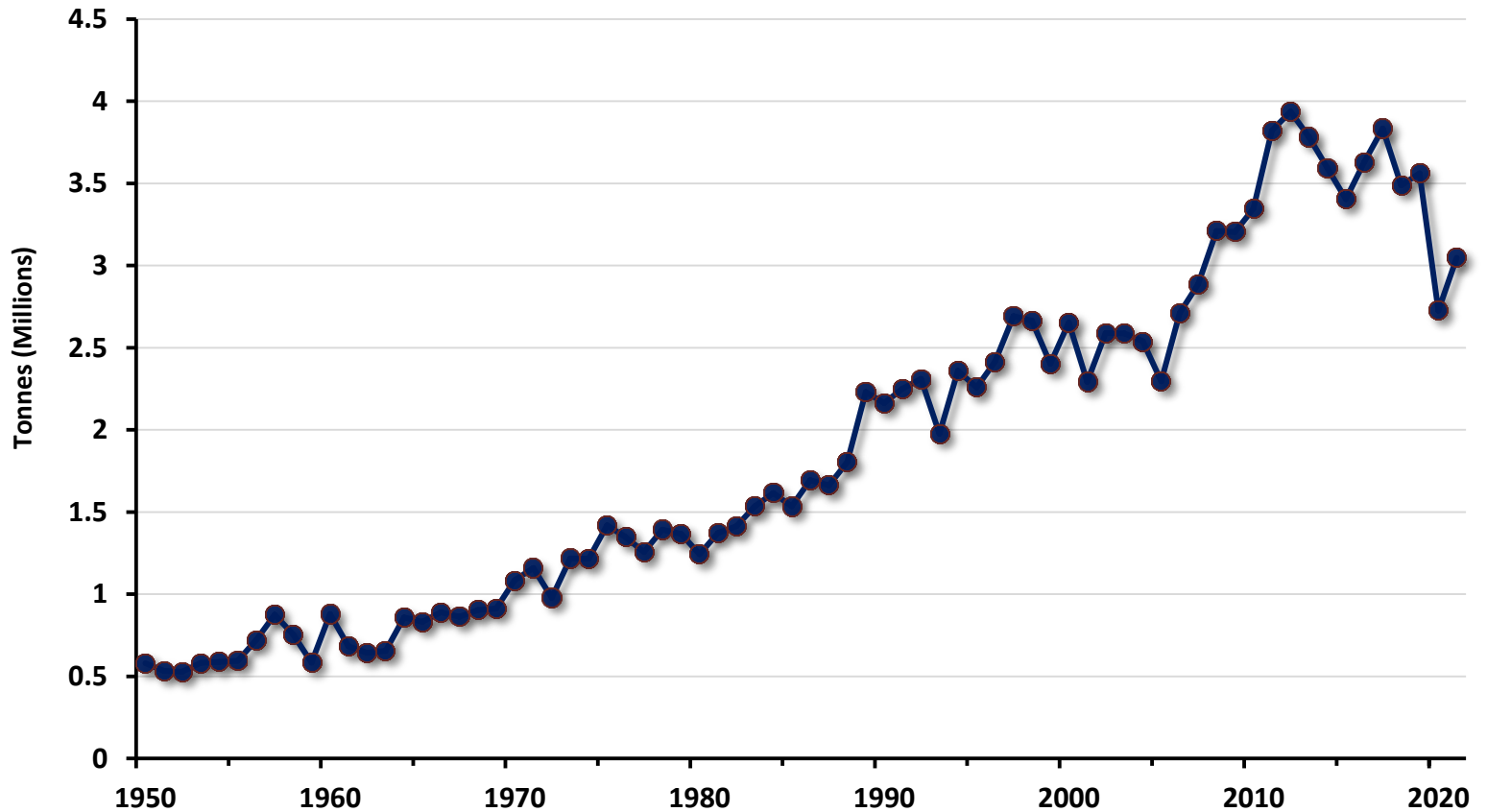


Status of marine fish stocks in India

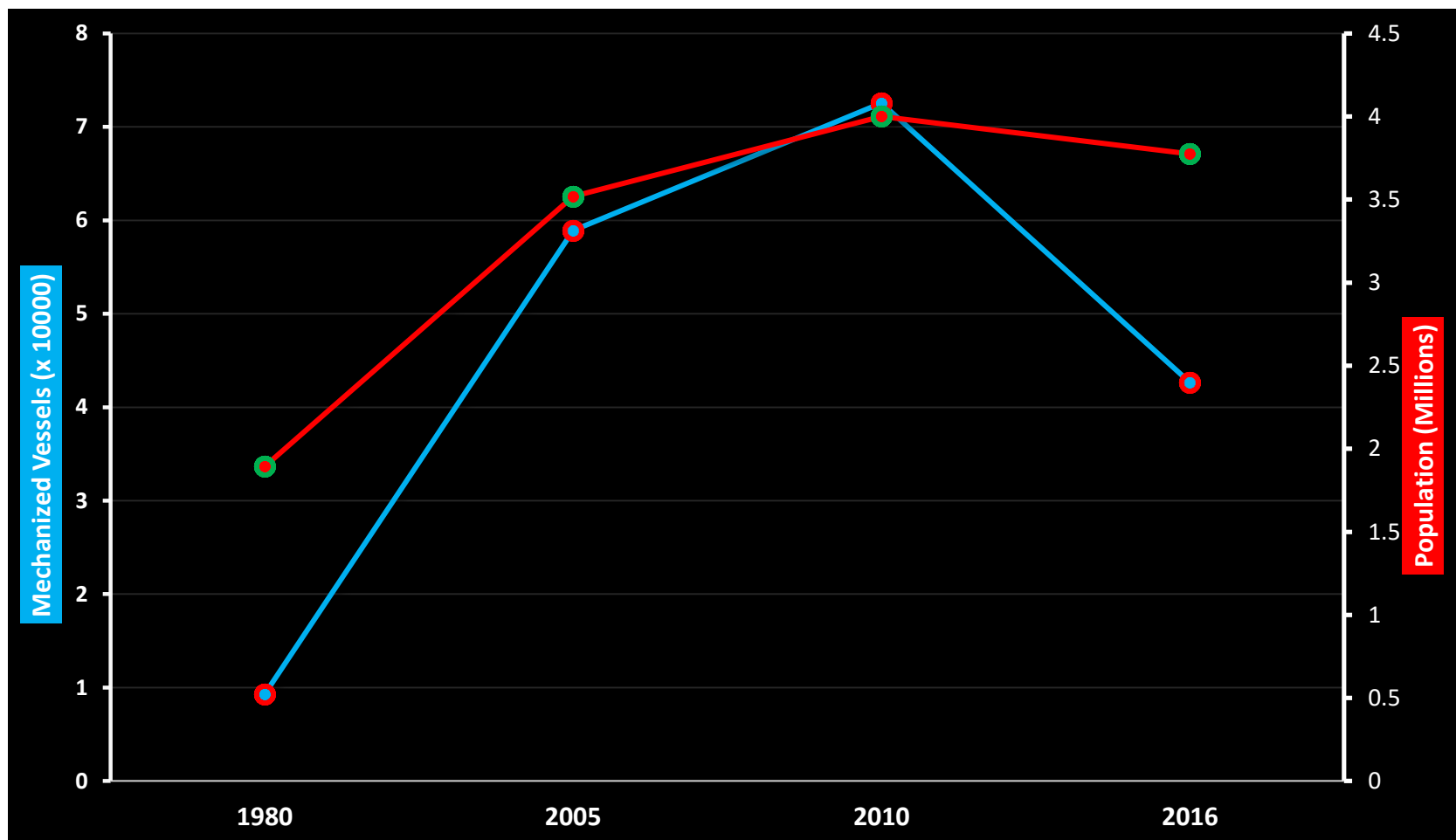
Dr. T.V. Sathianandan
Principal Scientist & Head (Retired)
ICAR – CMFRI
Kochi - 682018

India

Marine fish landings 1950-2020



Marine Fisher Population & Mechanized Fishing Vessels



Source: Marine Fisher Census 1980, 2005, 2010 & 2018

- There is growth in Population as well as number of mechanized fishing vessels during 1980 to 2010.
- But, the population reduced slightly where as there is drastic reduction in the number of mechanized fishing vessel during 2010 – 2016.

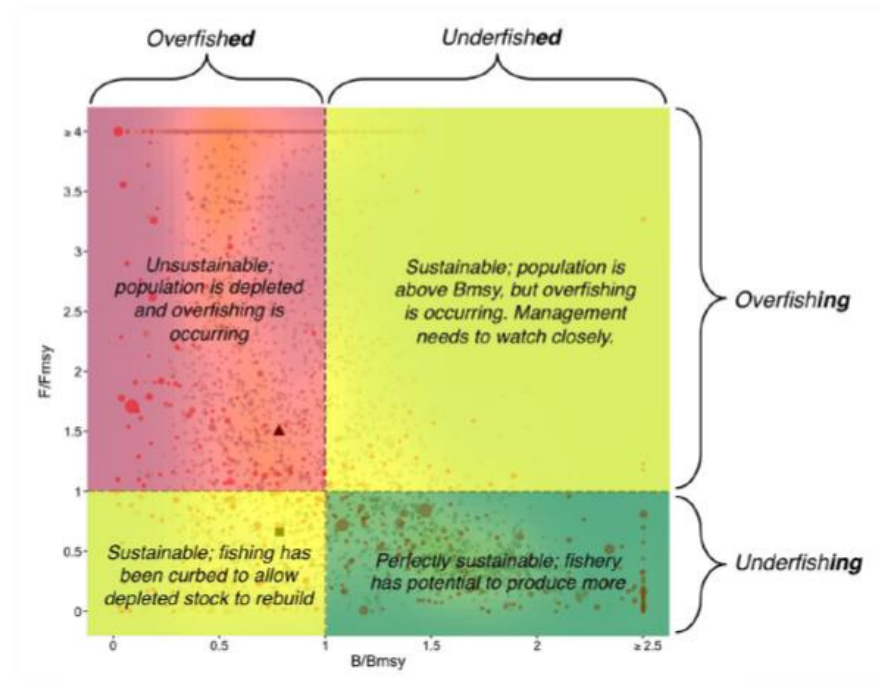
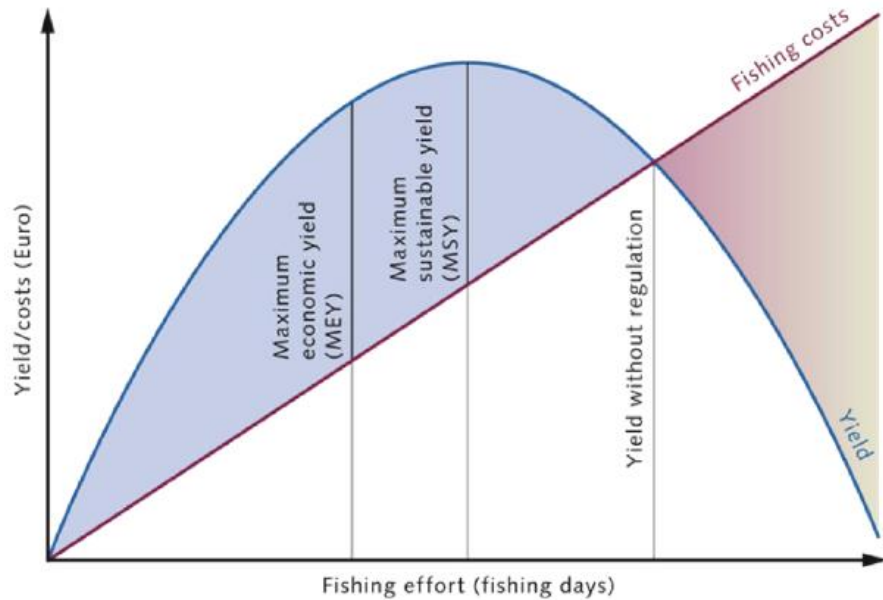
About Fish Stock Assessment

- Marine fisheries in India is an important sector providing employment, livelihood, nutritional security, export earnings etc.
- Being a living resource, the marine fishery resources have the capacity to rebuild its population through reproduction.
- Harvest of the marine fishery resources have to be properly managed for sustained production.
- Assessment of fish stocks through standard scientific procedures is the primary requirement towards fisheries management.
- There are different procedures for different situations and type of data available.
- Modelling of the dynamics of the fish population biomass is one of the popular and widely adopted procedure. These approach are known as biomass dynamics models.

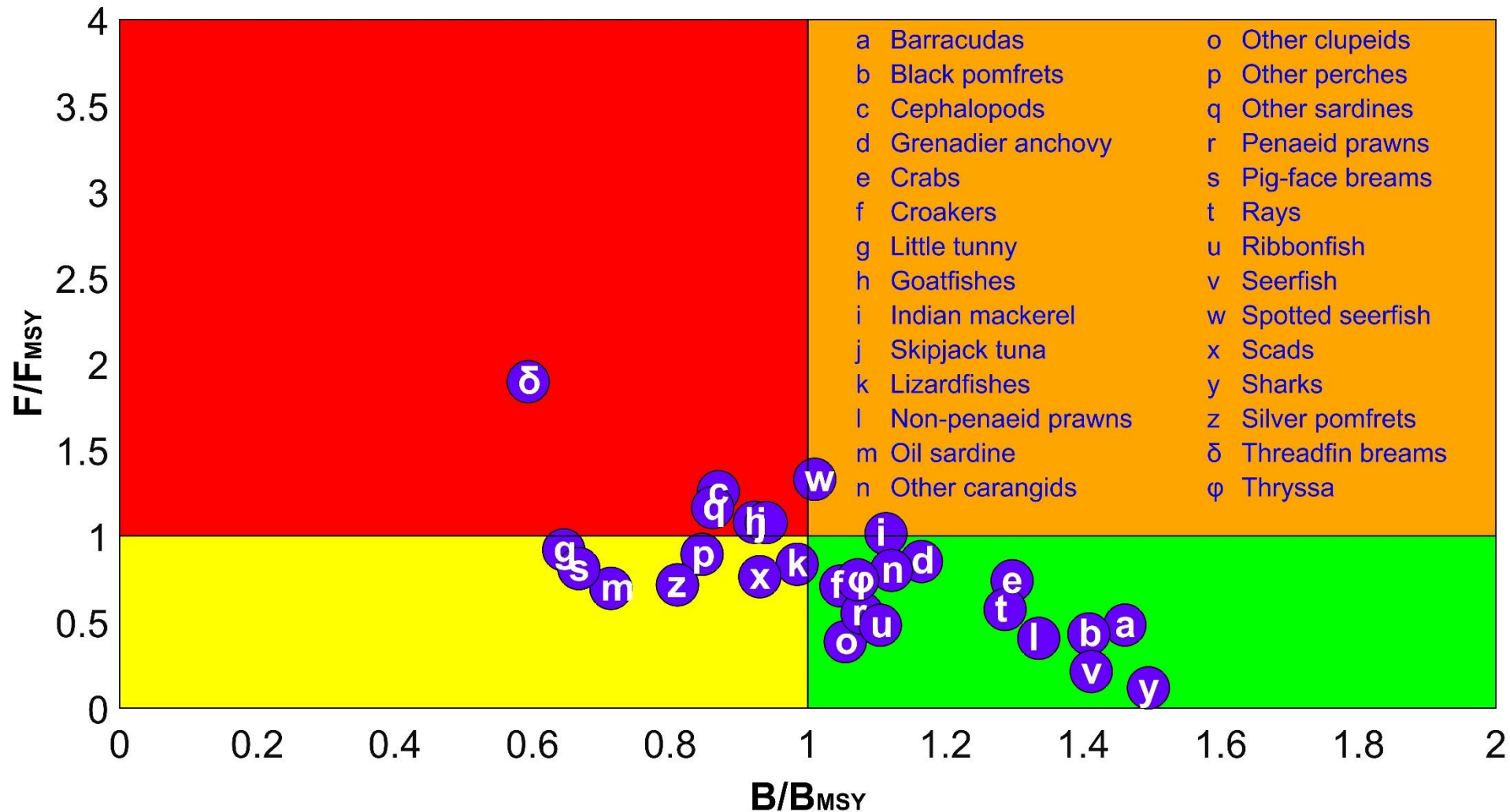
About Modelling

- Input data: Time series data on fishing gear wise landings of the species and hours of fishing by different fishing crafts
- Model used: Biomass dynamics model for estimating biomass and model parameters
- Arriving at the conclusion about status of the fish stocks modelled.

BASIC FISHERIES MANAGEMENT PRINCIPLES

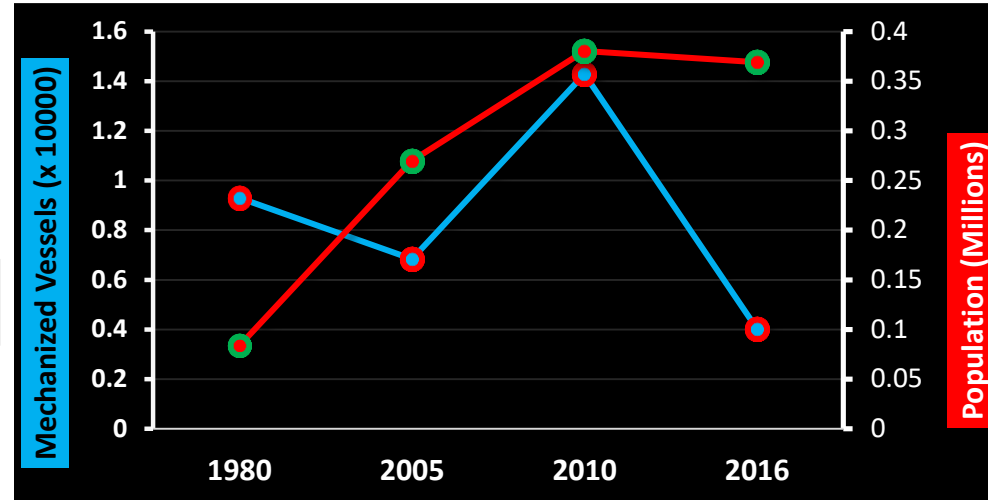
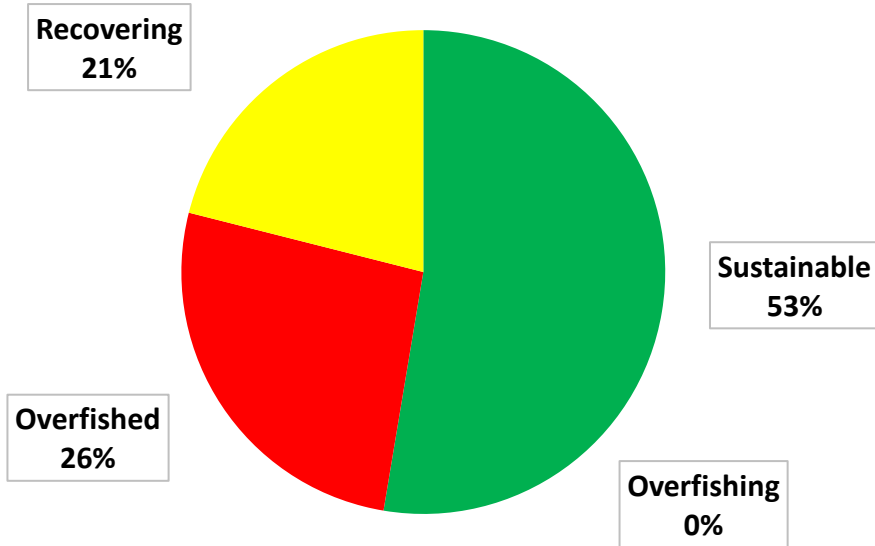


Kobe plot showing status of fish stocks (Tamil Nadu)



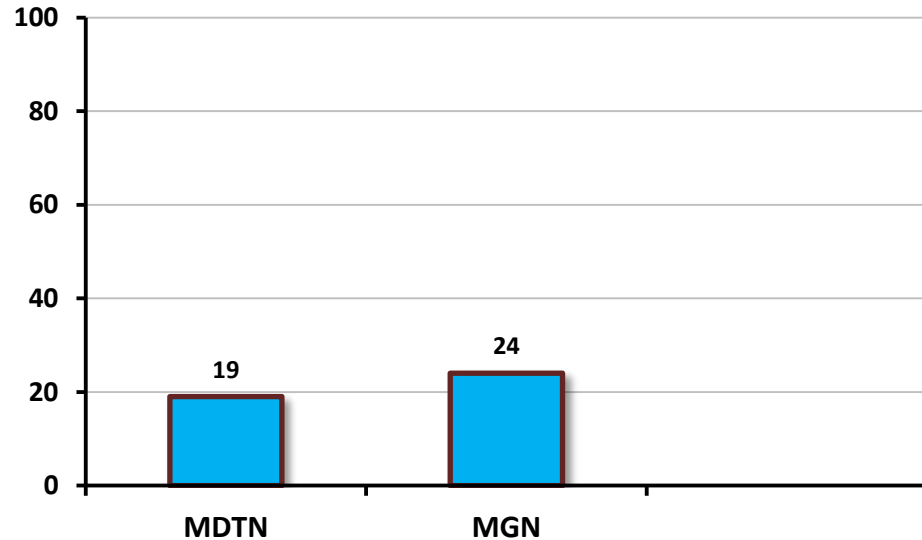
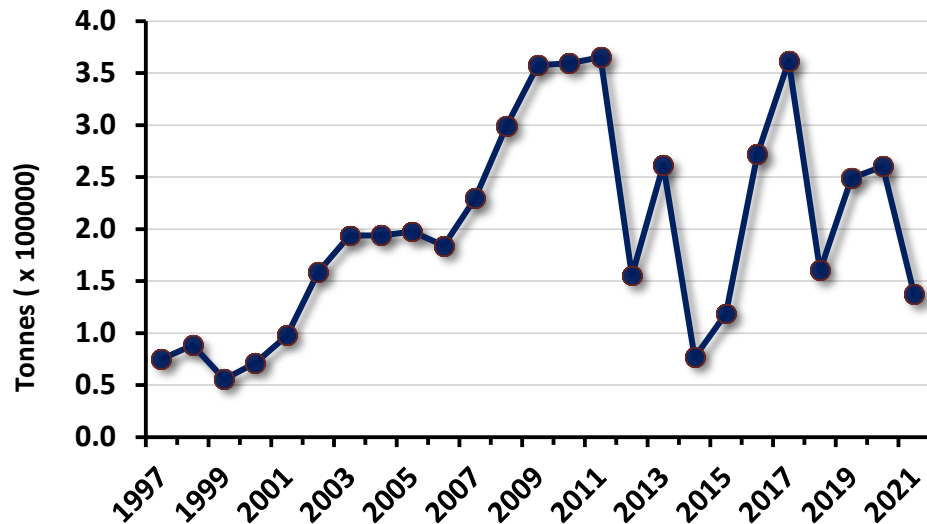
Summary of findings from the modelling work for assessing stocks of maritime states

West Bengal Stock Status - 19 Stocks - 2016



Fishing fleets (% reduction in fishing hours)

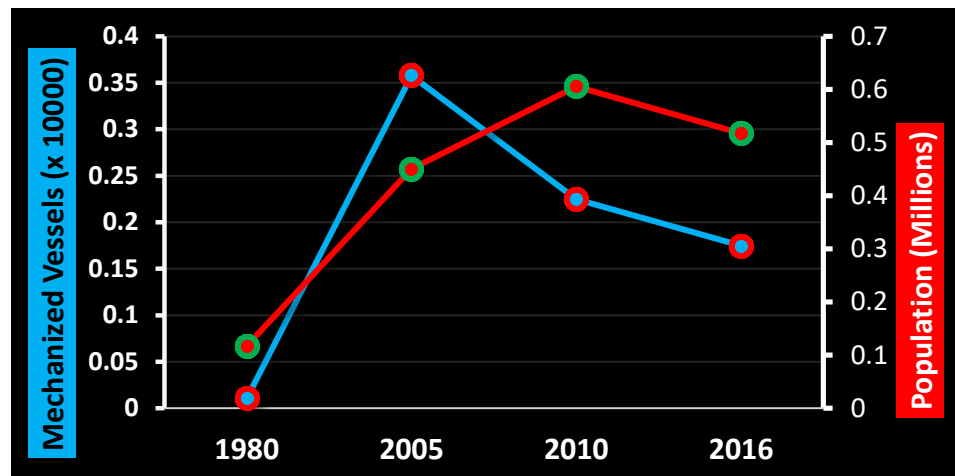
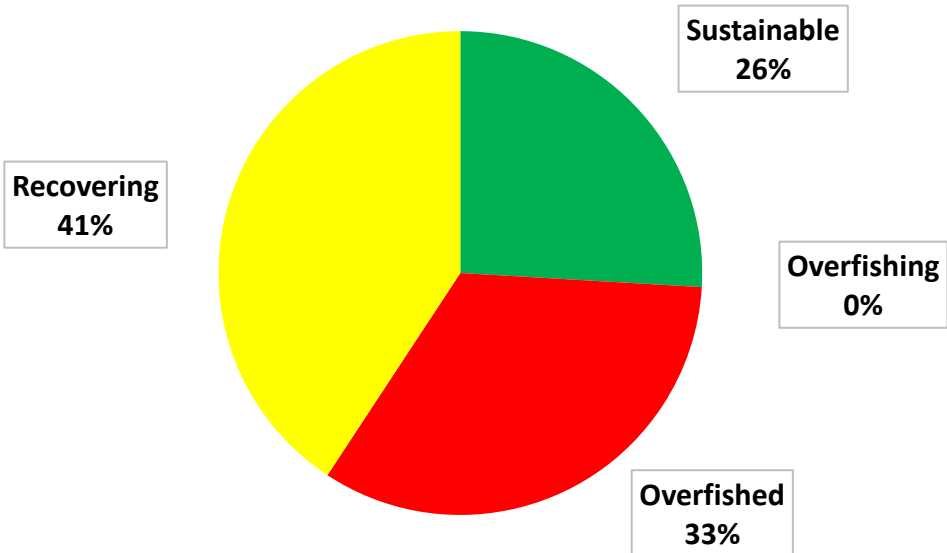
Marine fish catch



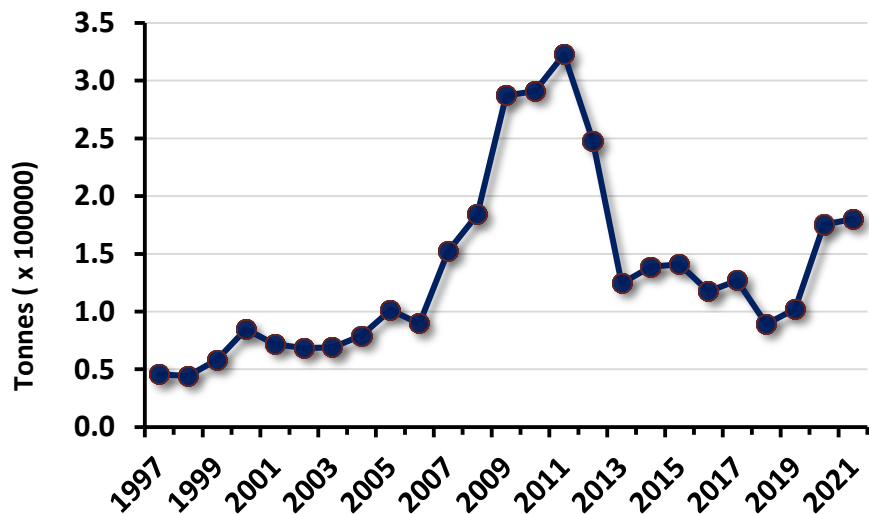
West Bengal

- Fishermen population increased during 1980 – 2010 and reduced very little during 2010 -2016.
- Commercially important 19 fish stocks assessed.
- 53 % of the stocks are sustainable and 26% are overfished.
- Drastic reduction in number of mechanized fishing vessels during 2010 – 2016.
- Recommends reduction in fishing hours by 19 and 24% respectively for Mechanized multi-day trawlnets and Mechanized gillnets in the state.

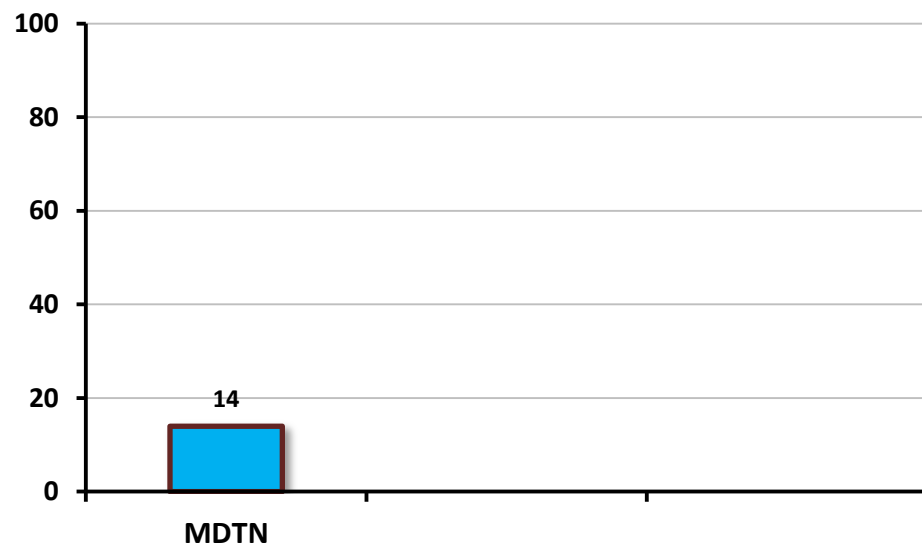
Odisha Stock Status - 27 Stocks - 2016



Marine fish catch



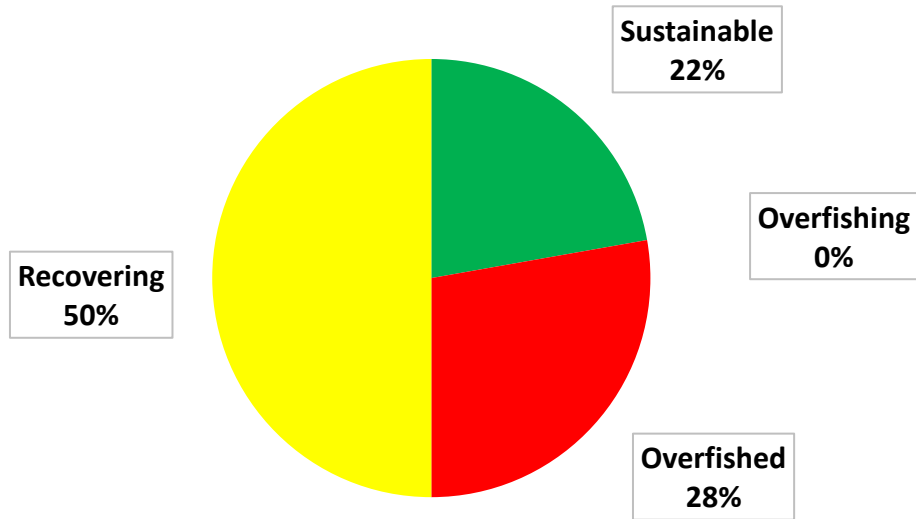
Fishing fleets (% reduction in fishing hours)



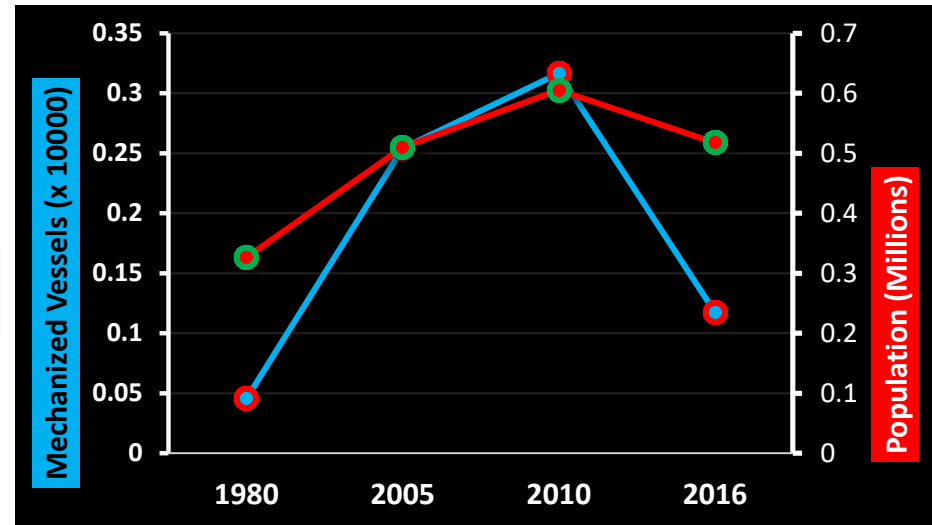
Odisha

- Fishermen population increased during 1980 – 2010 and reduced during 2010 -2016.
- Commercially important 27 fish stocks assessed.
- 26% of the stocks are sustainable and 33% are overfished.
- Drastic reduction in number of mechanized fishing vessels during 2005 – 2016.
- Recommends reduction in fishing hours by 14% for the Mechanized multi-day trawlnets .

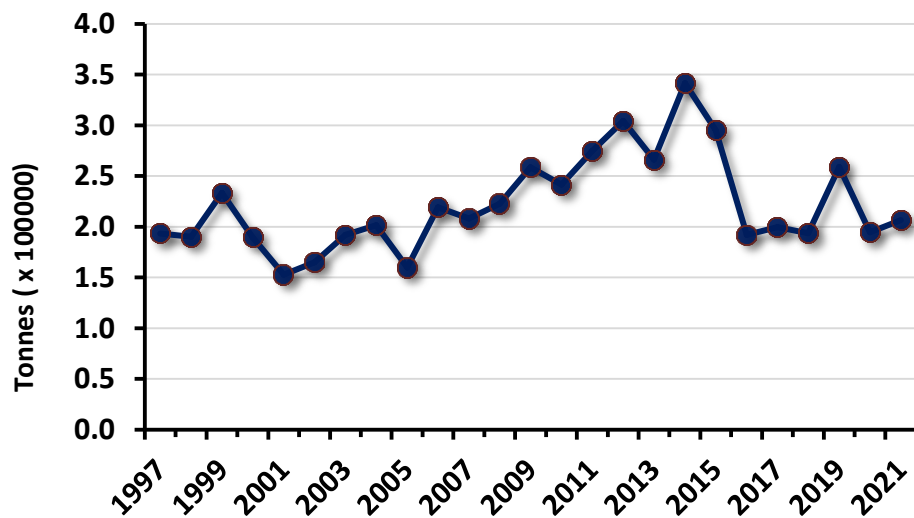
Andhra Pradesh Stock Status - 18 Stocks - 2016



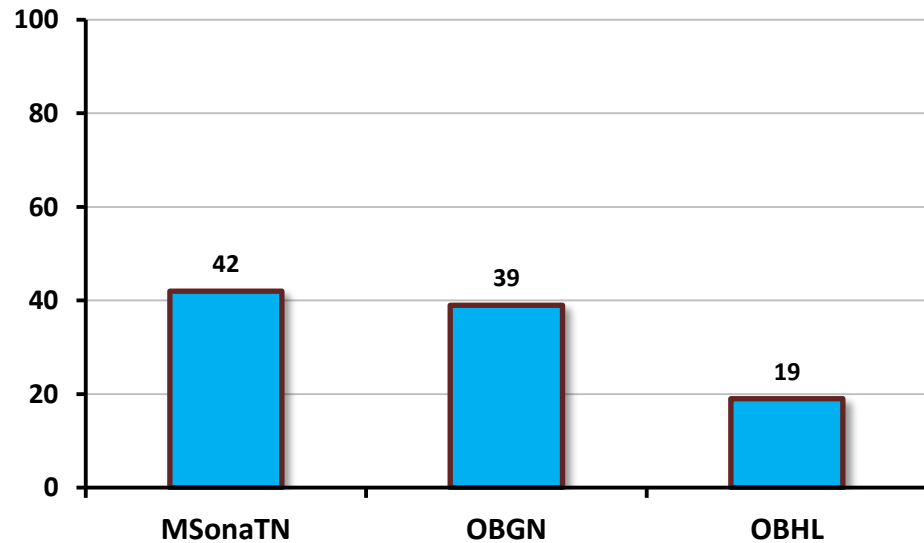
Andhra Pradesh



Marine fish catch



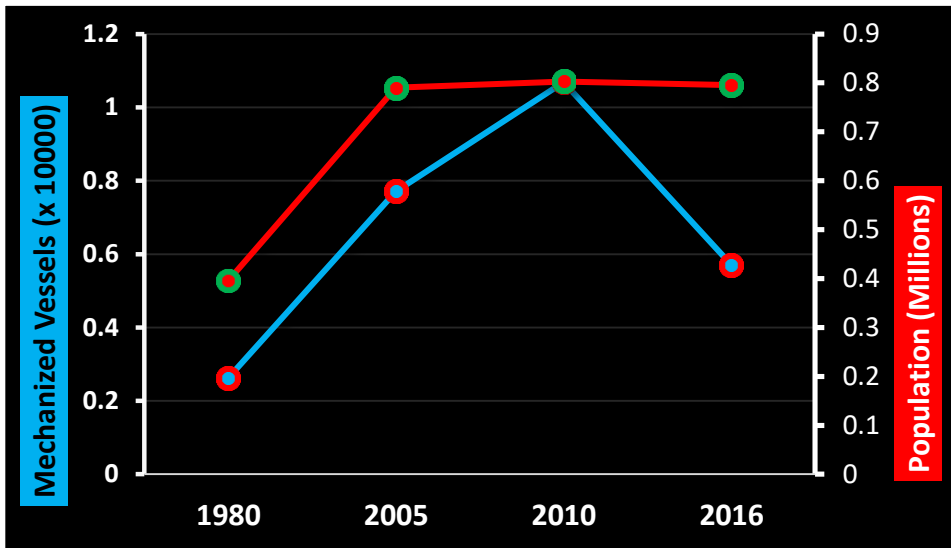
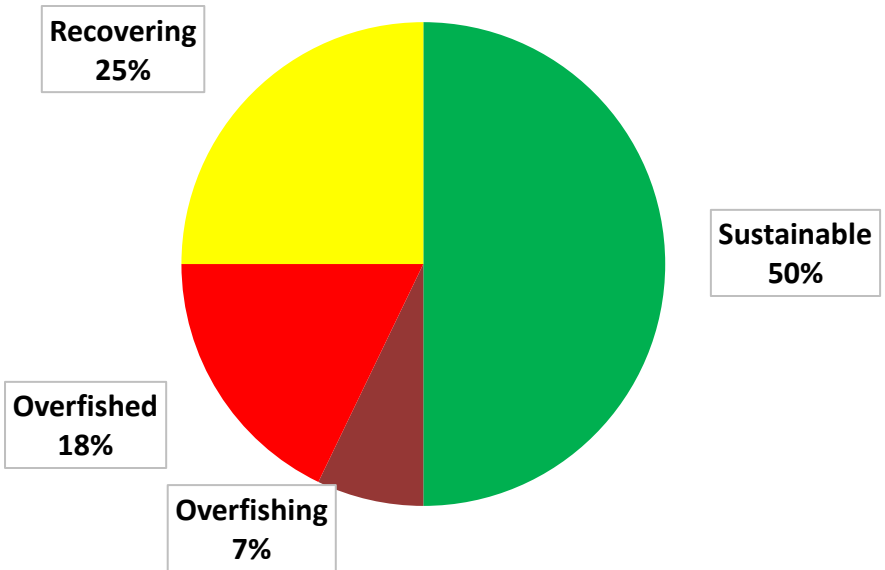
Fishing fleets (% reduction in fishing hours)



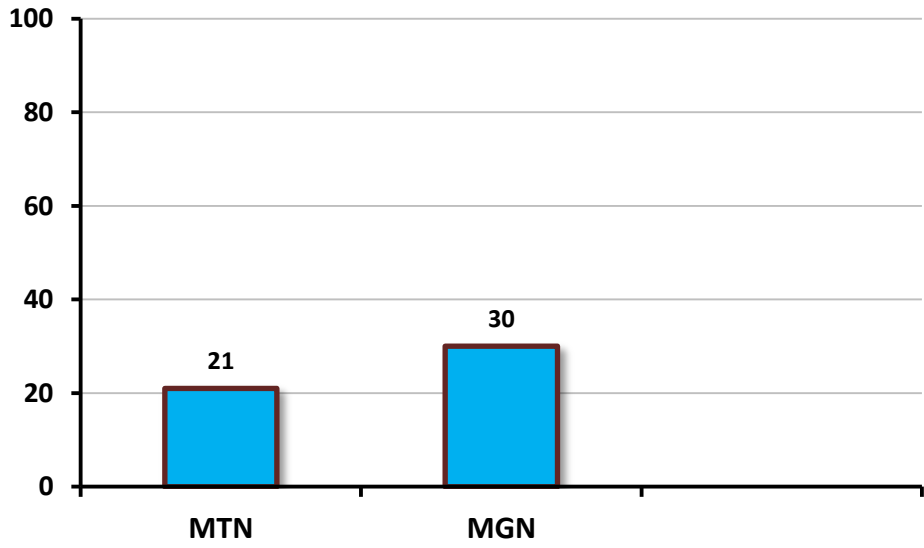
Andhra Pradesh

- Fishermen population increased during 1980 – 2010 and reduced during 2010 -2016.
- Commercially important 18 fish stocks assessed.
- 22% of the stocks are sustainable and 28% are overfished.
- Drastic reduction in number of mechanized fishing vessels during 2010 – 2016.
- Recommends reduction in fishing hours by 42% for Mechanized sona trawlnets, 39% for Outboard gillnets and 19% for Outboard hooks & lines.

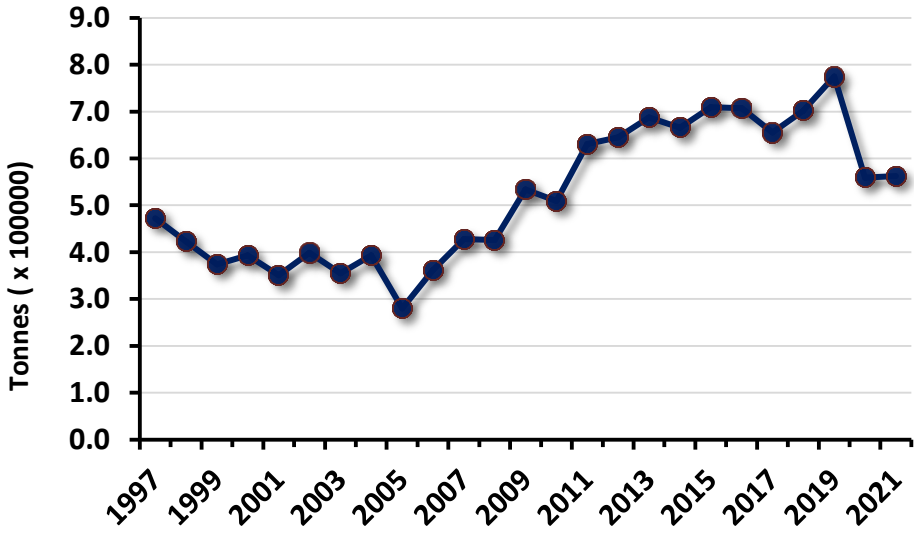
Tamil Nadu Stock Status - 28 Stocks - 2016



Fishing fleets (% reduction in fishing hours)



Marine fish catch

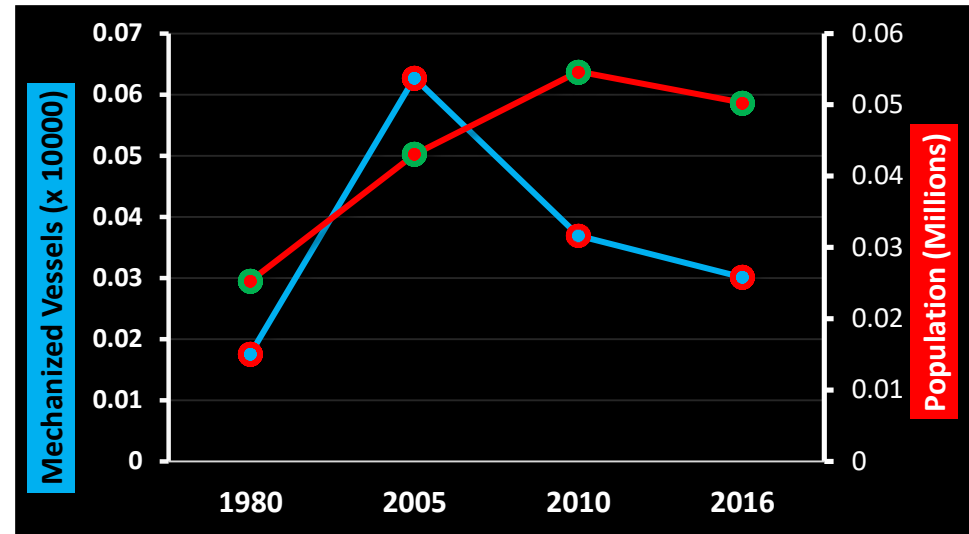
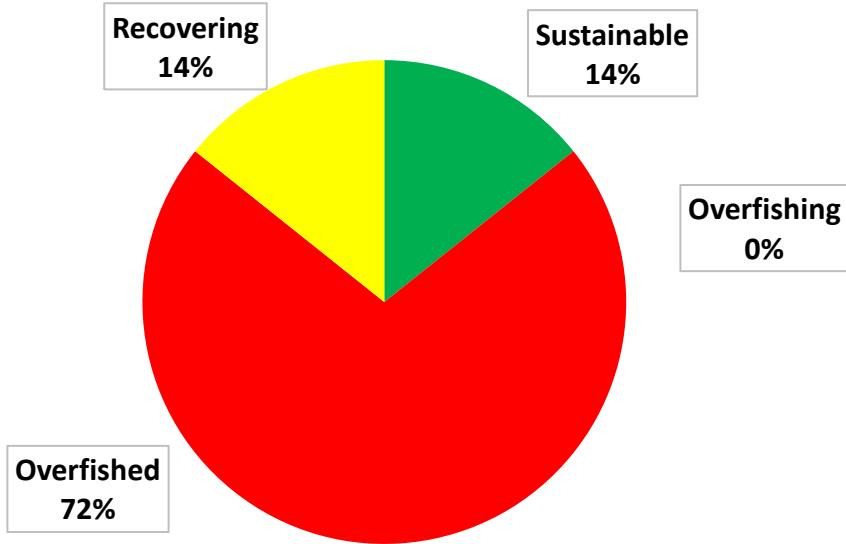


Tamil Nadu

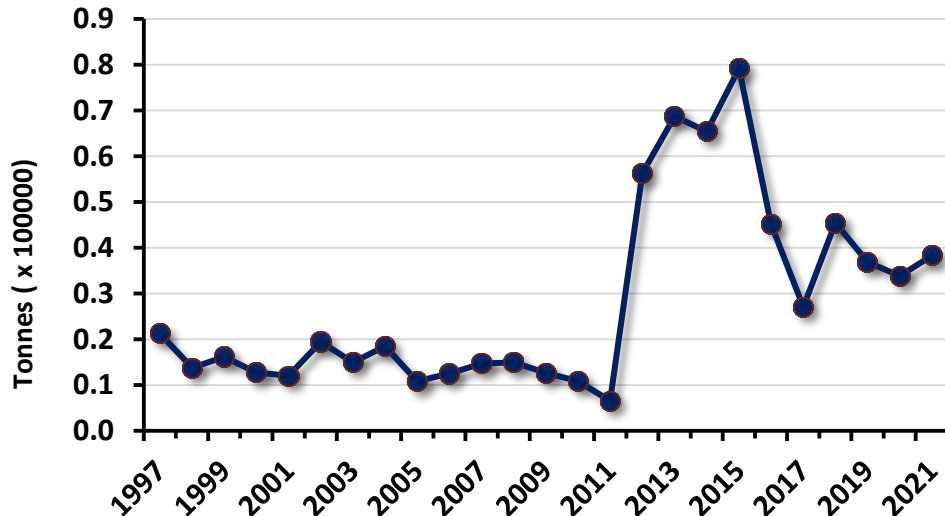
- Fishermen population increased during 1980 – 2005 and not much change during 2005 -2016.
- Commercially important 28 fish stocks assessed.
- 50 % of the stocks are sustainable and 18% are overfished.
- Steady increase in the number of mechanized fishing vessels during 1980- 2010 and reduced during 2010-2016.
- Recommends reduction in fishing hours by 21 and 30% respectively for Mechanized trawlnets and Mechanized gillnets in the state.

Puducherry

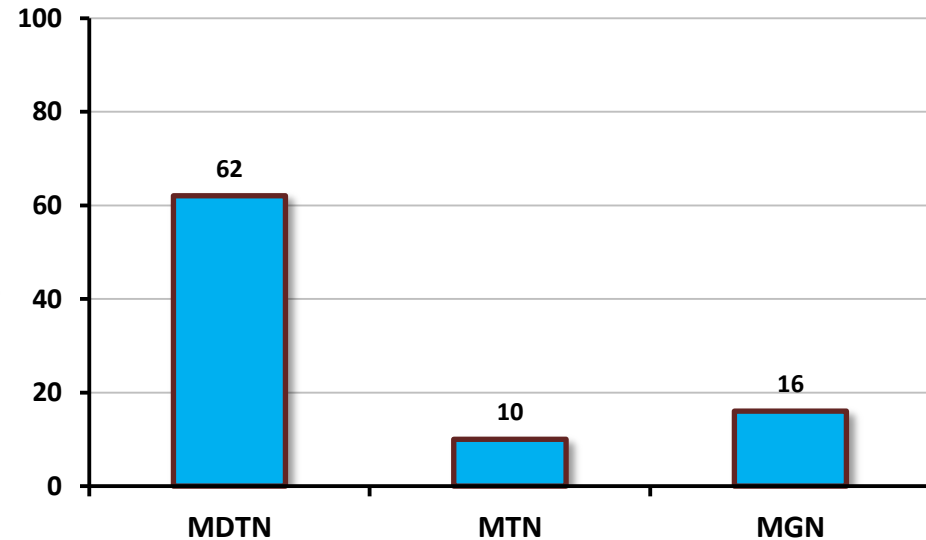
Puducherry Stock Status - 21 Stocks - 2016



Marine fish catch



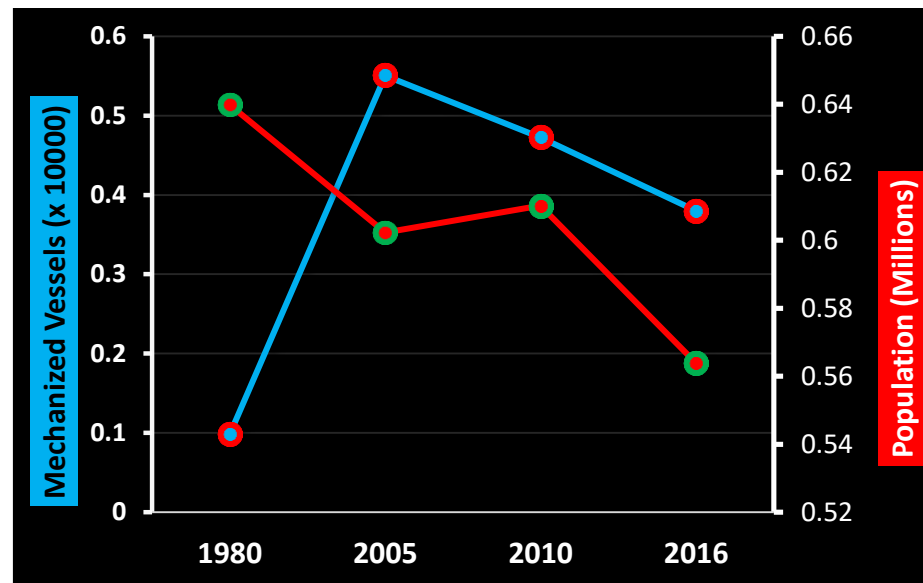
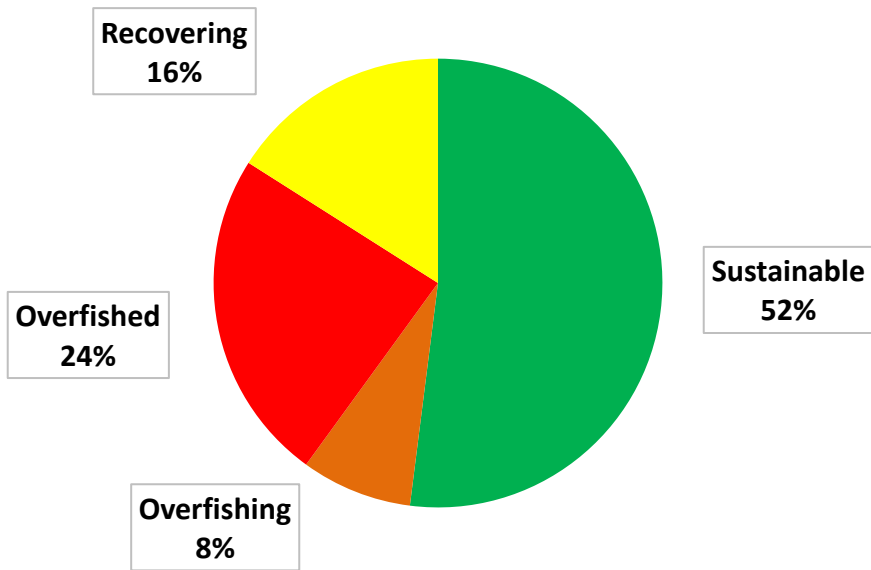
Fishing fleets (% reduction in fishing hours)



Puducherry

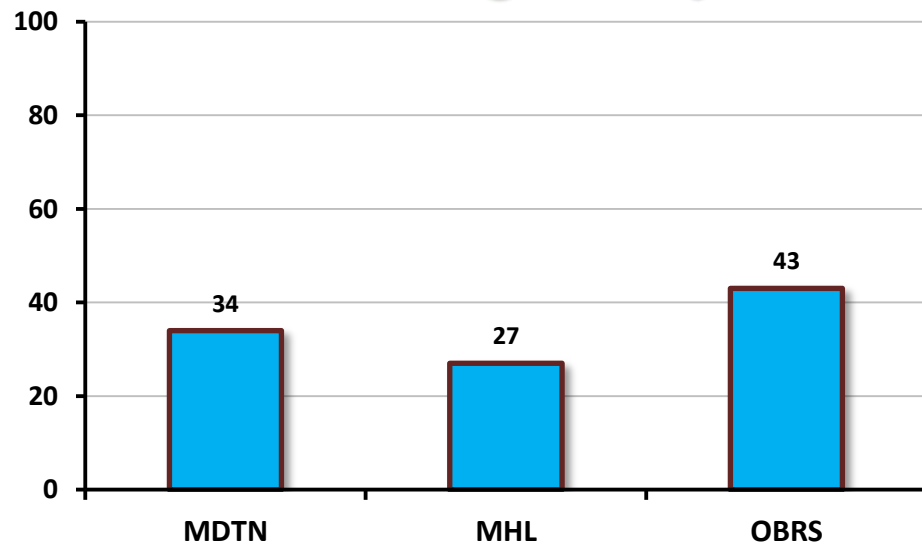
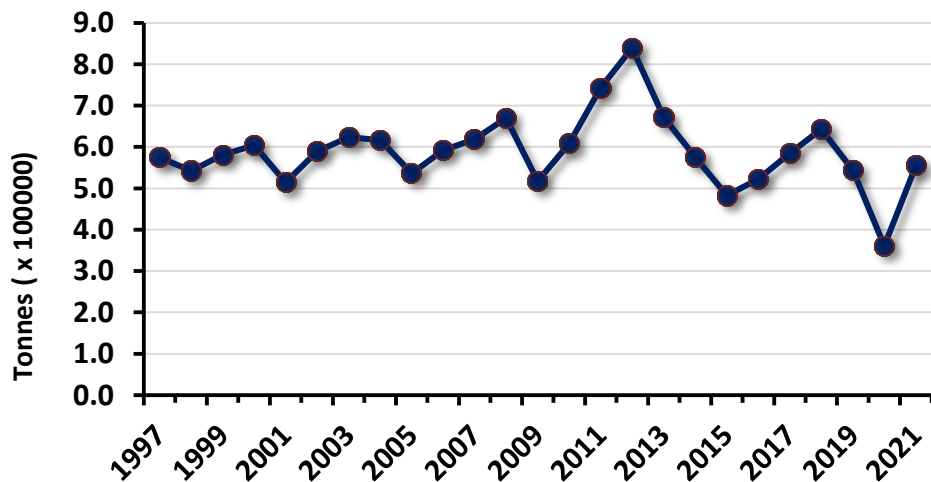
- Fishermen population increased during 1980 – 2010 and reduced slightly during 2010 -2016.
- Commercially important 21 fish stocks assessed.
- 14 % of the stocks are sustainable and 72% are overfished.
- Steady increase in number of mechanized fishing vessels during 1980-2005 and drastic reduction during 2010 – 2016.
- Recommends reduction in fishing hours by 62, 10 and 16% respectively for Mechanized multi-day trawlnets, Mechanized single day trawlnets and Mechanized gillnets in the state.

Kerala Stock Status - 25 Stocks - 2016



Fishing fleets (reduction % in fishing hours)

Marine fish catch

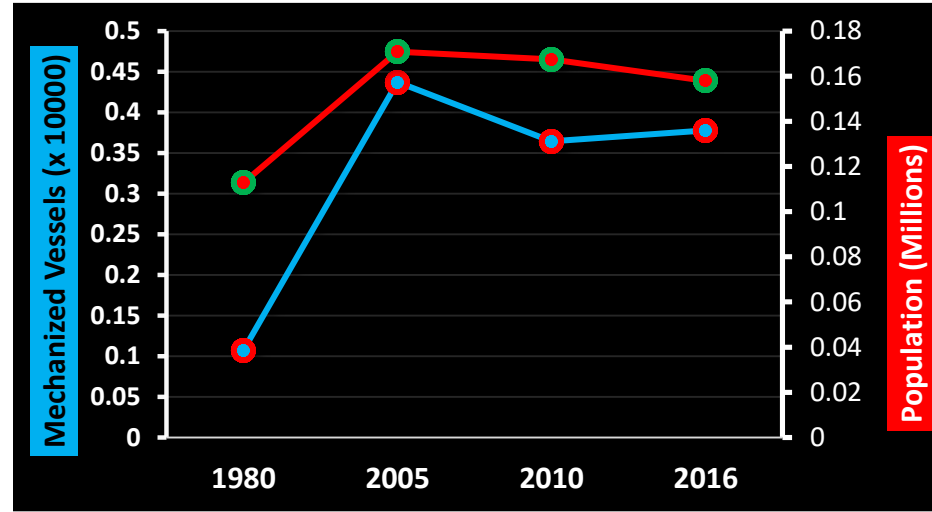
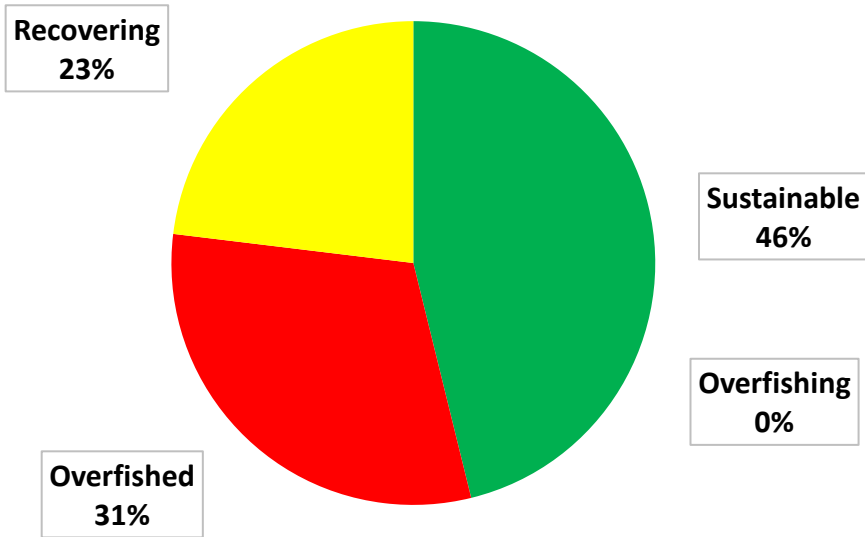


Kerala

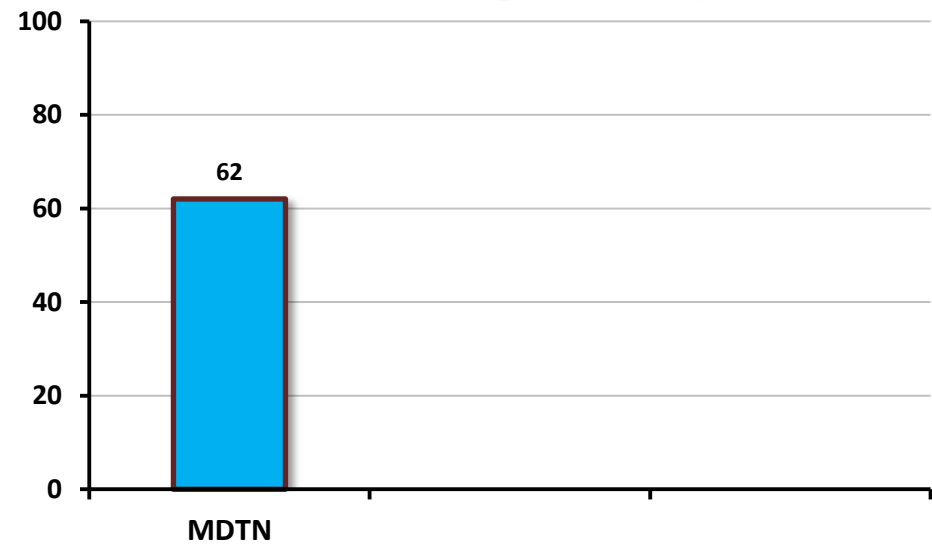
- Fishermen population reduced from 1980 – 2005, slight increase during 2005-2016 and further reduction observed during 2010 -2016.
- Commercially important 25 fish stocks assessed.
- 52 % of the stocks are sustainable and 24% are overfished.
- Steady increase in the number of mechanized fishing vessels during 1980– 2005 and steady reduction during 2005-2016.
- Recommends reduction in fishing hours by 34, 27 and 43% respectively for Mechanized multi-day trawlnets, Mechanized hooks & lines and Outboard ringseines in the state.

Karnataka

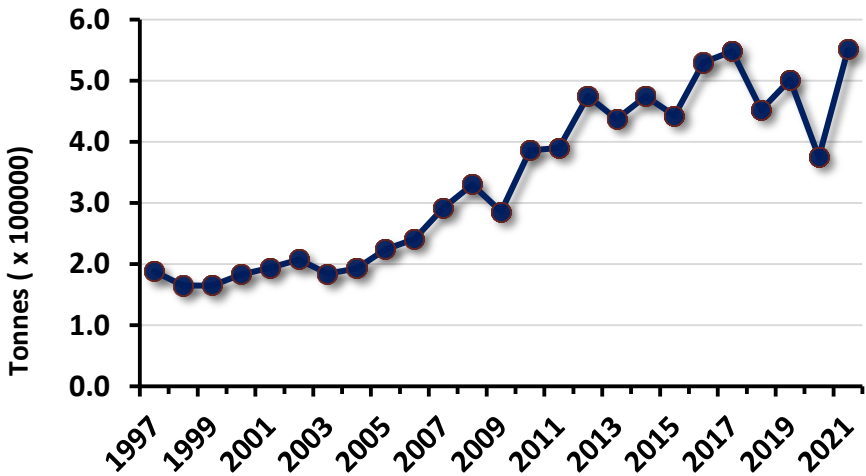
Karnataka Stock Status - 26 Stocks - 2016



Fishing fleets (% reduction in fishing hours)



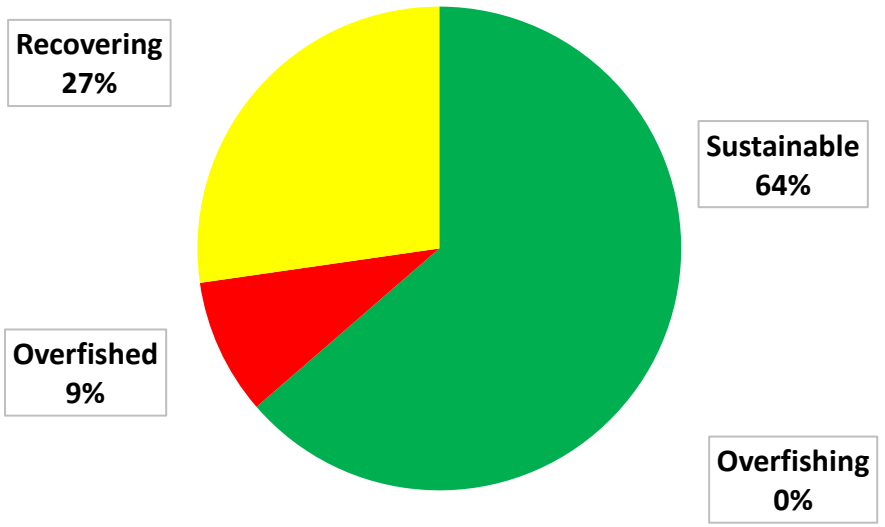
Marine fish catch



Karnataka

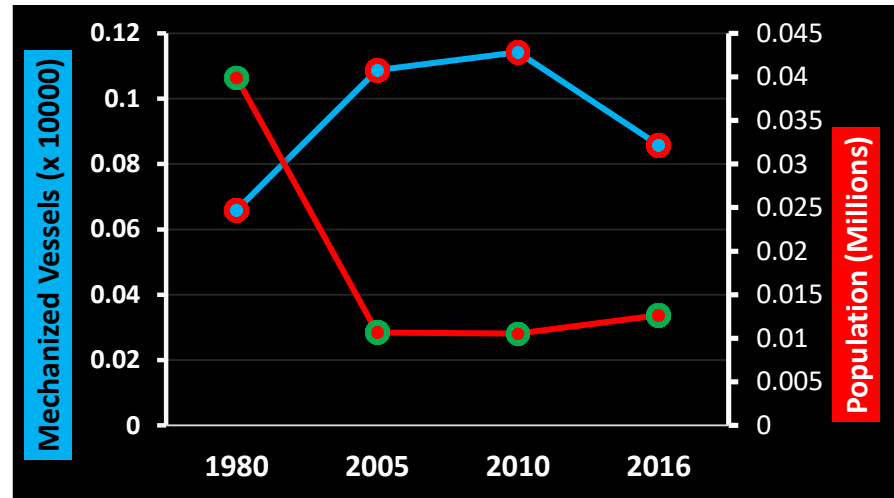
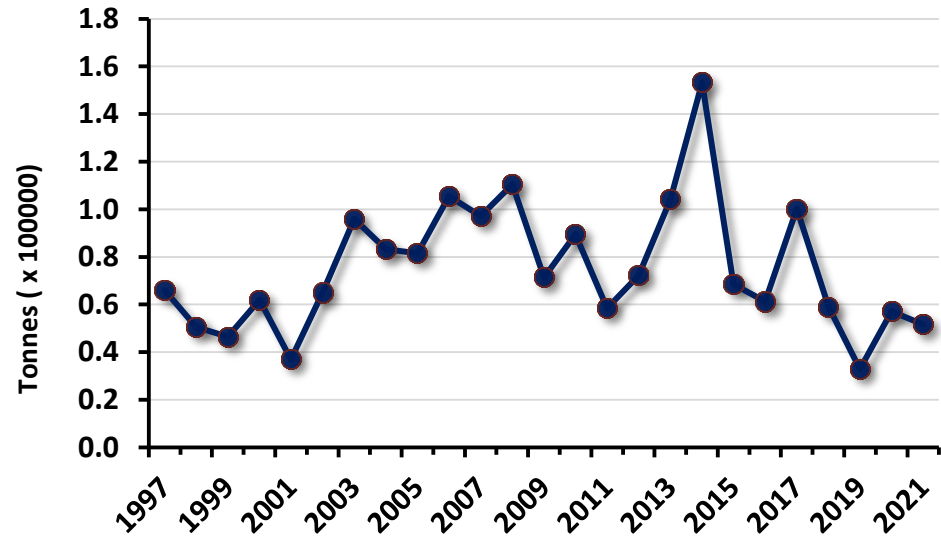
- Fishermen population increased during 1980 – 2005 and reduced slightly during 2005-2016.
- Commercially important 26 fish stocks assessed.
- 46% of the stocks are sustainable and 31% are overfished.
- Steady increase in the number of mechanized fishing vessels during 1980-2005, reduced during 2005-2010 and slightly increased during 2010 – 2016.
- Recommends reduction in fishing hours by 62% respectively for Mechanized multi-day trawlnets in the state.

Goa Stock Status - 11 Stocks - 2016



Goa

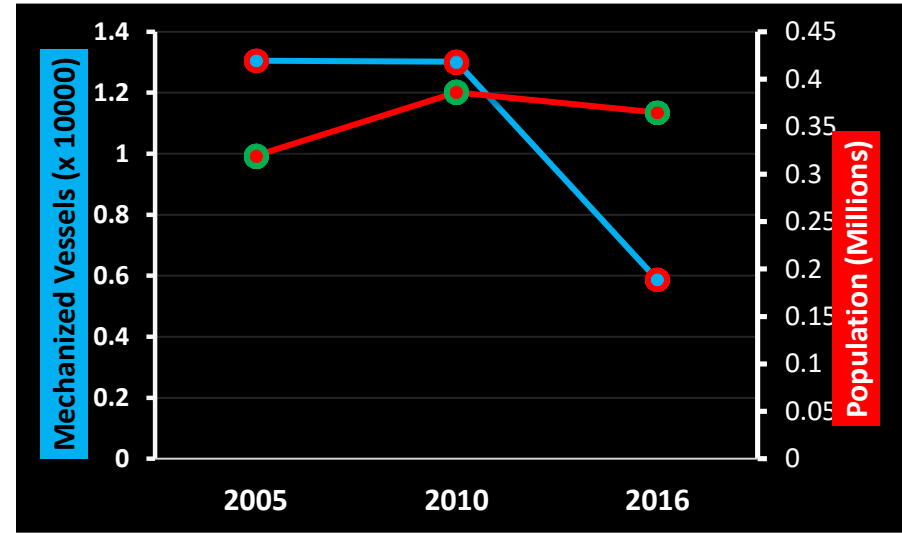
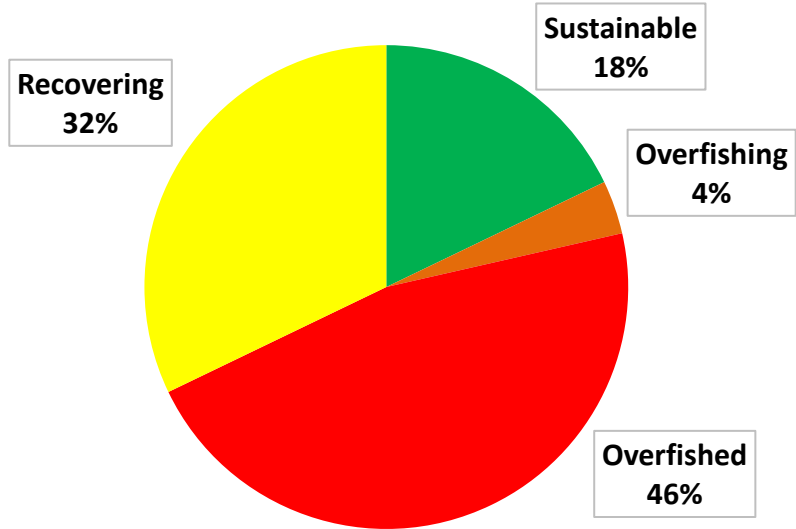
Marine fish catch



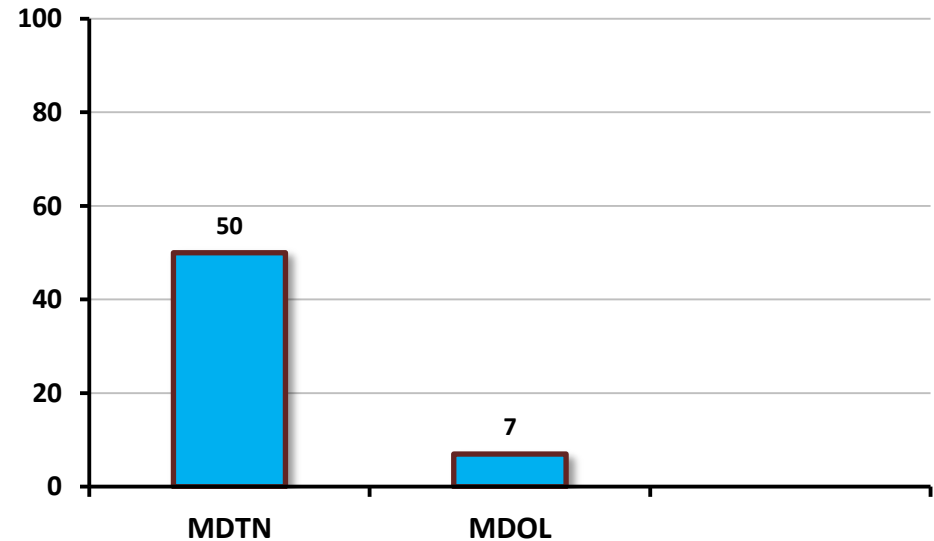
Goa

- Fishermen population increased slightly during 2005–2016.
- Commercially important 11 fish stocks assessed.
- 64% of the stocks are sustainable and 9% are overfished.
- Steady increase in the number of mechanized fishing vessels during 1980-2010 and reduced during 2010–2016.
- No recommendations for fishing fleets.

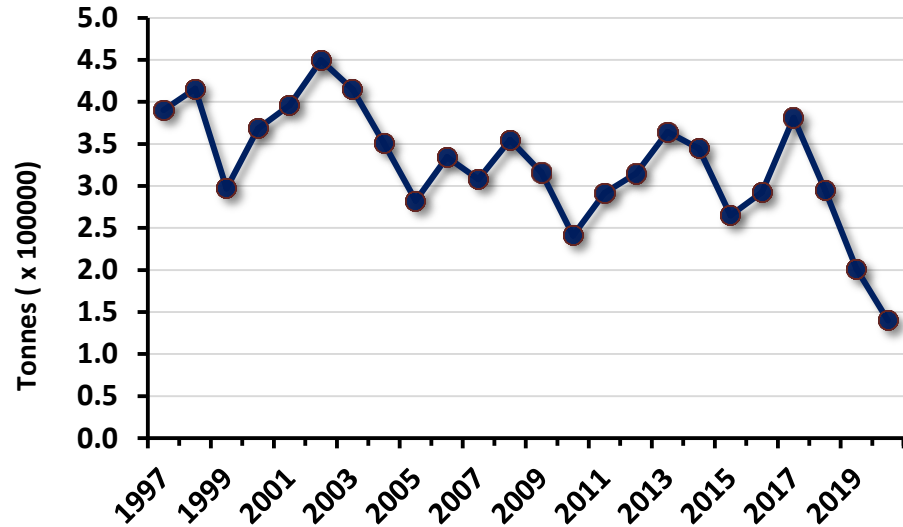
Maharashtra Stock Status - 28 Stocks - 2016



Fishing fleets (% reduction in fishing hours)



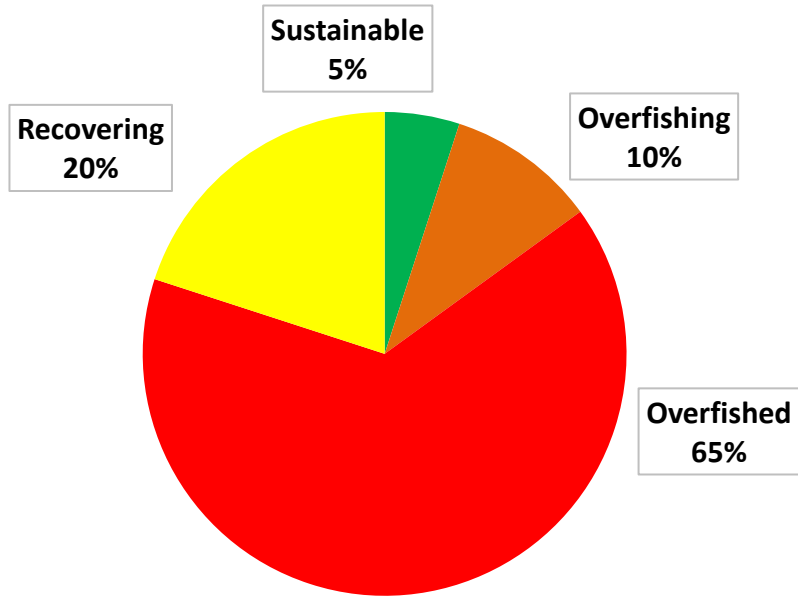
Marine fish catch



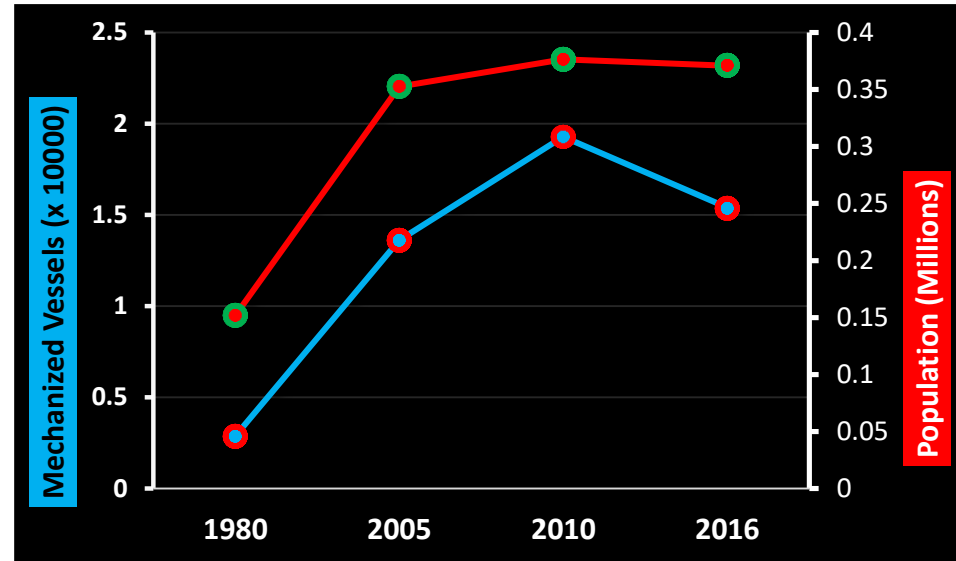
Maharashtra

- Fishermen population increased during 2005– 2010 and reduced little during 2010 -2016.
- Commercially important 28 fish stocks assessed.
- 18% of the stocks are sustainable and 46% are overfished.
- Reduction in number of mechanized fishing vessels during 2010 – 2016.
- Recommends reduction in fishing hours by 50 and 7% respectively for Mechanized multi-day trawlnets and Mechanized dolnets in the state.

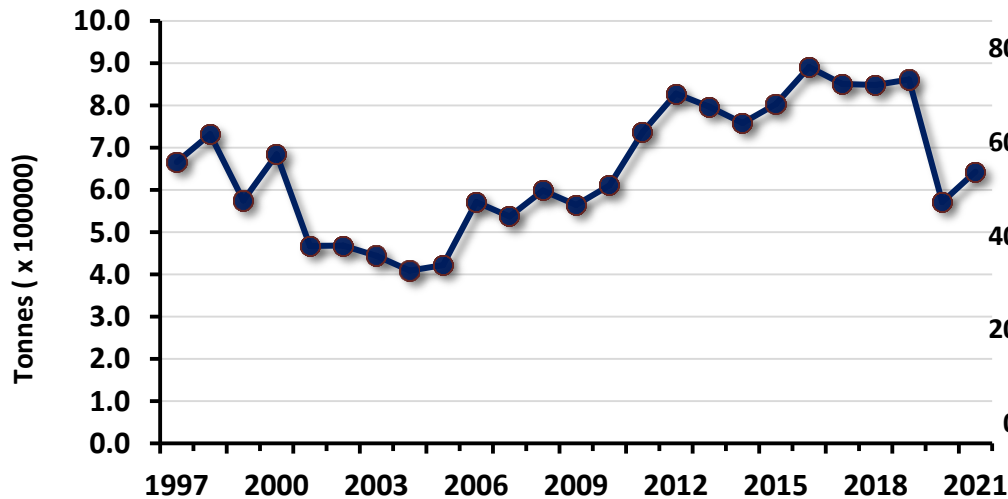
Gujarat & DD Stock Status - 20 Stocks - 2016



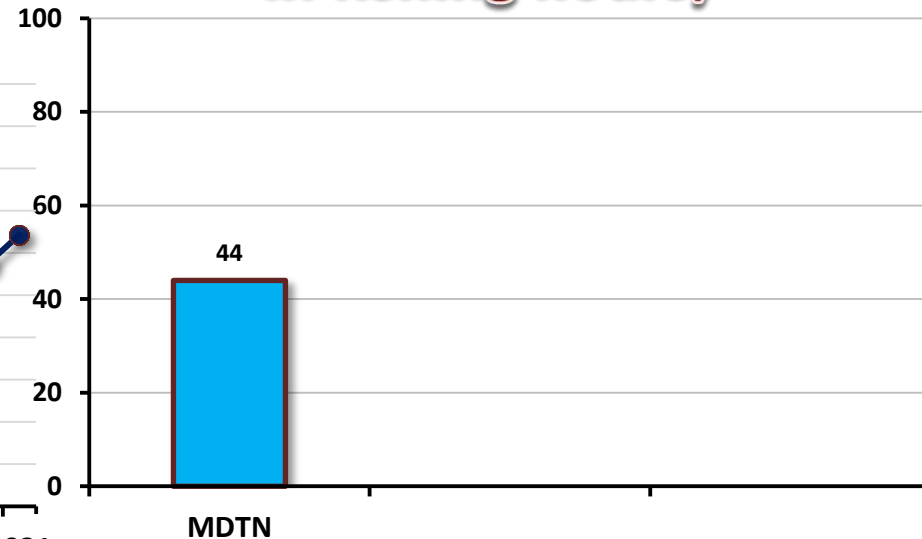
Gujarat & DD



Marine fish catch



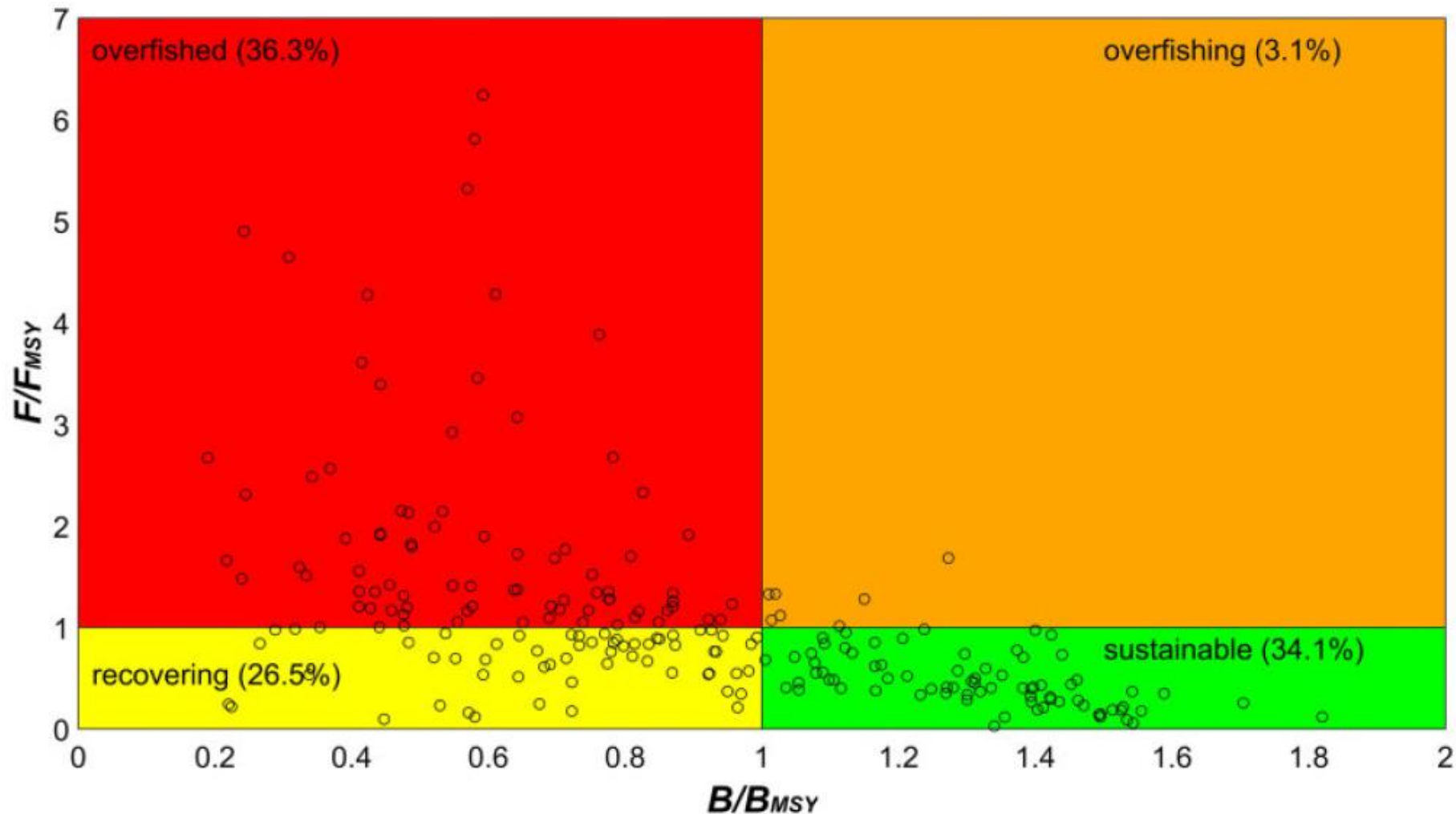
Fishing fleets (reduction % in fishing hours)



Gujarat & DD

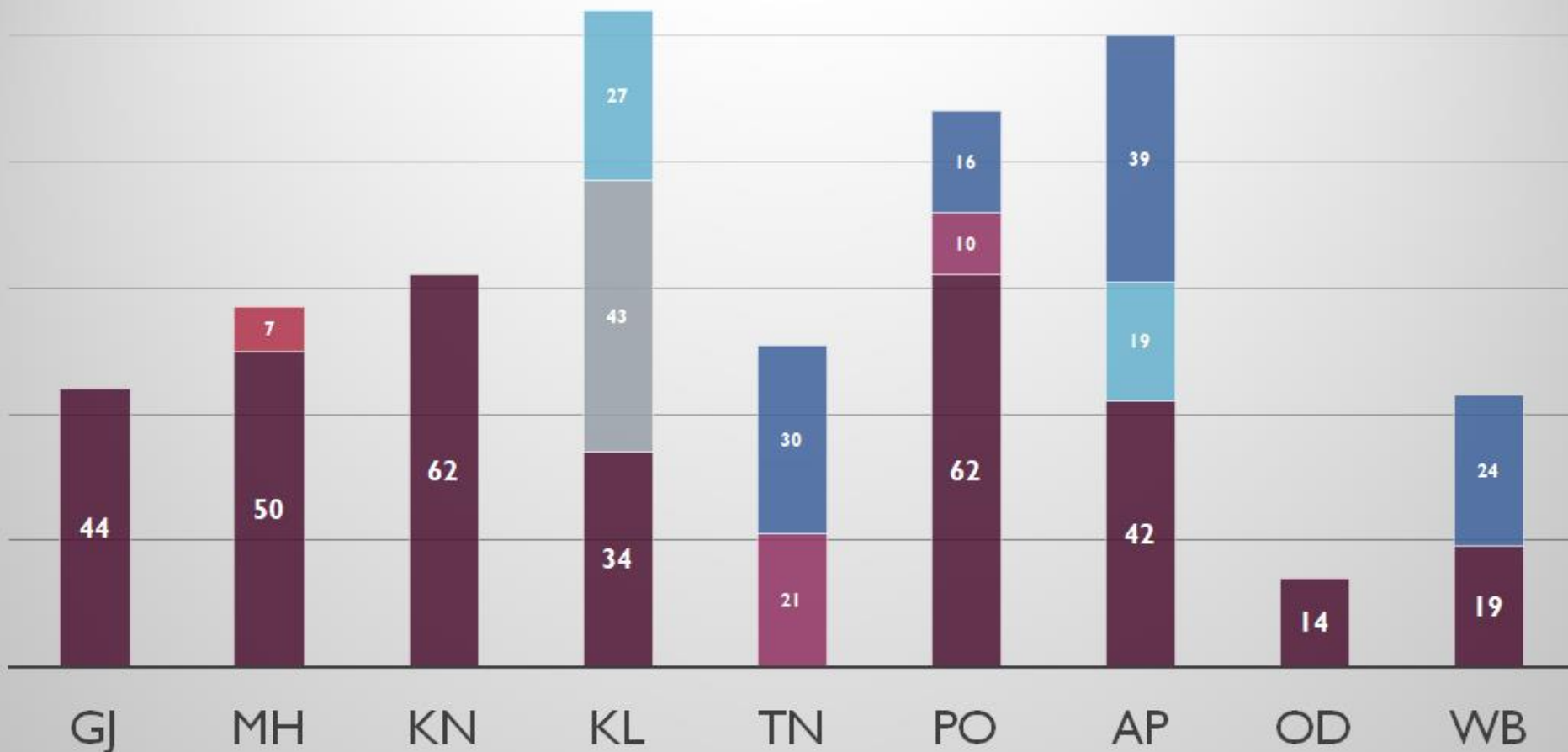
- Steady increase in fishermen population during 1980 – 2005 and slight increase during 2005-2016.
- Commercially important 20 fish stocks assessed.
- 5 % of the stocks are sustainable and 65% are overfished.
- Steady increase in the number of mechanized fishing vessels during 1980– 2010 and reduced during 2010-2016.
- Recommends reduction in fishing hours by 44% for Mechanized multi-day trawlnets in the state.

Kobe plot indicating status of all 223 fish stocks



Reduction of fishing hours (%)

MDTN MTN MDOL OBRS H&L GN



Andaman & Nicobar

- Assessment based on catch only limited situation (CMSY estimation method)
- Commercially important 10 fish stocks assessed.
- 70 % of the stocks are sustainable and 30% are overfished.

Thank You