<b>Ecosystem services</b>	<b>Services/benefits provided</b>
<b>Provisioning</b>	<b>Food, fuel, fiber, habitat, nursery grounds</b>
<b>Regulatory</b>	<b>Flooding and erosion, sediment trapping, climate moderation, carbon sequestration</b>
<b>Support</b>	<b>Nutrient cycling, primary production areas, soil formation, bio-filtration</b>
<b>Cultural</b>	<b>Aesthetic, spiritual, educational, recreational, and eco-tourism</b>

# Mangrove-dependent Households, Viet Nam





# Mangrove-dependent Households, Thailand



Mangrove storm, wave and erosion control functions are vital (and possible compatible with carbon marketing)



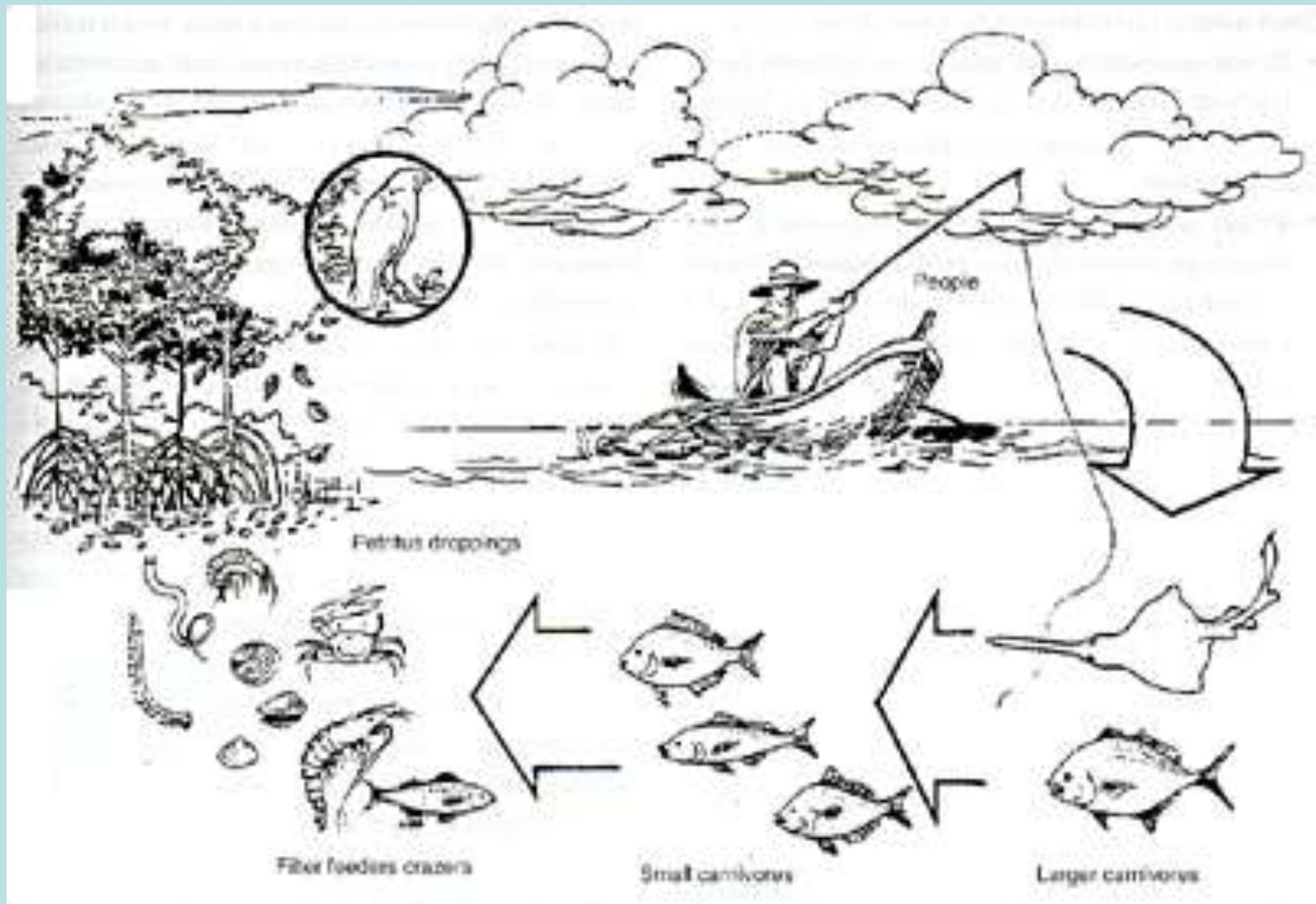
# Mangroves and climate change



- In the face of climate change, mangrove regulating services are actually becoming more necessary and valuable, especially their buffering capacity against storms and flooding.
- Mangroves can hold back the sea and reduce wave forces with their dense above ground roots by an estimated 70-90% on average, or by 20 % per 100m in the case of mangrove protection belts in Vietnam.
- Mangrove forests also moderate climate extremes by providing shade and increased air-humidity, while also reducing wind velocity and soil water evaporation.



# Mangrove nursery grounds



# Mangrove-based aquatic collecting, fishing, aquaculture



**Estuary**

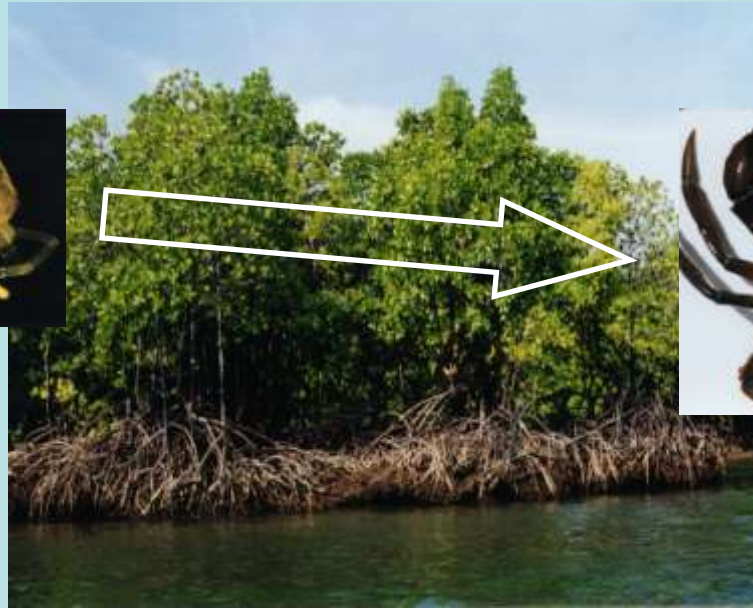
**Megalopae (final larval stage)**



**5-9 days**



**1st crab instar**



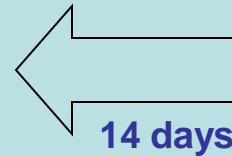
**From recruitment into mangrove 'nurseries' until becoming adult crabs: 90-120 days**



**Adult male mudcrab**



**Gravid female mudcrab**

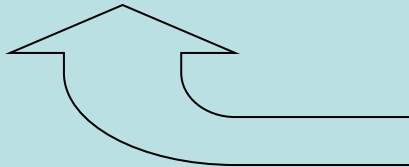


**14 days**



**Egg and zoea (larval stage)**

**20-25 days**



**Offshore**



# Aquatic collectors: Vietnam





# Mangrove habitat and productivity provide nursery grounds for fish/shellfish populations



## Mangrove-dependent mudskipper farming, Mekong Delta, Viet Nam





## Mangrove-dependent aquaculture, Thailand



# Non carbon values of mangrove goods and services:



## **GLOBAL OVERALL:**

- USD 10,000 per hectare/annum (Costanza, et *al.*, 1997).
- USD 2,000 to 9,000 per hectare/annum (UNEP-WCMC, 2006).

## **•GLOBAL FISHERY PRODUCTS**

- USD 3,000 per hectare/annum (Ronnback, 1999),

## **•STORM PROTECTION**

- USD 4,335 per hectare of mangrove forest land (Orissa, India; Das 2008).



# Mangroves and PES: eco-tourism



# Communities can benefit, but good PES models are needed



# CONCLUSIONS...

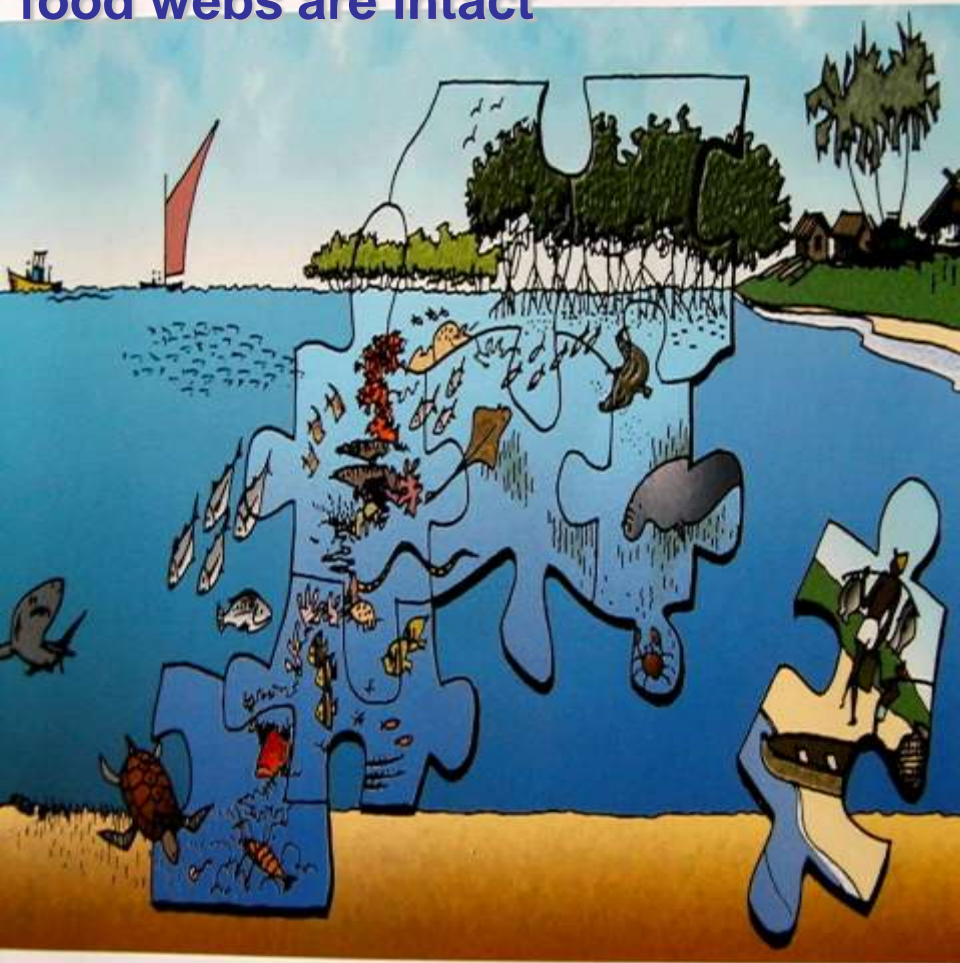


“Wise use of wetlands is the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development” RAMSAR (2006)

- Mangroves support and enrich coastal fish and shellfish populations vital to the nutrition and subsistence livelihoods of millions of coastal dwellers, as well as sustaining commercial fisheries and aquaculture
- But the role that healthy mangroves can play in terms of food security and livelihood provision are commonly undervalued/overlooked, especially the ecological links between mangroves and coastal fisheries
- “Design REDD+ activities in such a way that natural resources continue to provide goods and services as before” (Evaline Trines, June 2010)

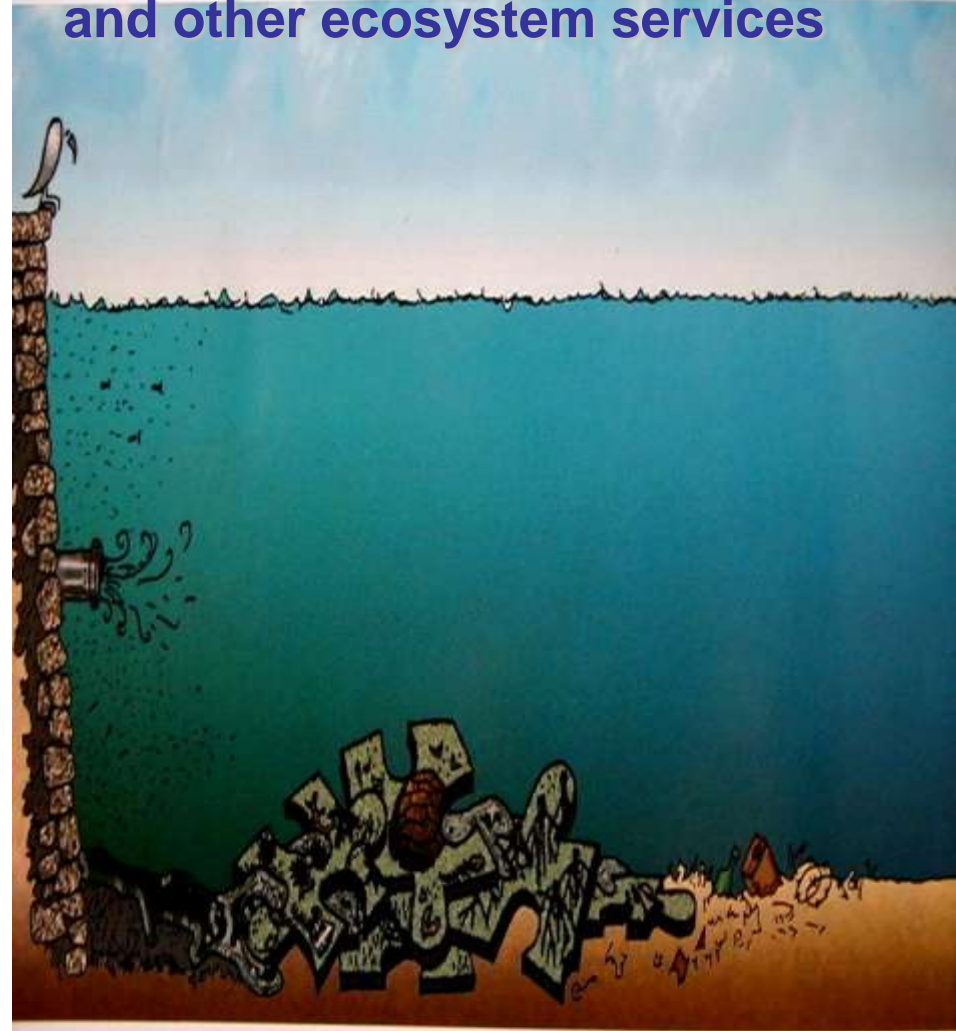


**Wise use of coastal ecosystems -  
food webs are intact**



**Sustainable**

**Over- exploitation \ degradation  
leading to collapse of food webs  
and other ecosystem services**



**Non-sustainable**



# THANK YOU !



[www.mangrovesforthefuture.org](http://www.mangrovesforthefuture.org)