



# The global potential of sea cucumber aquaculture

by

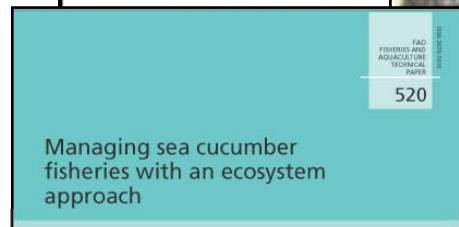
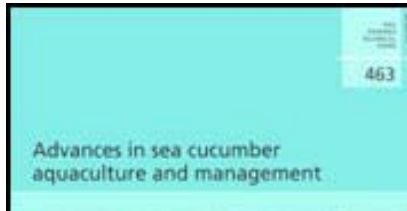
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A detailed, light-colored illustration of several sea cucumbers, showing their characteristic bumpy, oval shapes and internal structures, serving as a background for the lower half of the slide.

ACIAR-SPC Asia-Pacific Sea Cucumber Aquaculture Symposium  
15-17 February 2011, Noumea, New Caledonia



# FAO actions in recent years



**2003**

ASCAM Workshop, Dalian, China



**Advances in sea cucumber aquaculture and management**

**2007**

Galapagos Workshop, Ecuador

**Advances in sea cucumber aquaculture and management**



**Managing sea cucumber fisheries with an ecosystem approach**



**Putting into practice an ecosystem approach to managing sea cucumber fisheries**



# What are we planning next

## Publications

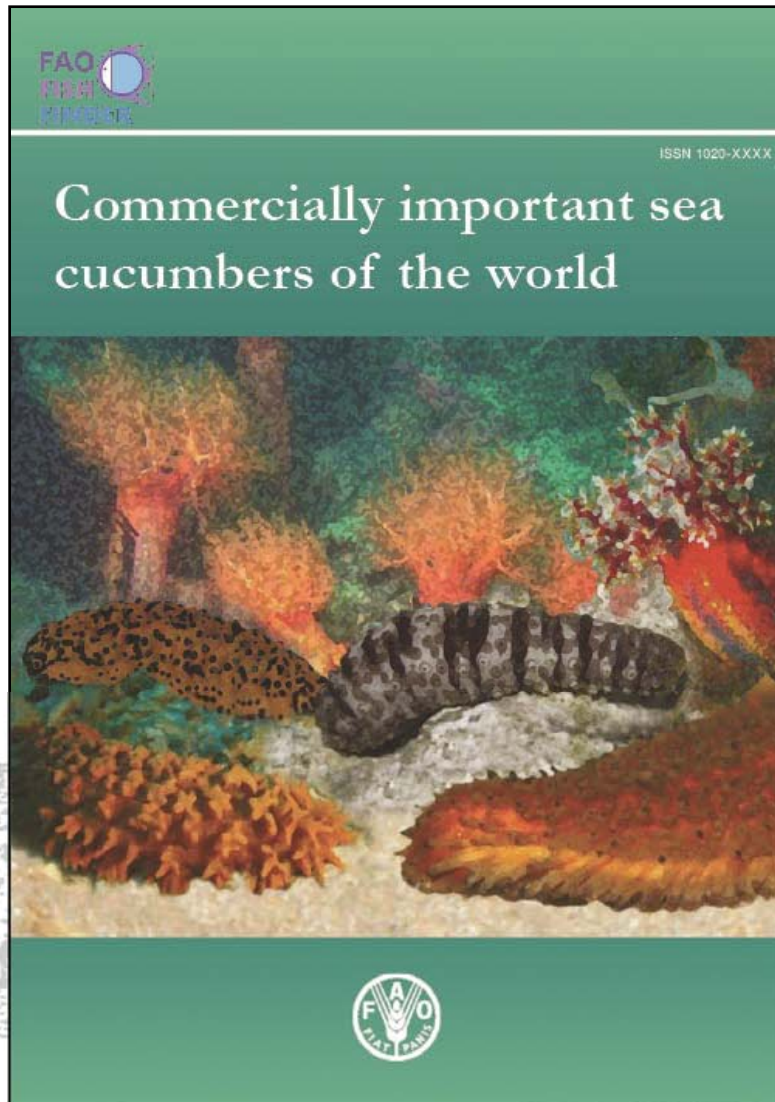
**An ID Guidebook for traders, exporters, custom officers, etc.**



## Workshop / Training

**Using available tools for setting up *ad hoc* sea cucumber management plans**

**1<sup>st</sup> workshop planned for the end of 2011 for the Pacific Region**



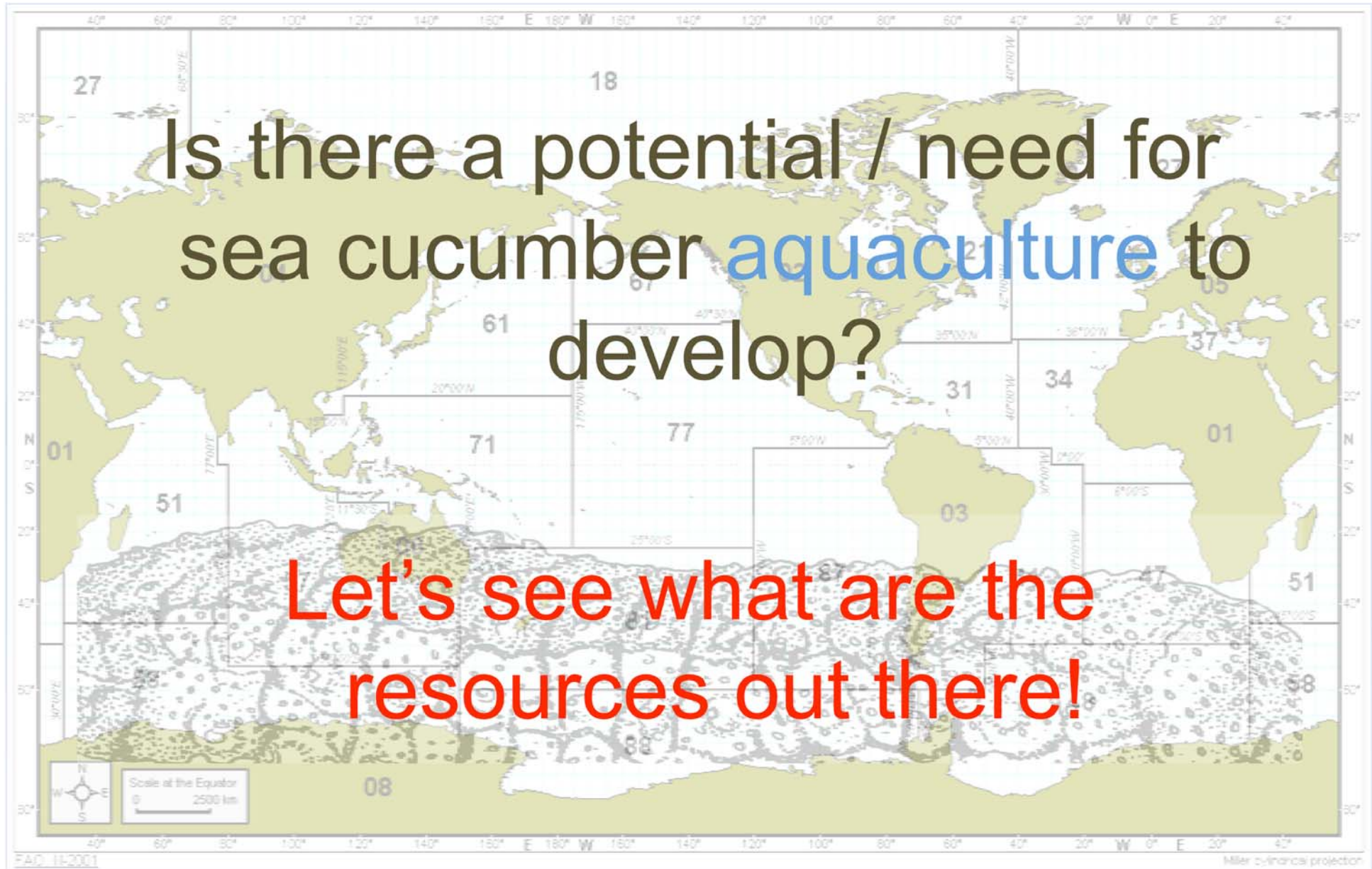




## Aquaculture: A way forward?

Is there a potential / need for  
sea cucumber **aquaculture** to  
develop?

Let's see what are the  
resources out there!





# Western Central Pacific

**Most sea cucumber fisheries have exhibited boom-and-bust cycles.**

**Since the 1980s, elevated export prices and demand from Asian markets have been the catalysts for increased fishing.**

**At many localities, high-value species have been depleted and previously unfished species are now exploited.**

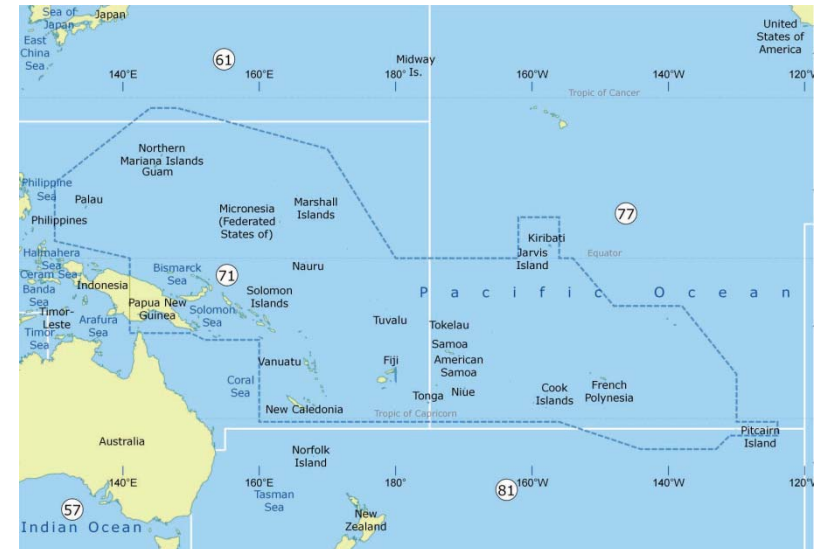
**Annual exports are generally declining (unsustainable fishing pressure and naturally low abundances).**

**The vast majority of sea cucumbers are exported**

**Rural poverty is causing some fishers to continue to collect sea cucumbers**

**The depletion of sea cucumber stocks is already impacting the potential incomes of coastal and island communities and national revenues .**

**sea cucumber fishing is the primary source of income for some coastal fishers.**







# Asia

A total of 52 species are commercially exploited as food with most of them comprising tropical and sub-tropical species.

**Fishery in temperate waters is single species, comprising predominantly only one species, *Apostichopus japonicus*.**

**Indonesia is the world's top producer of Holothuroidea from the capture fishery.**

**Apart from China, production in the other Asian countries is derived predominantly, if not exclusively, from capture fisheries.**

**Overfishing is the main problem contributing to the depletion of sea cucumber resources.**

**Except for Japan, other Asian countries are generally lacking in management measures to conserve and sustain their sea cucumber fisheries.**





# Africa and the Indian Ocean

Nearly thirty species are presently exploited.

In 12 out of the 30 countries in the region the resource appears to be overexploited or fully exploited.

According to FAO statistics, the region produces at least 1/3 of the world dried sea cucumber products.

There are several national management measures, including total bans; however, these seem to be insufficient for a sustainable use of the resources.

The sea cucumbers are entirely exported to Asia (mainly China) through “intermediate” (mainly Dubai) and Hong Kong SAR .

Illegal trade remains a problem in many countries.







# Latin America & the Caribbean

There are eleven species of sea cucumbers currently harvested for commercial use in the region, with legal and illegal fisheries currently occurring in Mexico, Panama, Colombia, Ecuador, Nicaragua, Peru, Venezuela and Chile.

**In most countries with ongoing fisheries, no management measures are in place.**

Additionally, the permanent search of new species to supply the bêche-de-mer markets poses a serious threat to the wellbeing of not only sea cucumber populations.

**Sea cucumber fisheries have arrived to the furthestmost fishing grounds available.**

The impact on the population status and socio-economic dependence by local fishers, are noticeable







# The Northern Hemisphere

Data on sea cucumber fisheries in the temperate northern hemisphere are mainly available for four countries (Canada, United States of America, Russian Federation, and Iceland).

Commercial harvests are centered on four species (*Parastichopus californicus*, *P. parvimensis*, *Cucumaria frondosa* and *C. japonica*).

*Cucumaria frondosa* species typically involve industrialized processes (i.e. fishing boats, specialized trawls and processing plants).

Most fisheries of *Cucumaria* are fairly new, and most of them are still in the exploratory phase.





# The Northern Hemisphere

## Sea cucumber processing in New Brunswick (Canada)

- Fresh product is trucked to the processing plant where workers proceed with evisceration (top left);
- Freshly cooked skin on drying racks (top right);
- Fresh muscles bands, or meat (left centre);
- Packaged meat (right centre);
- Dried skin and dried aquapharyngeal bulbs, or “flowers” (bottom left);
- Dried skin being packaged (bottom right)








Wild resources are declining!!!

YES and DEMAND is growing..... and  
example from PNG

In 1995 PNG  
exported **444**  
tonnes of cukes

... in 10 yrs  
  
..... 50%

In 2006 PNG  
exported **612**  
tonnes of cukes

Export value in  
USD:  
**3.56** million

  
... 200%

Export value in  
USD:  
**11.5** million



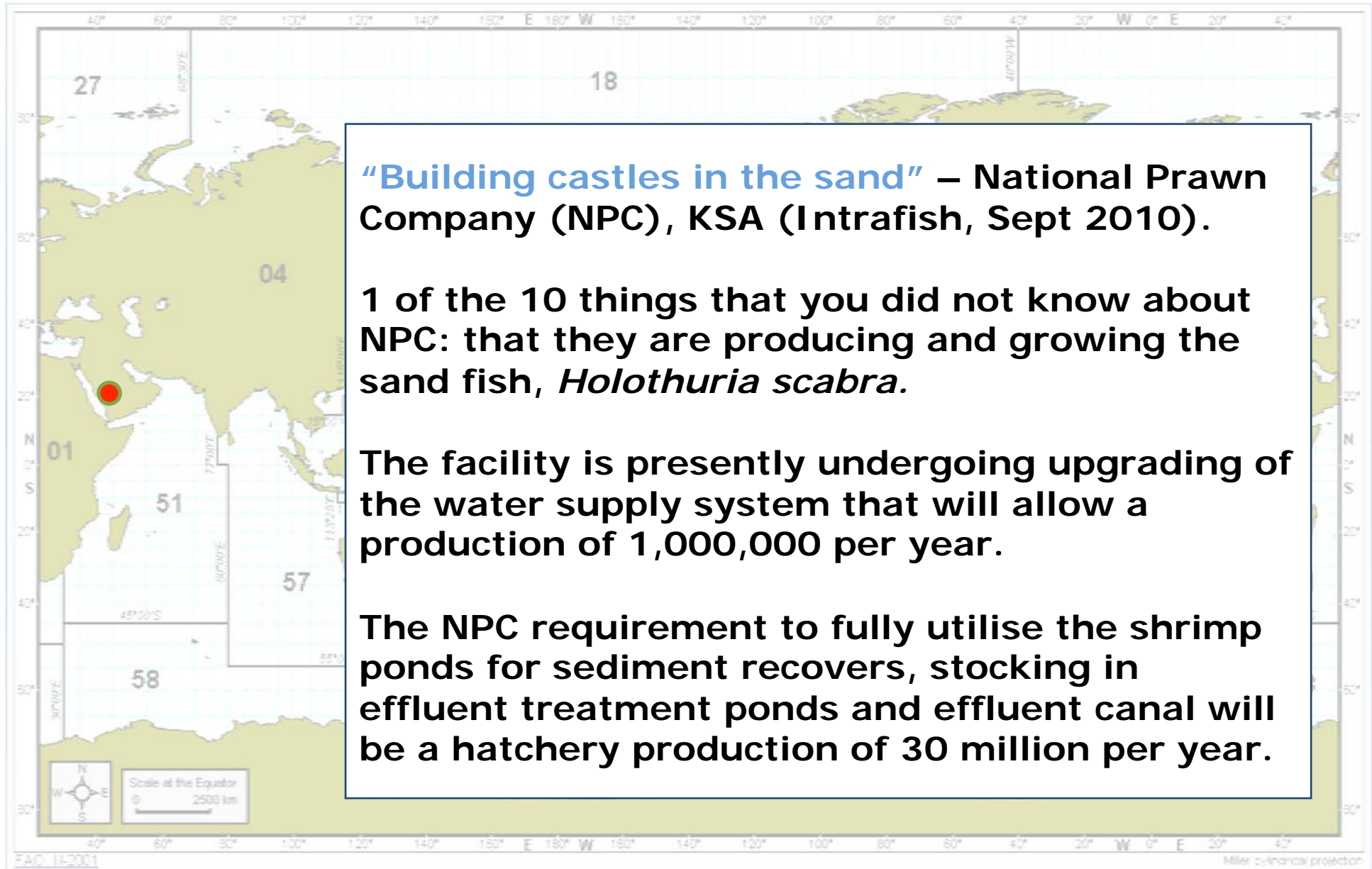
Interest in aquaculture? YES/NO?







## An example: SAUDI ARABIA



**“Building castles in the sand” – National Prawn Company (NPC), KSA (Intrafish, Sept 2010).**

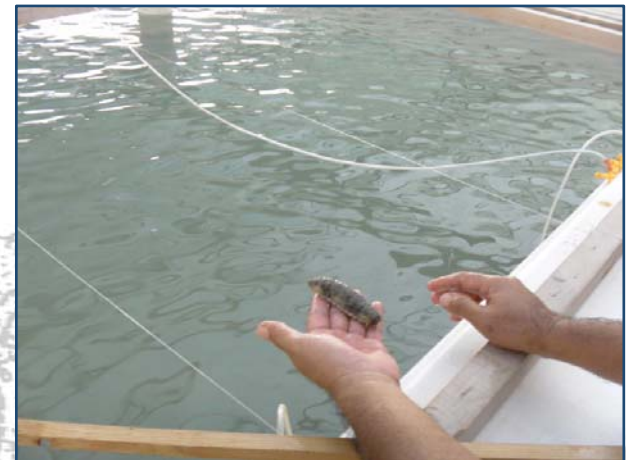
**1 of the 10 things that you did not know about NPC: that they are producing and growing the sand fish, *Holothuria scabra*.**

**The facility is presently undergoing upgrading of the water supply system that will allow a production of 1,000,000 per year.**

**The NPC requirement to fully utilise the shrimp ponds for sediment recovers, stocking in effluent treatment ponds and effluent canal will be a hatchery production of 30 million per year.**



## An example: SAUDI ARABIA

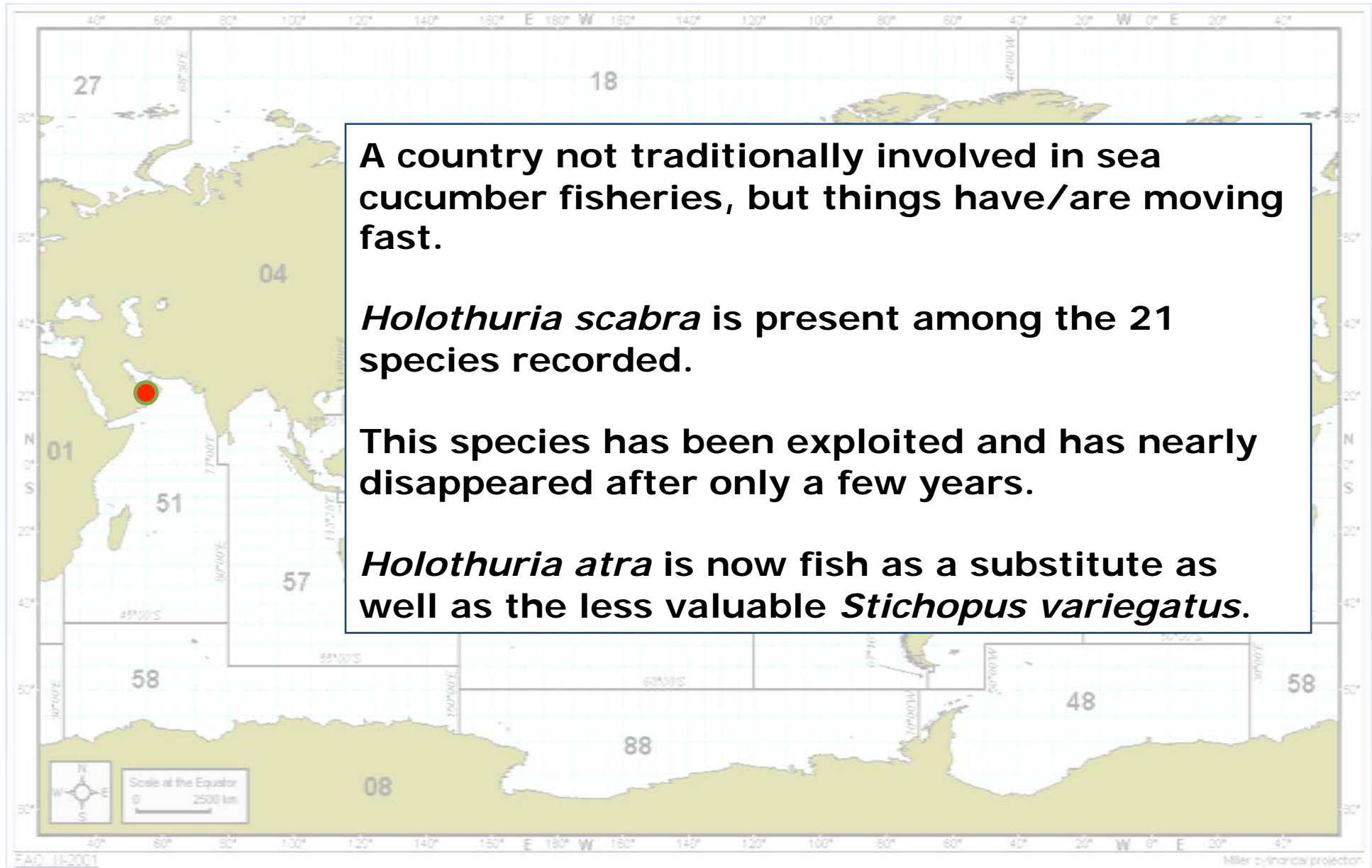


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# The case of OMAN





# The case of EQUADOR

Interesting case and a new event in sea cucumber aquaculture history.

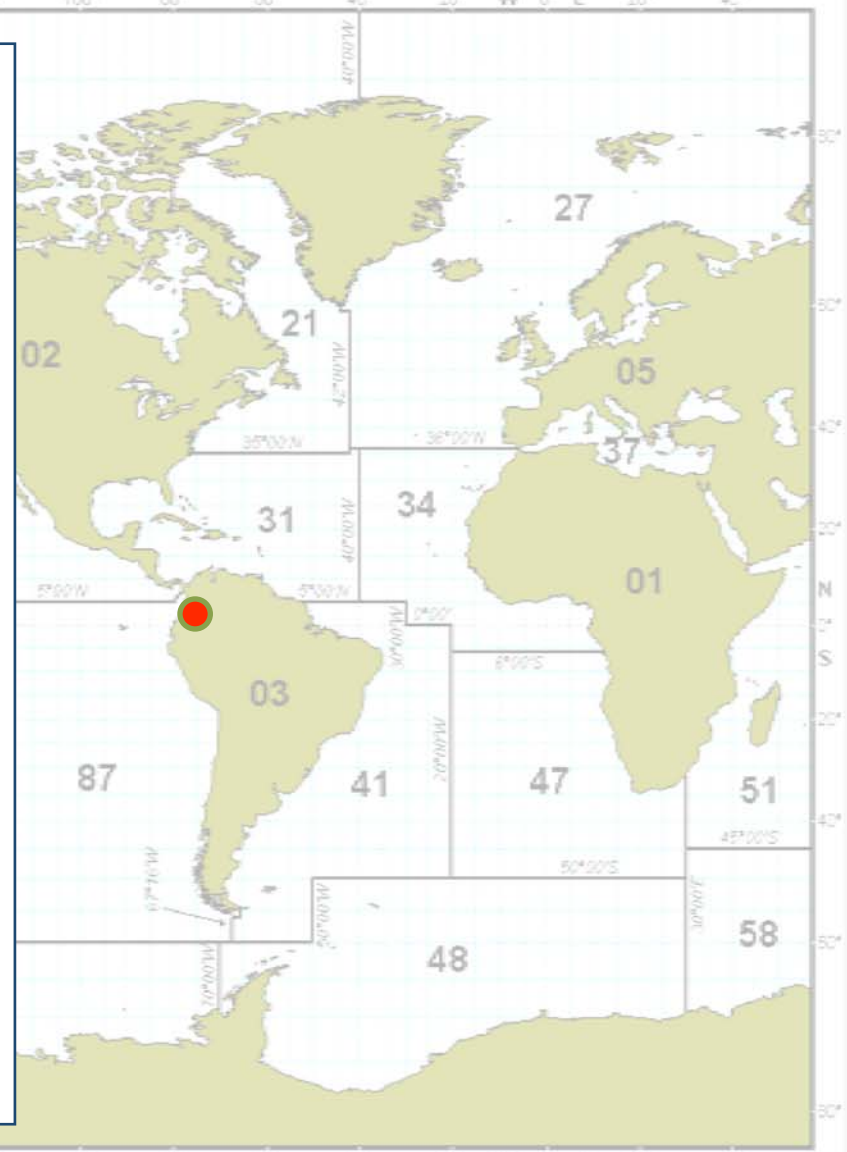
Research of *I. fuscus* started in the mid-2000s.

Private sector.

Hatchery technology developed for this species.

Commercial aquaculture started in abandoned shrimp ponds along the coast.

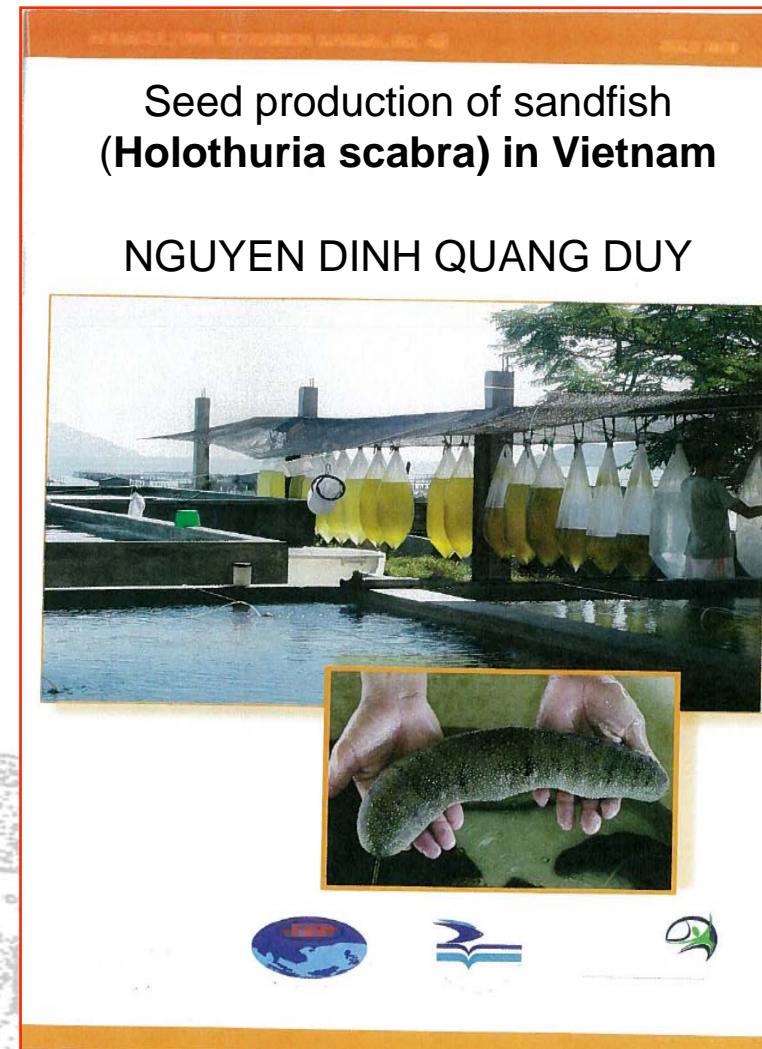
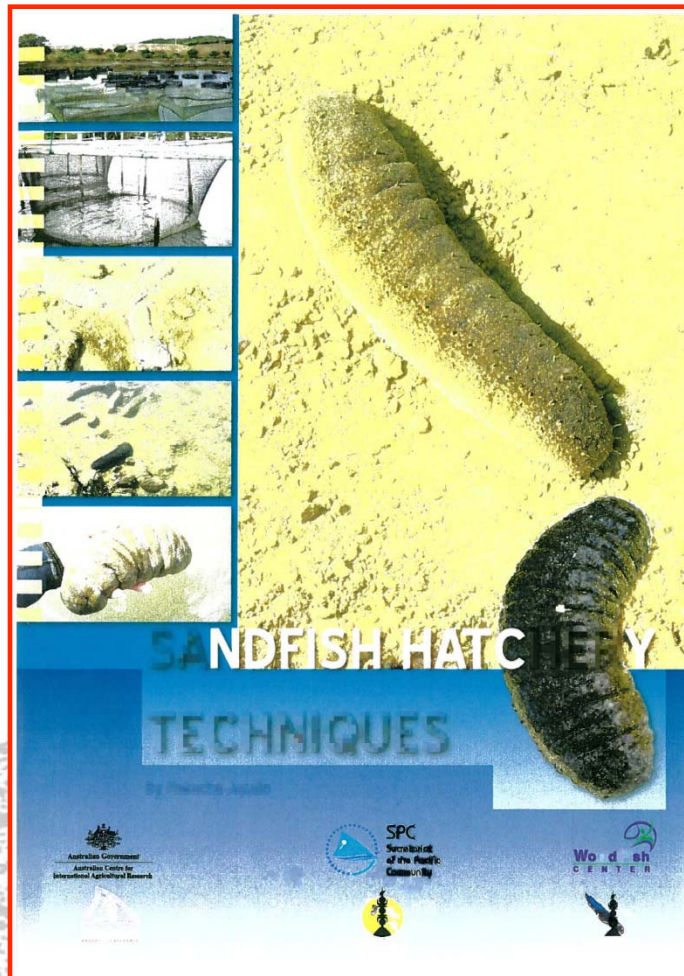
..... *Annie will tell you the full story!!!!*







# Hatchery Manuals





# Sea cucumber AQUACULTURE



Existing sea cucumber aquaculture does not follow “traditional farming systems”, i.e.

placing hatchery produced material in enclosed / confined areas





# Sea cucumber AQUACULTURE

Seed can be produced in hatcheries

No. of species limited





## .... or Culture-based fisheries



### CRITERIA FOR RELEASE STRATEGIES FOR SEA CUCUMBERS AQUACULTURE

Hatchery-produced juveniles could speed the recovery of depleted stocks.

Advances in methods for culturing sea cucumbers have allowed juveniles to be produced in high numbers for restocking.

However, the lack of research on release methods and assessment of stock recovery jeopardizes the success of restocking programmes.







## A restaurant in Gaomi Shandong Province

A county-level city northeast of  
Qingdao away from the sea

The Chinese writer Guan Moya  
recently said at an official lunch  
in his honour:

**"I had no idea that Gaomi had a  
restaurant of such high  
quality."**

He was served among other  
delicacies three kind of sea  
cucumbers

*Source:* Time Magazine 2010



## A growing purchasing “Power”



**The purchasing power of the Chinese is growing fast**

**Demand for sea cucumber products as food items, for the preparation of cosmetic and traditional medicinal products is growing.**

**An estimated 63 % of the world sea cucumber fisheries have been overexploited or depleted**

**The number of restaurants offering sea cucumber dishes are growing, not only in China**





# Fresh and Processed



**Large range of products ... and still growing.**

**High quality processing (mostly in China)**





# What if we all start eating cukes?



~~Will well-managed fishery resources satisfy the growing demand for sea cucumbers?~~

Is the world market for cukes expanding?

~~Are only the Chinese from China eating / buying cukes?~~

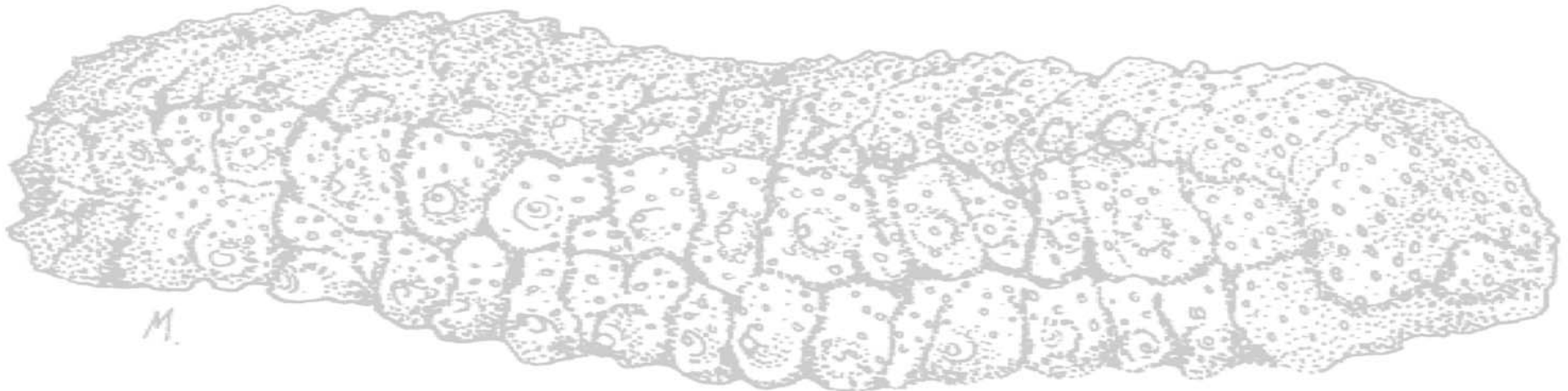




## Aquaculture?

Is aquaculture the way forward? **This is happening, but much still needs to be learnt.**

At present there is much interest across the globe!!!





## What can/should FAO do next?

In 2003 the ASCAM workshop came out with a series of recommendations, some specifically on aquaculture:

- **Manual/guide on sea cucumber aquaculture**
- **Enhancement of international exchanges (Directory of Experts)**
- **Research- Fundamental biological research**
  - Hatchery techniques
  - Farming / sea ranching





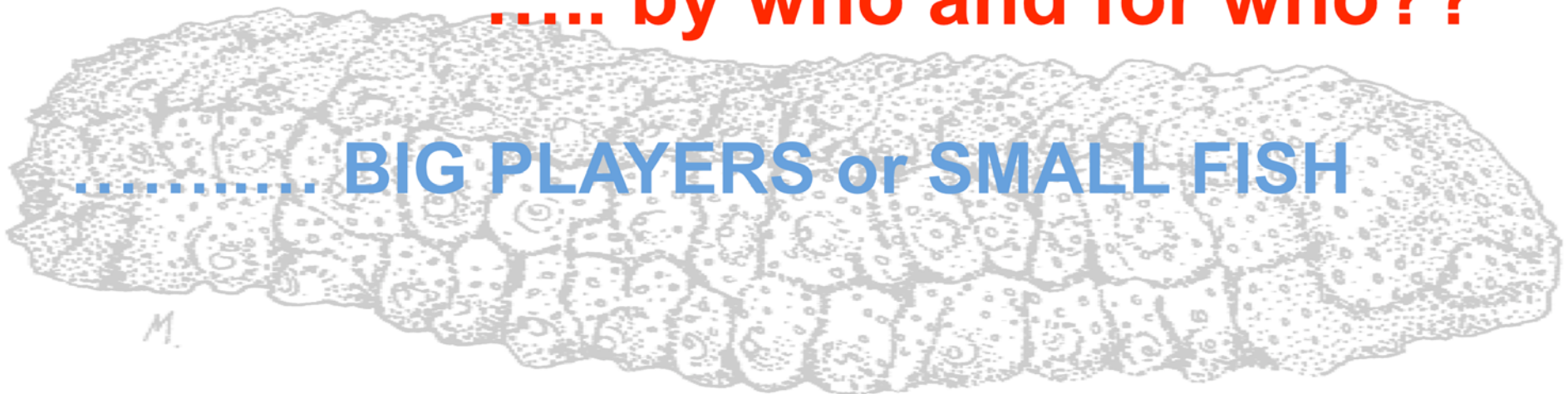


..... in conclusion

- ..... wild resources are declining.
- ..... more species are being fished.
- ..... market demand is obviously growing.
- ..... a lot of interest expressed in aquaculture.

..... by who and for who??

..... BIG PLAYERS or SMALL FISH





..... What can we do?

**I look forward to all the  
presentations and discussion s  
of this timely symposium.**

**Merci**

**Thank you**

