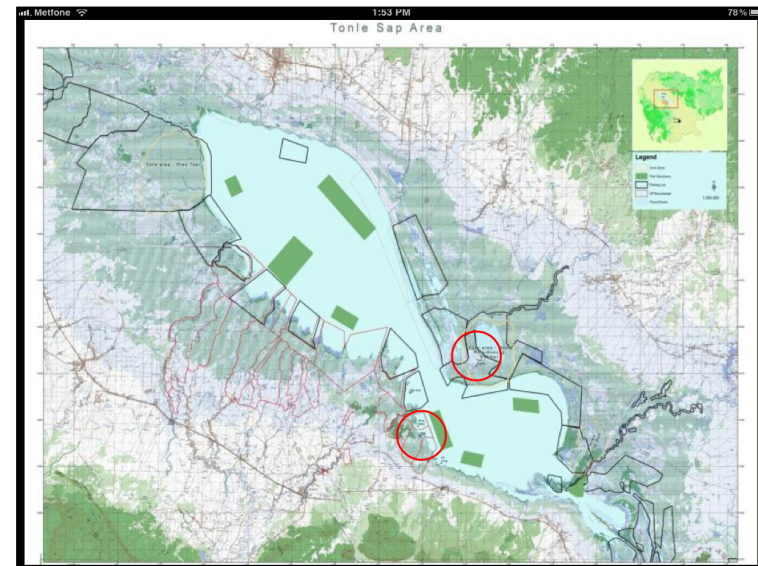


Boeung Chhmar
Tonle Sap Biosphere Zone
Conservation International

Ecological vs Economic Species
in Climate Change Scenarios

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www.conservation.org

Lime green, green, red algal blooms
Origin?



Consider community adaptation planning, such as sanitation and hygiene promotion through community management processes

Forming of gender balance community management committees (community level coordination but Local Government is involved from the planning to completion to ensure sustainability).

Training of a management committee on community programme management.

Formative research - KAP survey to identify the knowledge, attitude, practice, early adopters and late adopters of safe hygiene practice, producers and consumer options on technologies & what motivates people to change their behaviour

Behaviour Change Communication (BCC) with the aim of promoting best practices in the community. Identification of key motivators for people to change their behaviour/practices.

SOCIAL MARKETING PRINCIPLES

eg. Build a latrine and visitors come to your place

Engage children through school programs and non-school community programs

Identification and training of Volunteer Promoters

Development of Community Action Plans with monitoring and evaluation component.

Tonle Sap Lake in Context

- Arguably world's most productive per hectare inland fishery
- Arguably world's most complex eco-hydrological system
- 75% of inland catch ? 60% of national protein ? X% of Omega-3 fats ?
- ~1 million floating villagers ? ~3 million resource dependent livelihoods ?

CI Study on Alternative Livelihoods

Livelihood Surveys to find:

- the illegal fishing gears used by the local people and general problems in the community
- the living status and daily occupations of the local people
- the needs for alternative occupations to improve local livelihood
- To identify and develop suitable solutions to the local people to reduce those practices which negatively impact the fish stock

QuickTime™ and a decompressor are needed to see this picture.

Do you make enough income to meet all household need?

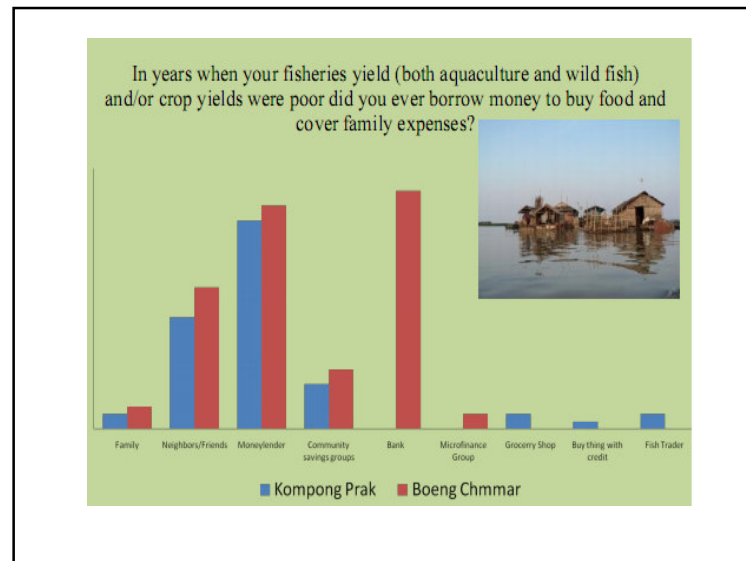
QuickTime™ and a decompressor are needed to see this picture.

In the years where your fish yields were affected by severe drought, floods, pests, diseases, policy changes, did you have to change your fishing practices?

QuickTime™ and a decompressor are needed to see this picture.

Solution to adapt with the poor fisheries yields, disease, pests, weather problems or policy change

- What type of aid or technical would you like to receive from a local association, organization, etc, to increase your food security and make your income more secure?
- Floating garden
 - Money Saving group and lending Credit
 - Fish and Livestock raising
 - Want house on land
 - Water filter container
 - Energy saving cooking stove
 - Provide training raising fish and pig
 - Allocate fishing area for community (Peachakrey, Daun Sdoeng and Peov Voey)
 - Permanence teacher in each village
 - Nurse in health care centre



QuickTime™ and a decompressor are needed to see this picture.

In the years when you had poor fish yields and income due to illness in family, pest outbreaks, market or weather shocks, did your household take any of the following measures to reduce household costs

Table 1: Types of illegal fishing gears which impact on natural resources

| Types of fishing gears | Habitat loss | Fish stock | Wildlife |
|--|--------------|------------|----------|
| Enclosure nets (Chbore) <u>Clear forest</u> Declined fish stock | | | |
| Giant lift nets (Chnork) <u>Clear forest (15x15 m & 20x20 m)</u> 1-2 T per day Caught all kinds of fish No | | | |
| Machines seine net (Oun) <u>Impact on fish species which breed at bottom</u> as Chitala lopis (krai), Oseochilus melanopleurus(Krum), Wallago attu (Sunday) & Pangasius bocourti (Pra) 2 T per day No | | | |
| Pulling nets (Yakav) <u>Impact on fish species which breed at bottom</u> as Chitala lopis (krai), Oseochilus melanopleurus(Krum), Wallago attu (Sunday) & Pangasius bocourti (Pra) Loss fish stock No | | | |
| Rapid pushing nets (Sip) <u>Impact on fish species which breed at bottom</u> as Chitala lopis (krai), Oseochilus melanopleurus(Krum), Wallago attu (Sunday) & Pangasius bocourti (Pra) Loss fish stock No | | | |
| Electro-fishing gear No Killed all kinds of fish Fish can't breed long time Decrease fish stock Otters | | | |

Source: Group discussion by local people on 18 January 2011

- Flooded forest utilized by local people**
- brush Parks (Samras)
 - firewood for cooking, firewood for smoking fish, poles for house, fences, pig enclosures
 - fishing gear, fish cage
 - traditional medicines,
 - foods,
 - water hygiene

- group discussion interviews**
- ~12 m³ of flooded forest used as firewood for cooking a year per household
 - ~ 12.5 m³ of flooded forest used as firewood for smoking fish a year per household (~30%)
 - ~2.3 m³ of flooded forest used for brush parks a year per household
 - > 1 m³ of flooded forest used as tree poles a year per household
 - **TOTAL ~27.8 cubic meters/family**

Fisheries Resource

- Protect fish habitats
- Respect the fishery laws
- Reduce or stop using illegal fishing gears
- Strengthen patrolling at fish sanctuary
- Create conservation pond for fish breeding sites
- Do not poison fish
- Keep outsiders from mainland areas out
- Report to law enforcement teams when they see illegal activities.

Flooded forest Resources

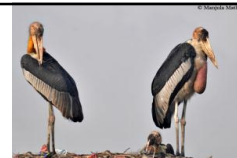
- Re-plantation
- Community participation to protect
- Prevent forest fires
- Cut only tree branches for usages
- Do not cut big trees for brush parks
- Educate on advantages of flooded forest

Wildlife Resources

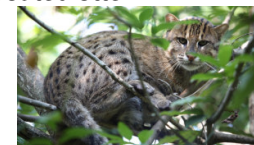
- No hook baiting for wildlife
 - Do not poison water birds
 - Stop hunting wildlife
 - Prohibit trading wildlife
 - Create conservation/sanctuary sites
- Develop tourism.



Present or *Expected* Wildlife



- Hairy-nosed otter
- Fishing cats
- Long-tailed Macaque
- Water Monitors
- King Cobra
- Crocodile
- Turtles
- Lesser Adjutant
- Spot-billed Pelican
- Black-headed Ibis
- Smooth-coated otter
- Civet
- Pythons
- Greater Adjutant
- Asian Openbill Darter
- Black-crowned Night Heron



Source: Group discussion by local people on 18 January 2011

Community Needs

- **Lack of drinking water in dry season**
- **Lack of financial for support floating school**
- **Do not have nurses standby at health post**
- **Lack of transportation for students and sick people**
- **Too small fishing zone for local people**

Group suggestions

- Reduce illegal fishing gears in order to increase fish stock
- Create community rangers
- Create protected dry season pond for fish breeding sites
- Create incentive compensation agreement with local people:
 - Provide access to catfish and pangasius fingerlings
 - Improve access to piglets
 - Improve access to chicken and duck
- Provide training courses on fish, pig, and chicken husbandry
- Support loan or cost-sharing for fish cages and pig enclosures
- Study the possibility of building pumping wells in dry season and treatment tank for clean drinking water
- Improve access to solar panels for charging batteries

What don't we know?

- **Other groups present at Tonle Sap, such as mollusks, shellfish, insects, plankton etc.**
- **Several of these are doubtless important for the ecosystem function and will likely be impacted by climate change.**
- ***“However, due to lack of knowledge on these groups and little capacity to discuss this they will be omitted from this assessment.”***

Increasing Pig Production & disease vectors?

QuickTime™ and a decompressor are needed to see this picture.

