

Darwin Reef Fish Project

Managing coral reef fisheries
for biodiversity, ecosystem
and economic benefits, Maldives
2009 - 2013



Project Partners

Marine Conservation Society

UK based NGO. Work on species and wildlife protection, litter and pollution and fisheries.

Marine Research Centre

MRC is responsible for marine resource surveys and for collecting fishery data.

Darwin Initiative

UK funding scheme that promotes conservation of biodiversity and sustainable use of resources.



Importance of the Darwin Reef Fish Project

- Reef fish are of high value for food, tourism interest, & as part of healthy ecosystem.
- Fisheries can bring problems e.g. over-exploitation, ecosystem disturbance, Conflicts of interest e.g. between divers & fishermen.
- Aim of DRFP is to collect data on reef fisheries and provide information for management.
- Effective management brings environmental and economic benefits.

Maldives Fisheries – the broad picture

- Food fishery for tourism and local consumption, sport fishing and collection for aquarium trade.
- Fishermen can operate anywhere except the 25 Marine Protected Areas & all resort house reefs.
- Tend to voluntarily keep away from dive sites in order to avoid conflict.



Reef fishery – for food

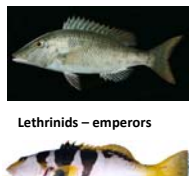
Target all species - catch mainly composed of:



Carangids – jacks, rainbow runner,



Lutjanids - Green jobfish, red snapper,



Lethrinids – emperors
Serranids – groupers 40+ species

Main issue – increasing demand

- Approx. 7100 mt of reef fish purchased by resorts annually - 3x the estimated amount being purchased in the late 80s. Expected to increase as tourism expands to all atolls.



Decline in exports of live/chilled grouper. Possibly due to stock decline? Or preference for local sale?

Impacts on populations

- Groupers - lower average weight of main species caught, in comparison to earlier surveys.
- 43% of total grouper catch - below maturity length/age.



Steps to be taken

- Updated review of catch for both groupers and other commercially important reef fish.
- Stock assessment of groupers and other commercially important reef fish.
- Regulation of catch sizes and species.
- Regulation of exports via quotas.
- Establishment and implementation of management plans.

Marine Aquarium Fishery

- Over 120 species used.
- Collection used to be around Male – now further afield.
- Currently around 250,000 fish exported annually.
- Overall increasing trend in export value - around Rf7 million (approx US\$ 0.55 million).



Current management – restricted categories

- **Category A – prohibited** e.g. Locally rare. Armitage angelfish *Apolemichthys armitagei*
- **Category B Export quota** e.g. Comet *Callopleiops altivelis*: quota 50



- Poor survival. Triangle butterflyfish *Chaetodon triangulum*

- Fire goby *Nemateleotris magnifica*: quota 10,000



Current management – unrestricted

- **Category C – unrestricted** (But maximum all exports 300,000).

Moorish idol
Zanclus cornutus



Powder blue surgeon
Acanthurus leucosternon



Orange-striped triggerfish
Balistapus undulatus



What should be done to ensure sustainability?

Catch regulations are based on data collected from 1987-90 when the fishery operated only in Male Atolls. Current priorities are to:

- Review banned species – are there some that are safe to collect or vice versa?
- Review quotas for Category B – are they still appropriate?
- Establish quotas for Category C species.
- Ensure reporting of exports is accurate.

Conclusion: importance of monitoring fisheries

- To do their job effectively, managers need good fishery data and information on catch and population trends.
- The Darwin Reef Fish Project is using a combination of 2 methods to monitor fishery resources:
 - Fishery monitoring: sample and measure catch (species, size, numbers/weight + export data).
 - Fishery independent monitoring – [underwater surveys](#) - to obtain estimates of density

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