

Management of the Marine Biodiversity and Resources of the Socotra Archipelago, Yemen



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Ministry of
Water & Environment

Environment Protection Authority

Socotra Conservation &
Development Programme

overview:

- **Important of Socotra**
- **Institutional & capacity building**
- **Documentation of traditional fisheries practices**
- **Marine habitat & biodiversity inventory**
- **Specific marine resource assessment**
- **Threat analyses**
- **Actions**

High Marine Biogeographic Significance with a mixture of species from the Arabian, Red Sea, African and the Indo-Pacific regions.

Yemen



Socotra
Archipelago

Important fisheries due to annual upwelling.

INDIAN OCEAN

Rapidly increasing coastal and marine development and exploitative pressures



Objective:

The conservation & sustainable use of the terrestrial and marine resources to meet the challenge of increasing development and exploitative pressures.

A man in a light green shirt stands at the front of a room, holding a framed chart with a blue and yellow line graph. He is addressing a group of people seated around a table. The room has light green walls and a whiteboard in the background. The text 'Institutional & capacity building' is overlaid in red on the whiteboard area.

Institutional & capacity building

The local authorities are regularly informed of project activities & findings. Technical workshops & various training are provided to local stakeholders.

ecology training.

Other training courses:

- Scuba diving
- marine biology & taxonomy
- Marine survey techniques
- Fisheries surveys & monitoring
- Marine resource management
- Fisheries processing & marketing
- Fishermen cooperatives management



Documentation of traditional fisheries practices

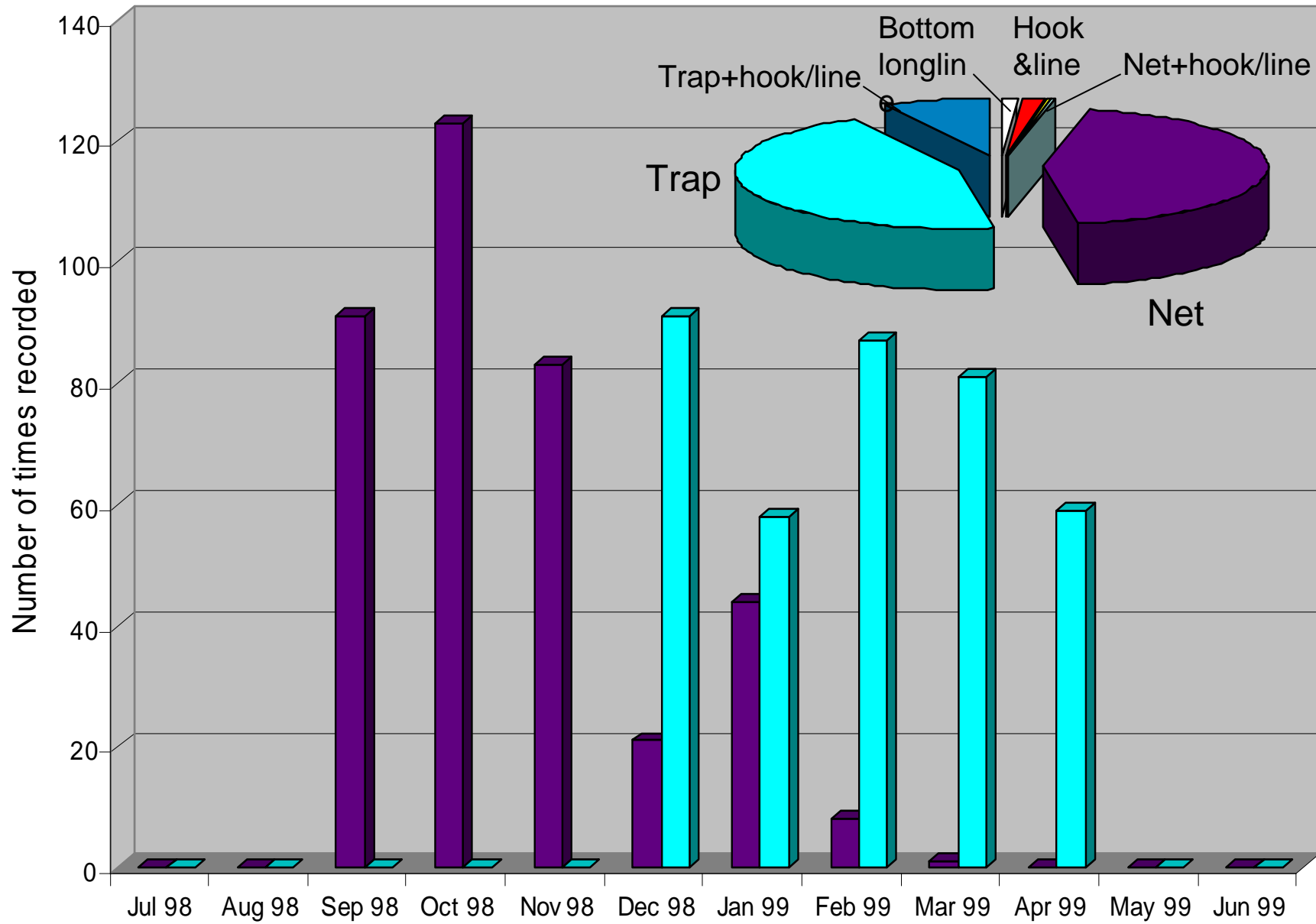
e.g. No catching of berried and small lobsters, no fishing by net during full moon, no fishing by baited steel traps, no bottom nets in rocky areas.....





Daily recording of fishing activities & fish catch by 17 extension officers around the islands


Frequency of Use of Nets & Traps at Dehamdh



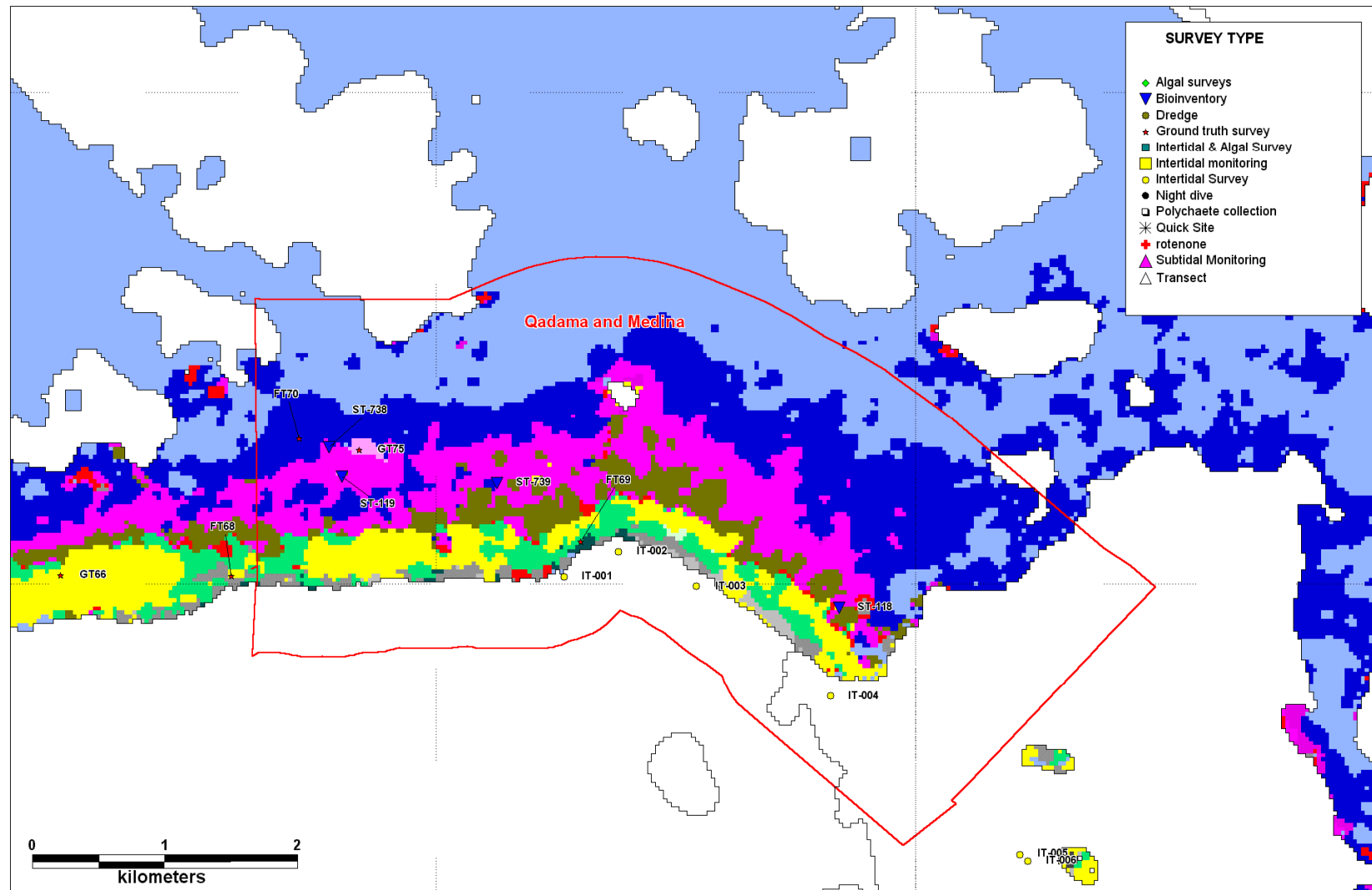
Marine Habitat & Biodiversity Inventory

- Over 30 international & national scientists conducted intertidal & subtidal surveys with the local team.



A large, layered rock stack in the ocean under a cloudy sky. The rock stack is composed of many horizontal layers of light-colored rock, possibly limestone or sandstone, with some darker, more jagged sections at the top. The ocean is a deep blue with some whitecaps. The sky is a mix of blue and grey clouds.

Over 500 intertidal & subtidal sites were surveyed, including the islands of Samha, Darsah & Abdul Kuri & two outlying rock stacks.



**ground truthing of biotope
classifications from satellite images**



coral diversity



fish diversity

Intertidal survey



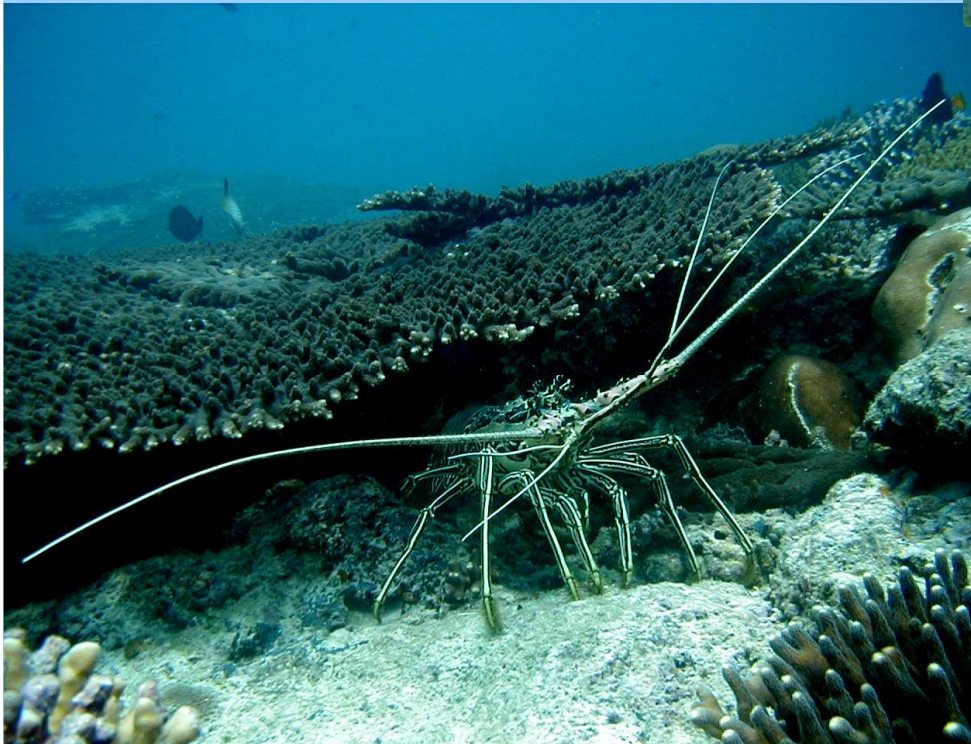
Birds in Outer Islands in 2004 and 2005



Legend



Lobster
Sea-Cucumber
other Invertebrates





Permanent monitoring sites
11 subtidal site
15 intertidal

Specific Resource Assessment

- Sharks
- Lobsters
- Reef fishes



Shark fisheries

- Net & longline
- Shark fins dried for export
- Shark meat salted for sale to the mainland



Lobster fisheries

- Until 2000 Almost all by net (replaced by traps)
- Occasionally by skin diving

The catch is dominated by *Panulirus homarus*, all for export to the mainland and abroad.





Reef fisheries

- By hook & line
- Mostly for home consumption, but also sold to visiting buyers for export.

Threat Analyses

- **Over-exploitation**
- **Illegal & uncontrolled industrial fishing**
- **Habitat destruction**
- **Natural disturbances**
- **Social impacts**

Over-exploitation



Shark fishery

Symptoms of overfishing:

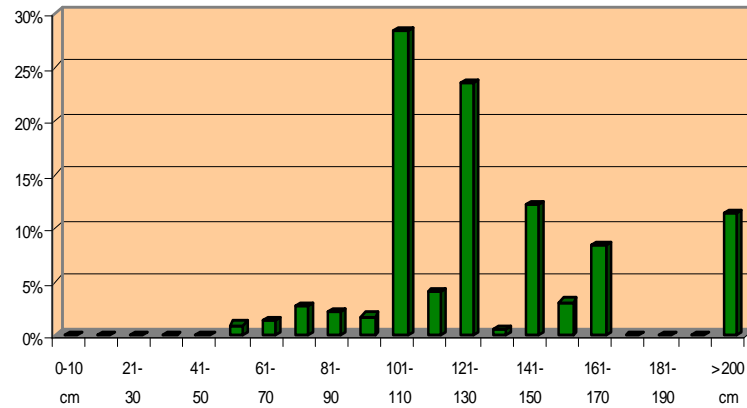
- **Decline in numbers all around the island**
- **Decline in sizes**
- **Decline in diversity?**

Root causes:

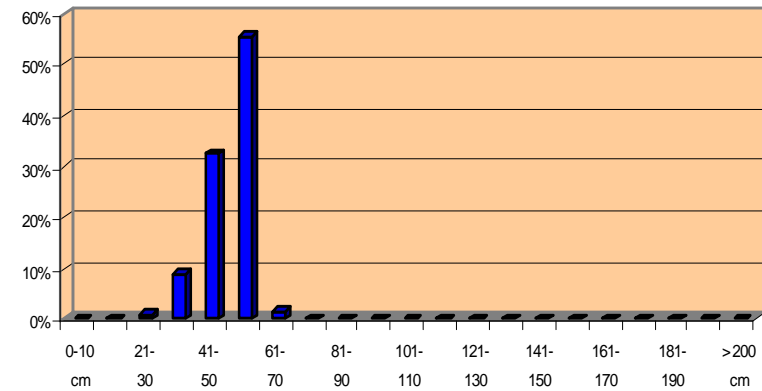
- **Heavy export demand for shark fins to supply E.Asia markets**
- **Regional and international overfishing by legal & illegal industrial fishing vessels**

Size distribution of the four most commonly caught sharks from Mahfrehin area (southern Socotra I.)

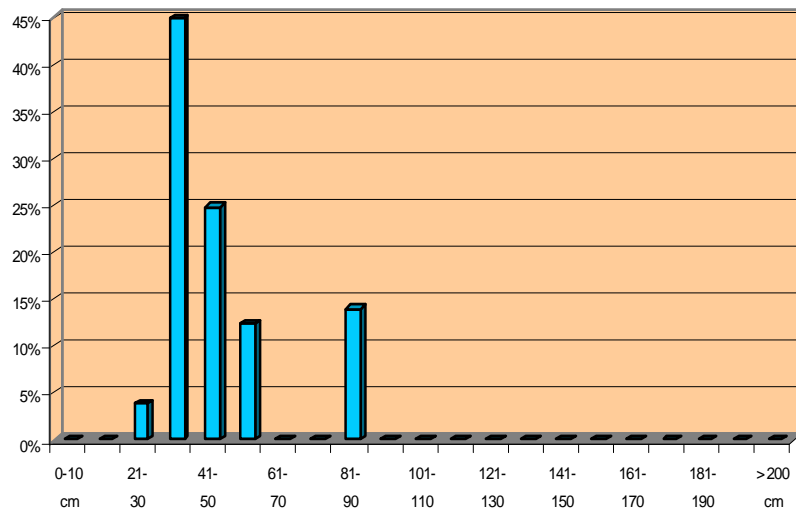
Rhinobatos spp.



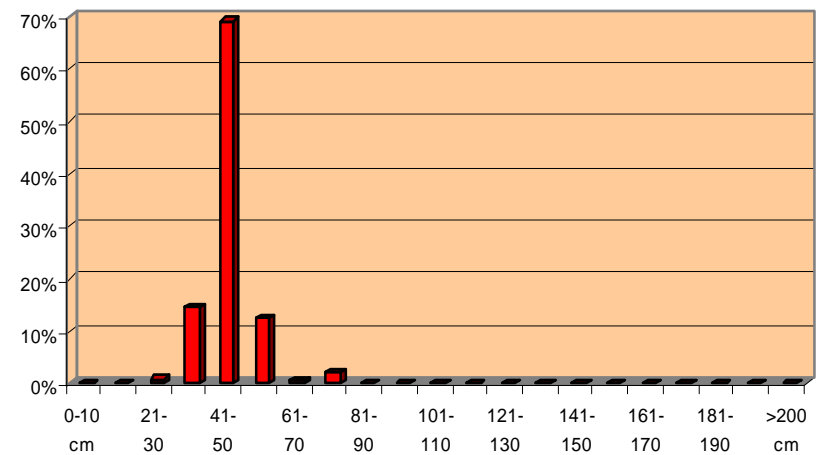
Loxodon macrorhinus, Carcharhinus macloti



Sphyrna lewini



Carcharhinus sorrah



Lobster fishery

Symptoms of overfishing:

- Decline in numbers on the northern coast and part of the southern coast of Socotra Island
- Small sizes in heavily fished areas (e.g. E. Noged)
- Loss of traditional conservation ethics in some areas, indicated by high percentage of berried & small lobsters.

Root cause:

- Collapse in the lobster fishery of the mainland coast
- Sharp increase in prices & buyer pressure

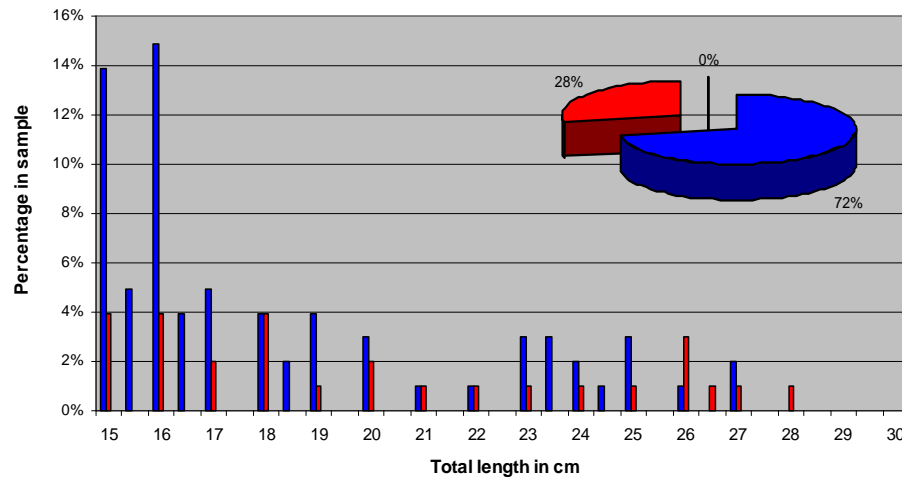
**Lobster price has extremely increased ,
tempting fishermen to extend their fishing
seasons & ignore official regulations.**

**Berried females & small lobsters are often
caught & sold, despite traditional ban.**

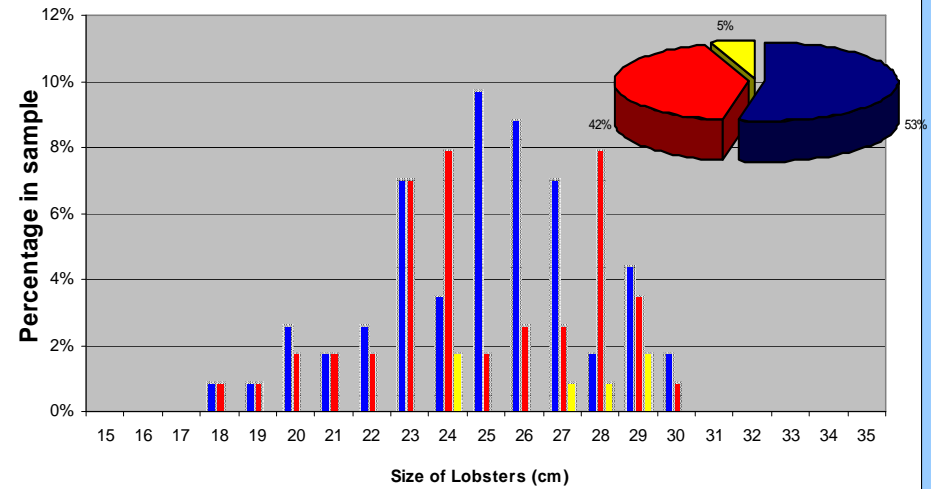


Size Distribution of *Panulirus homarus* sampled from lobster buyers at 4 locations.

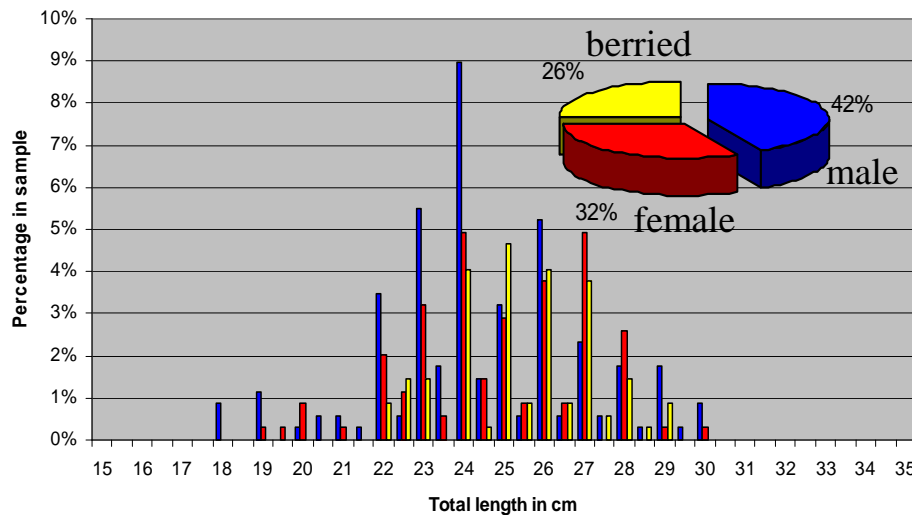
Zaheq (SE Socotra), 14 March 99



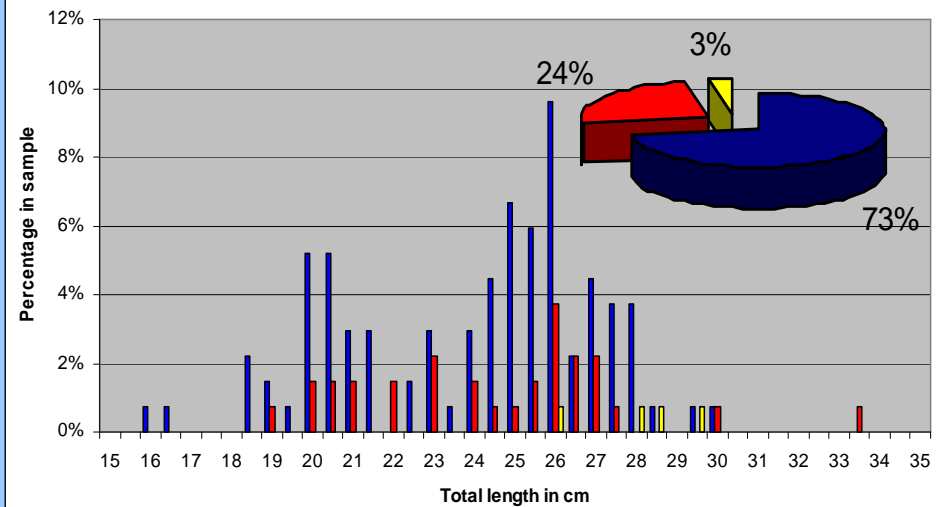
Irisal (eastern Socotra), 4 April 99



Neet (SW Socotra), 18 Nov 1999



Steroh (southern Socotra), 3 Dec 1999.



Reef fisheries

Symptoms of overfishing:

- **There is no noticeable overfishing yet, but the growing commercial reef fishery for export will place much heavier pressure on reef resources than the present traditional subsistence fishery.**

Root causes:

- **Rapid improvement in storage & transport facilities, leading to the increase in buyers from outside the islands.**

The newly installed ice plant & cold stores investors will enable fishermen to sell fresh fish to buyers year round.

None of the existing fisheries investment operations has undergone EIA or assessment on the sustainability of target fish stocks.

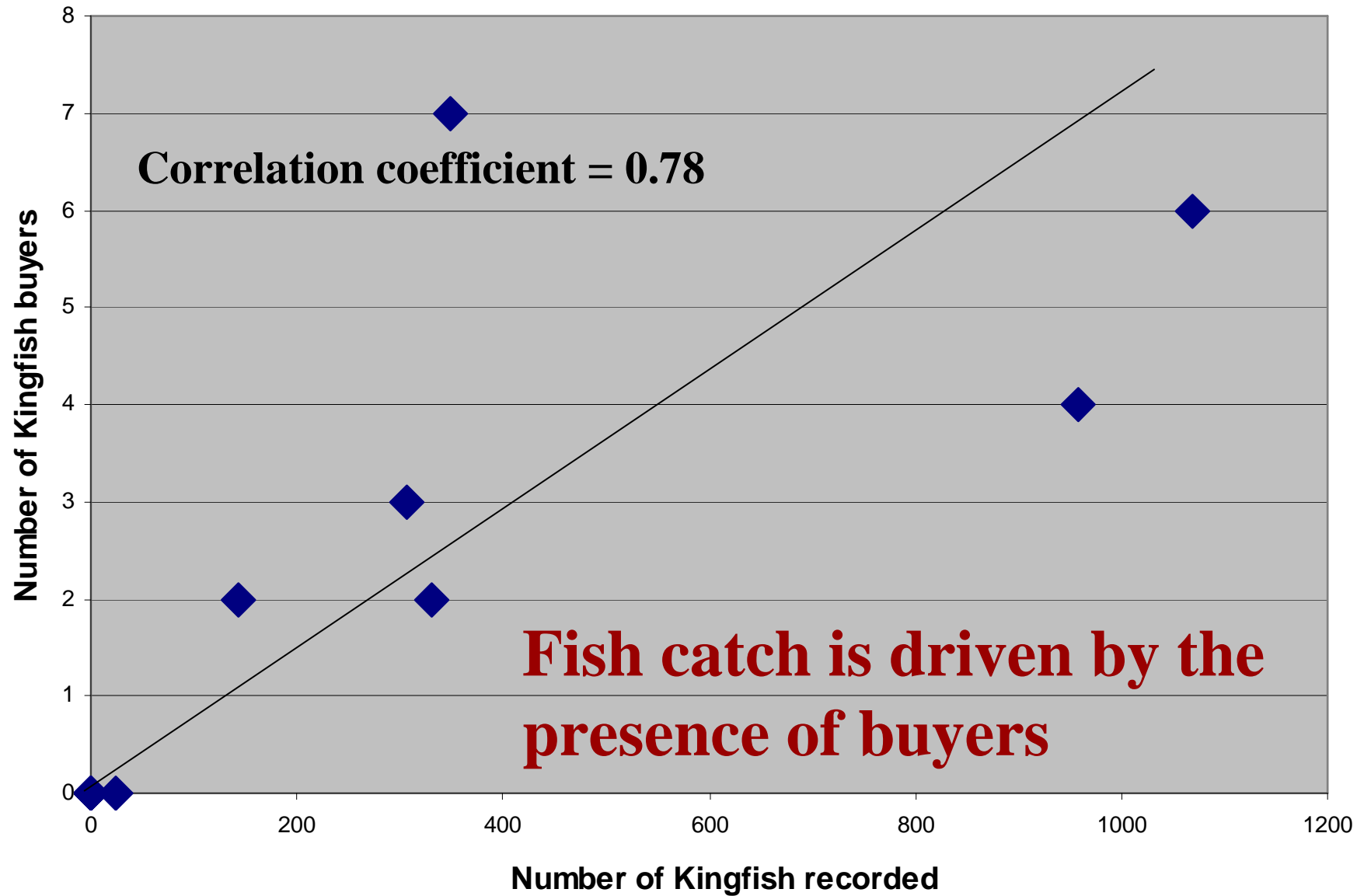
Rapidly increasing pressures on reef fisheries

- Limited resource base
- Escalating export demands
- Lack of monitoring & control
- Lack of information on stocks



A reef fish buyer from the Emirates equipped with freezers.

Buyer pressure & catch of Kingfish in Mahfrehin area (southern Socotra) from July 98- June 99





Illegal & uncontrolled industrial fishing

- **Poaching**
- **Excessive licensing**
- **Lack of surveillance & enforcement capacities**

الجمهورية اللبنانية
 وزارة الثروة السمكية
 ترخيص عمل القارب
 0172
 1999/0130
 076

ترخيص هذا القارب للقارب كوميثاغاليا - تابع للمستثمر رقم القارب هو 0172
 المملوكة لشارع الاصطفاة في ميدا الجمهورية الجيرالغريها مارجرعروون (المنطقة صالجرية مونا وجرالغ
 وطلقت بموجب القرار الجمهوري بالقانون رقم (43) لعام 1991م بشأن تنظيم قضاة واستشاريين الامانة واصحابها
 وزير اعم في الثالث الاثناوم بالقرارات الوزارية الصادرة بموجب

اسم القارب: كوميثاغاليا
 اسم الرمان: كوميثاغاليا
 الجنسية: كوميثاغاليا
 الثالث: ميلاد بصير فيقولاديريش
 ميناء التسجيل: كيرتشا
 اشارة المداوم (الطول): U.Z.Z.E
 الطول (م): 49,4 متر
 العرض (م): 9,8 متر
 العمق (م): 4,2 متر
 المحرك (م): 741 حصان
 المحرولة الامتالية: 222 حصان
 المحرولة الصافية: 1998 م
 سنة الصنع: جبر قاعجيب
 عدد الاصطفاة: 343
 رقم التسجيل: 343
 اسم القارب: آسوالد متفونده / ميار / قشربا
 اصحاب القارب: صاحب القارب العثماني رقم 35 لعام 1999
 تاريخ العمل: 1999/0130
 تاريخ الصلاحية: 1999/12/40
 مدير عام الرقابة والتفتيش البحري
 وكيل قطاع خدمات الانتاج والتسويق
 وزير الثروة السمكية

A forged trawling permit for an Ukrainian trawler.

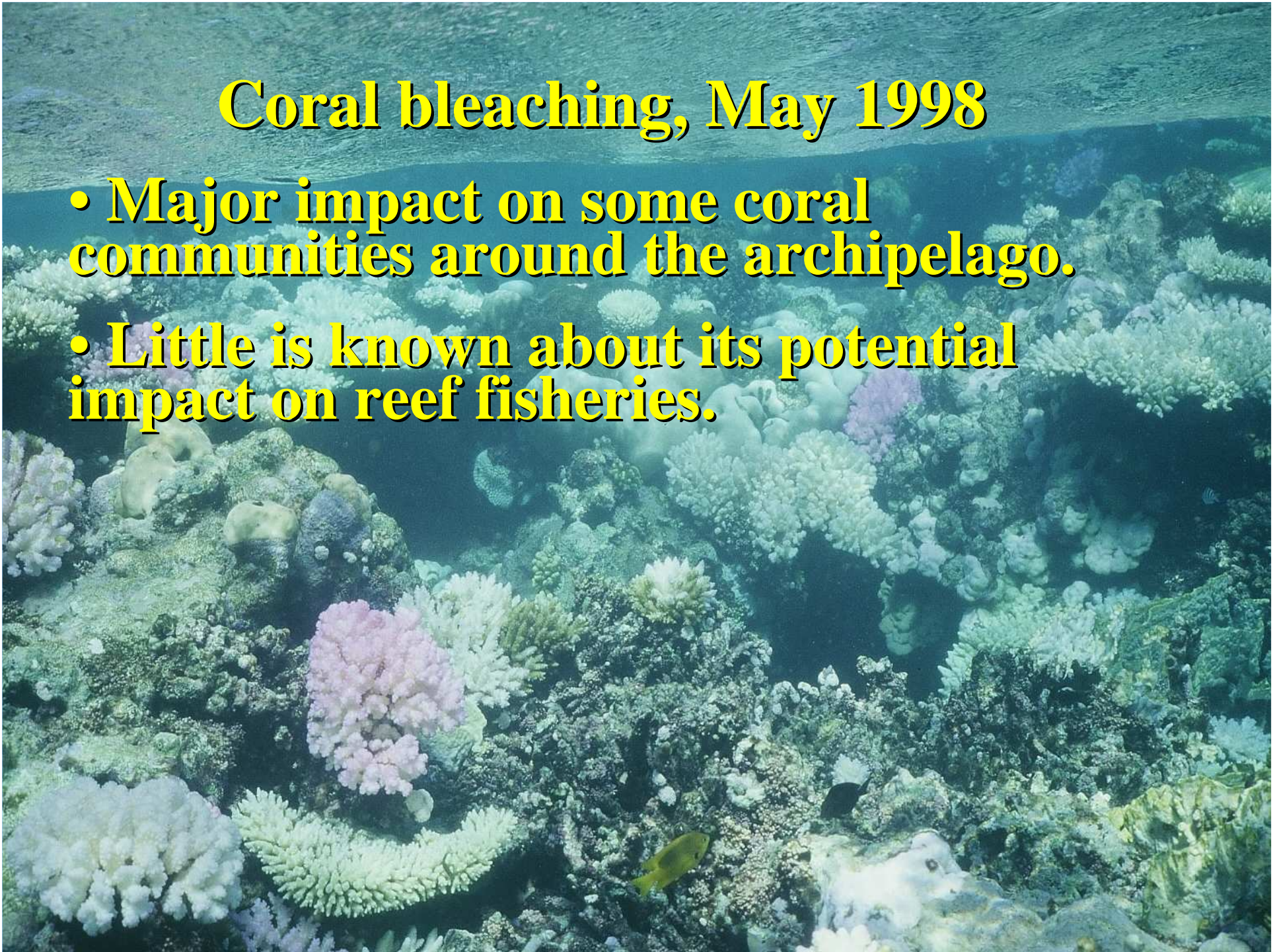
Habitat destruction & degradation

- Unplanned port construction & expansion
- Coastal development without EIAs
- Coral mining for export
- Trawling



Coral bleaching, May 1998

- Major impact on some coral communities around the archipelago.**
- Little is known about its potential impact on reef fisheries.**



Social impacts

A group of approximately 30 people, including men, women, and children, are sitting in a large circle on a sandy beach. They are dressed in casual, everyday clothing. In the background, the ocean is visible with several small boats and a larger wooden boat with people on board. The sky is clear and blue.

- **Changes in traditional conservation values**
- **Disputes over customary marine user rights**
- **Influx of outside fishermen**


Mitigation Measures (Actions)

- **Strengthened fisheries management & control**
 - **Conservation & Development Zoning Plan**
 - **Environmental education & awareness**
 - **Community empowerment**
 - **Partnerships among stakeholders**
 - **Political support**

A man in a camouflage uniform and cap stands in a storage area filled with large yellow bags. He is holding a white object, possibly a roll of paper or a small container. The background shows a corrugated metal wall and more bags.


Strengthened fisheries management & control

- Enforcement capacity of the Department of Fisheries
- Project extension officers serve as coast watchers
- Fishermen societies record fish landings & report violators
- Management oriented research



**The network
of marine
nature
sanctuaries
will serve as
'living
banks'.**

**managed well, the sanctuaries will
plenish the used resources in the
surrounding fishing grounds.**




**Environmental
education &
awareness**

**Joint visits to local schools & villages by the
marine team & education/awareness team to
promote environmental awareness.**

Community empowerment

Empowering the local communities to safeguard their own resources could be the most cost effective & long-term solution to undesirable exploitative pressures.





**Partnerships among stakeholders,
Government authorities and
international agencies informed with
sound scientific knowledge, will
contribute to the success of conservation
& sustainable management efforts.**

What future for Socotra?

ما هو مستقبل سقطرى؟

