

Variable Pelagic and Demersal Marine Ecosystems and Fisheries around Japan

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Fishes managed by TAC in Japan



Jack mackerel



saury



Walleye pollock



Japanese common squid



sardine



Chub mackerel

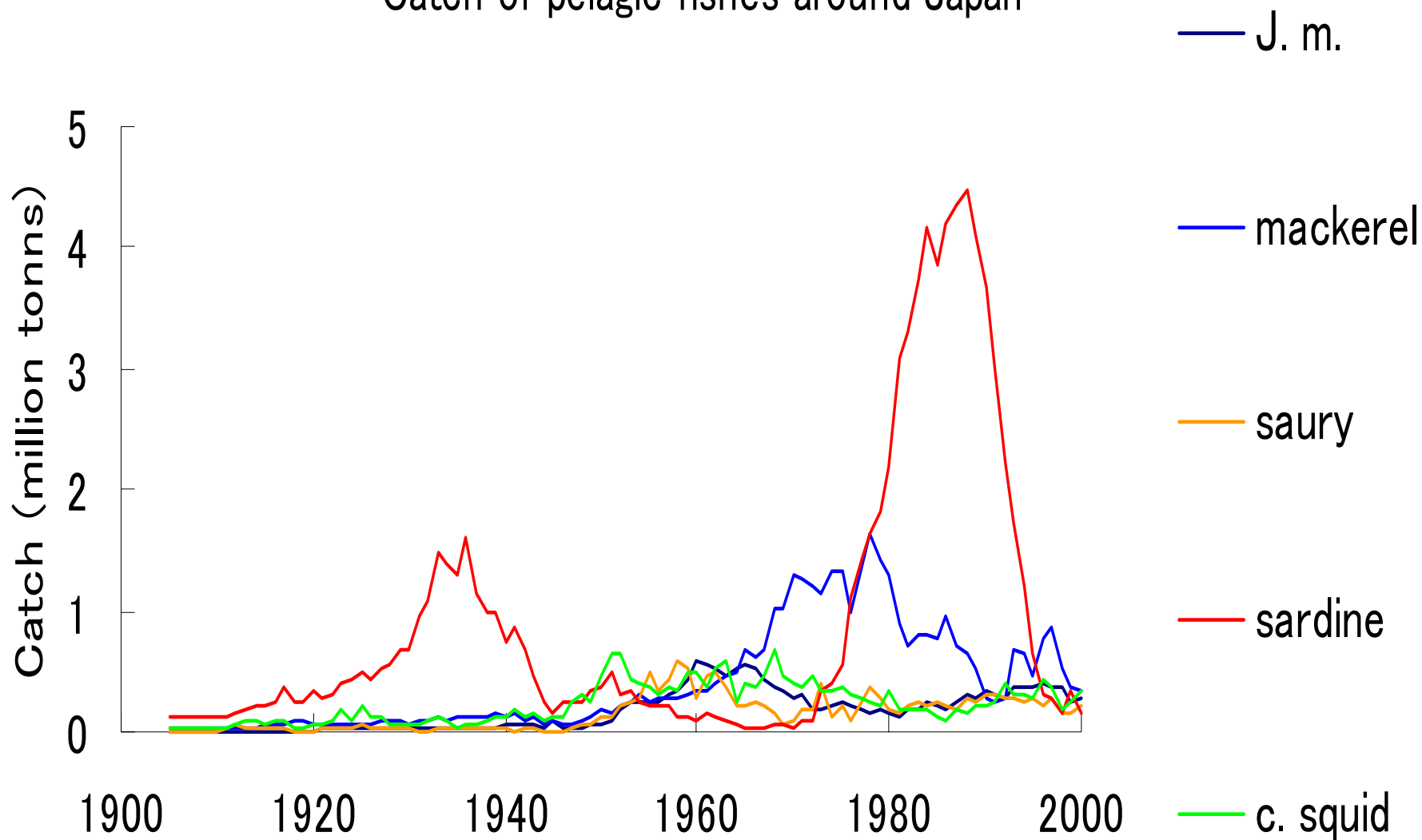


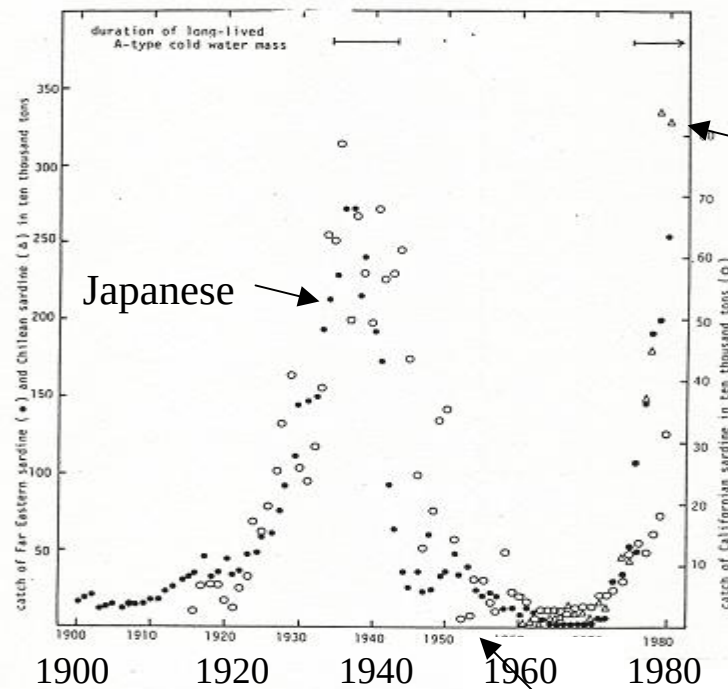
Snow crab



Spotted mackerel

Catch of pelagic fishes around Japan

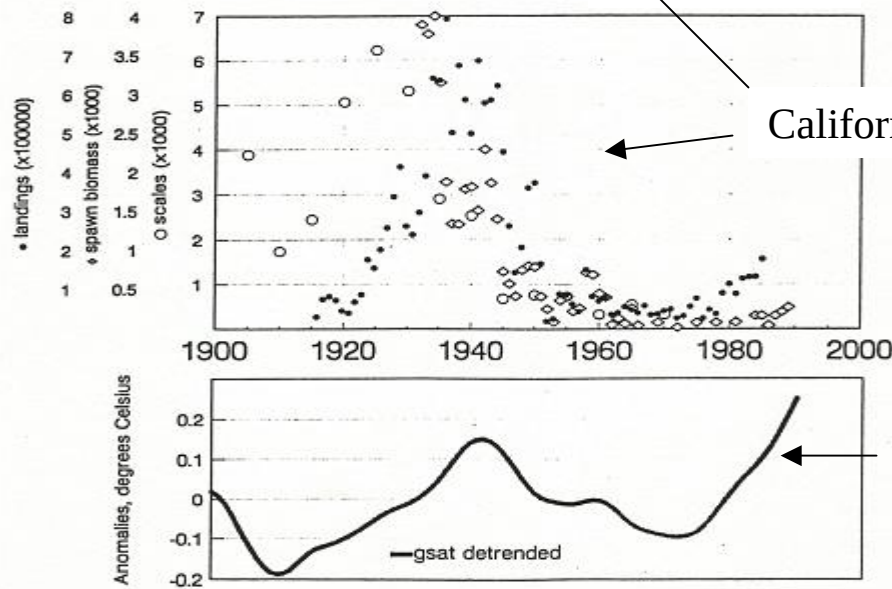




Japanese

Chilean

Kawasaki (1983)

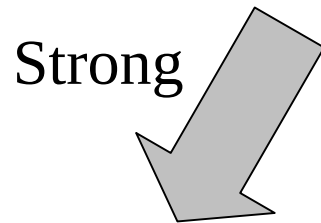


Californian

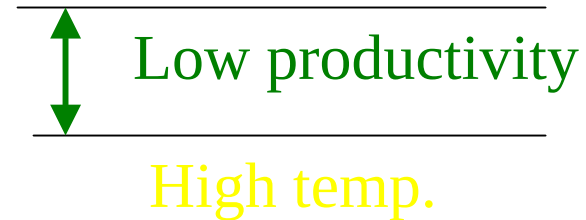
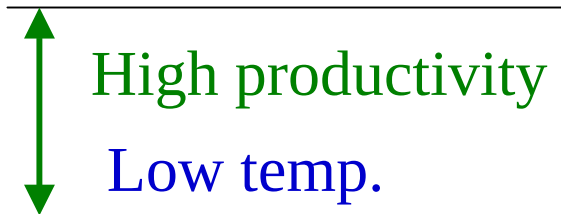
Global air surface temp.

Lluch-Belda *et al.* (1992)

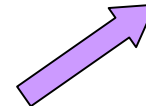
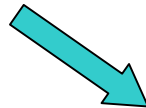
Climate and sardine stock fluctuation



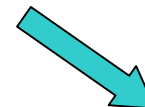
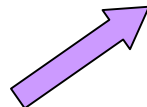
Mixed
layer

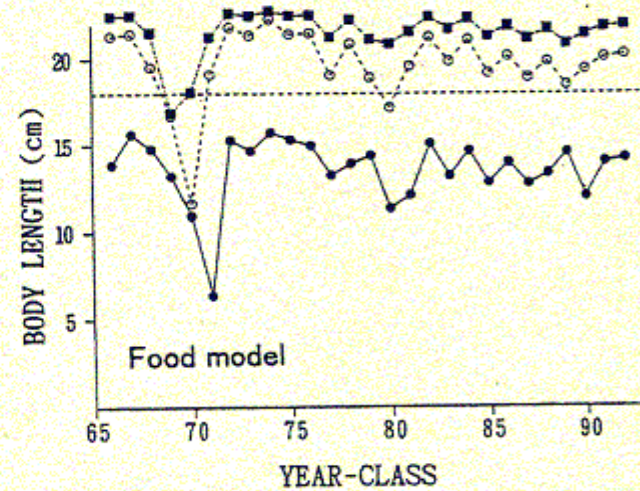
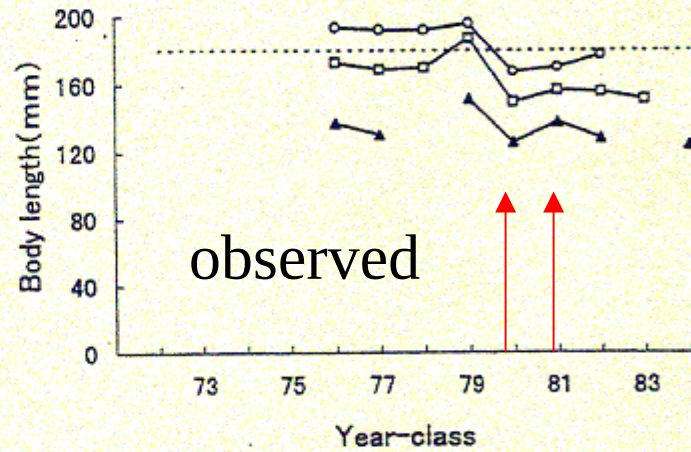
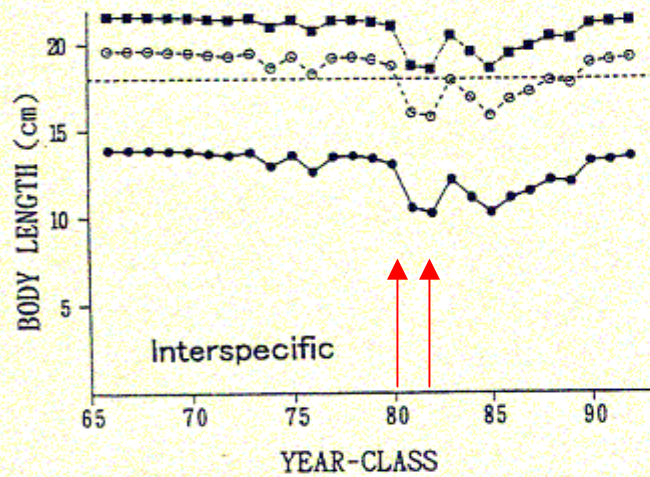


Predator

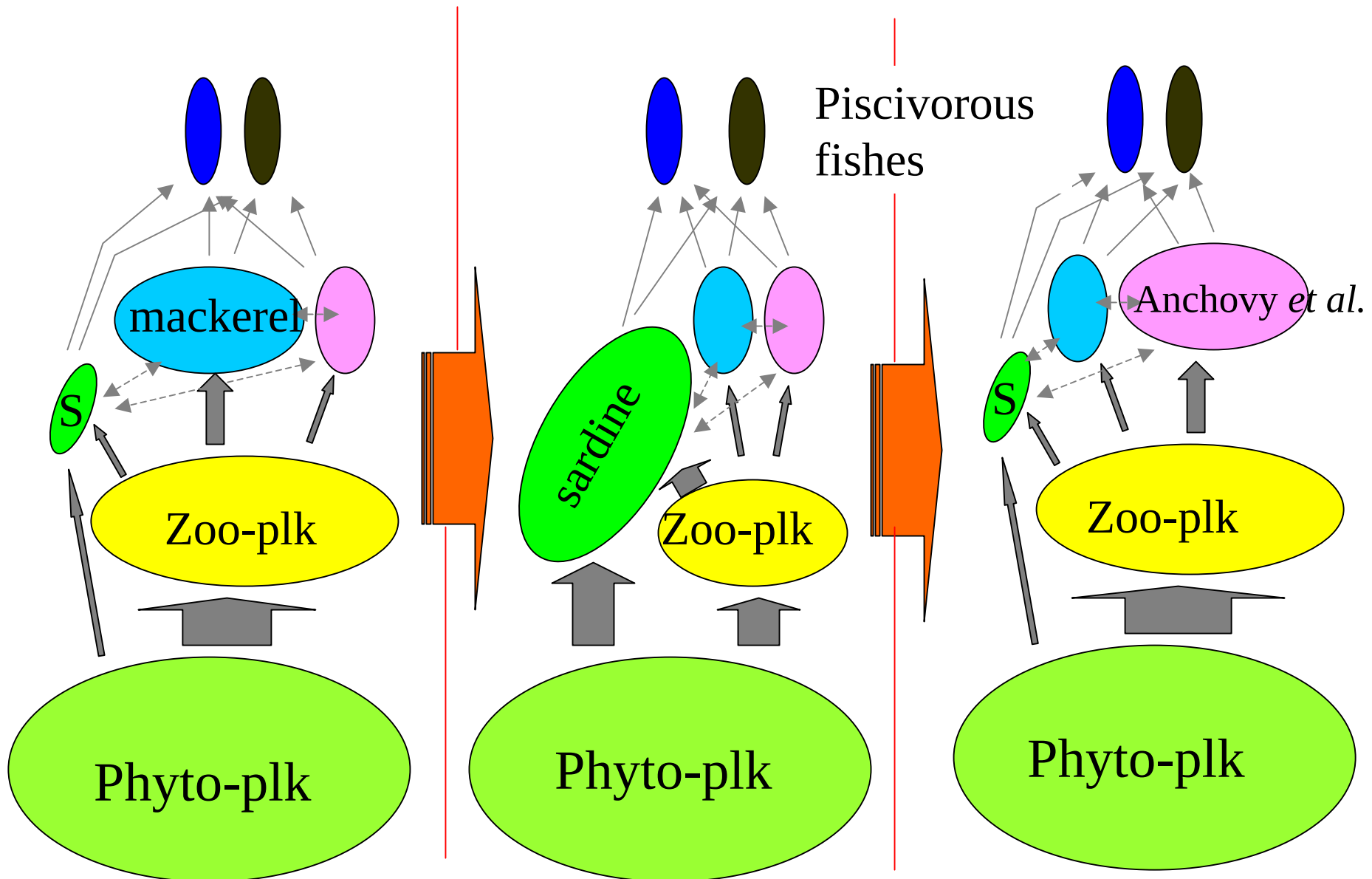


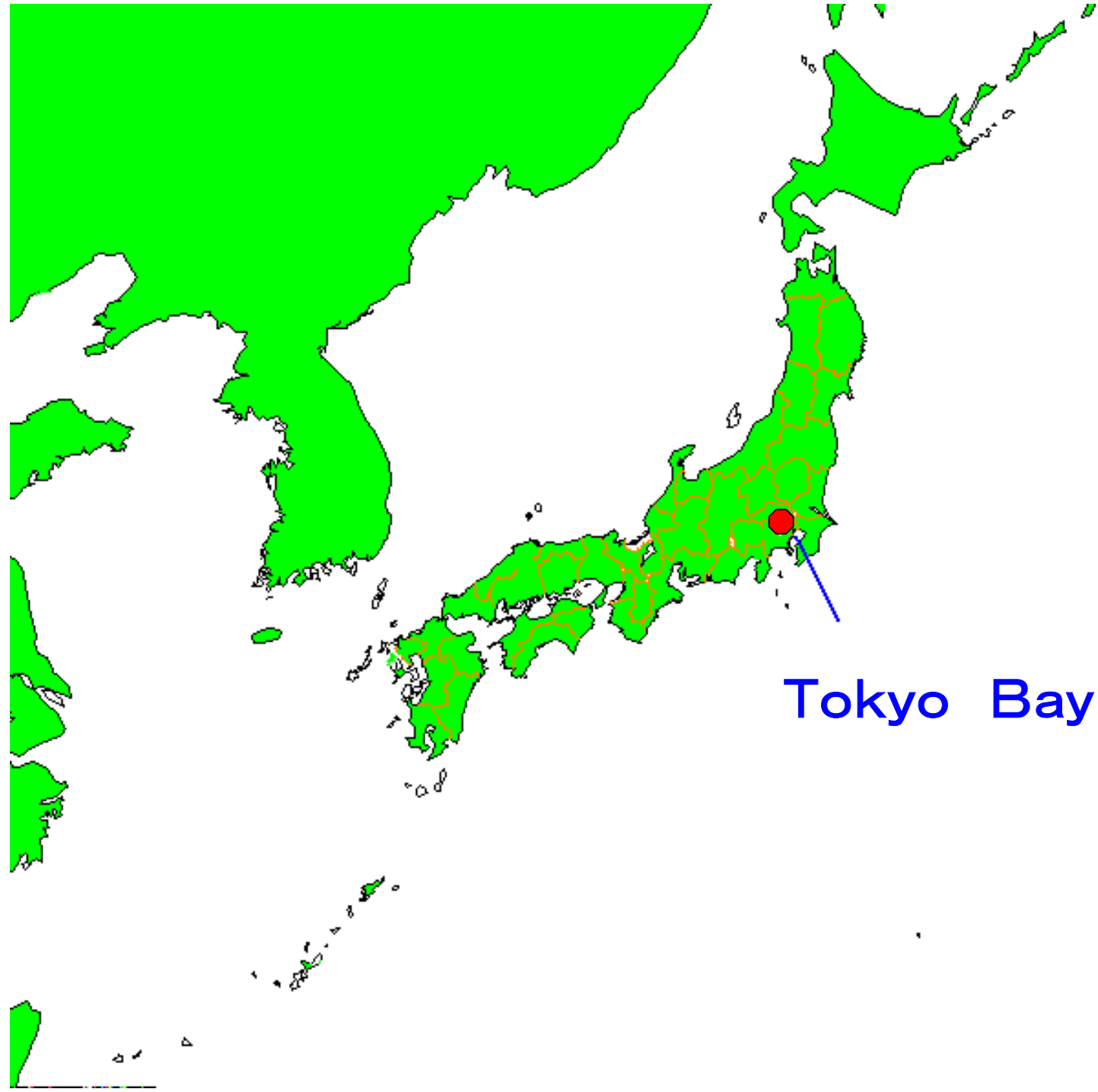
Sardine abundance





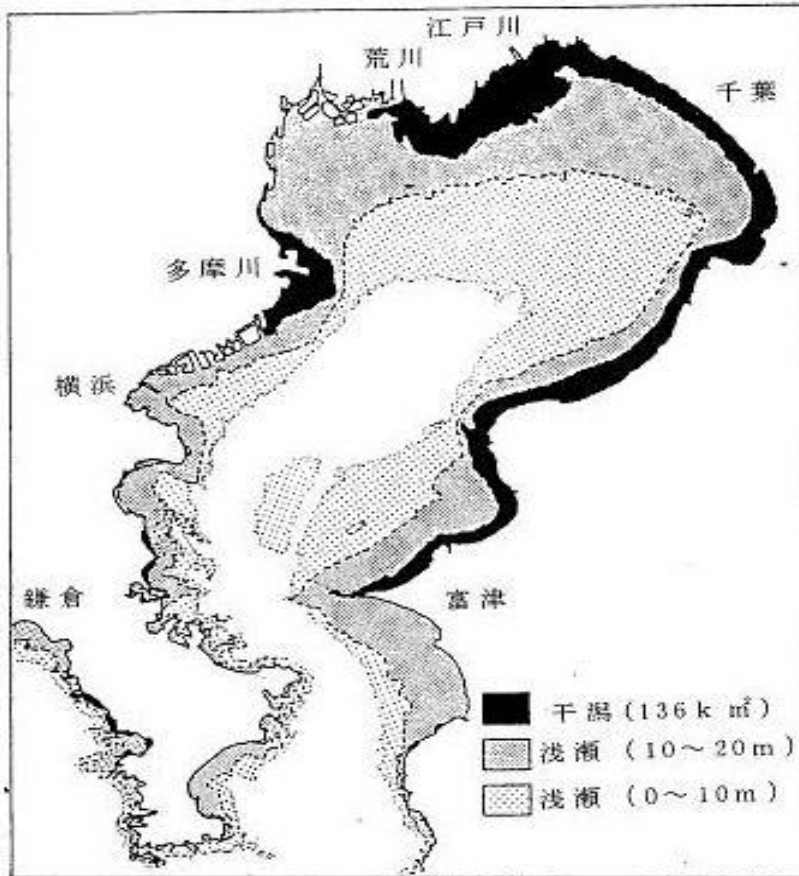
Schematic diagram of pelagic food-web around Japan



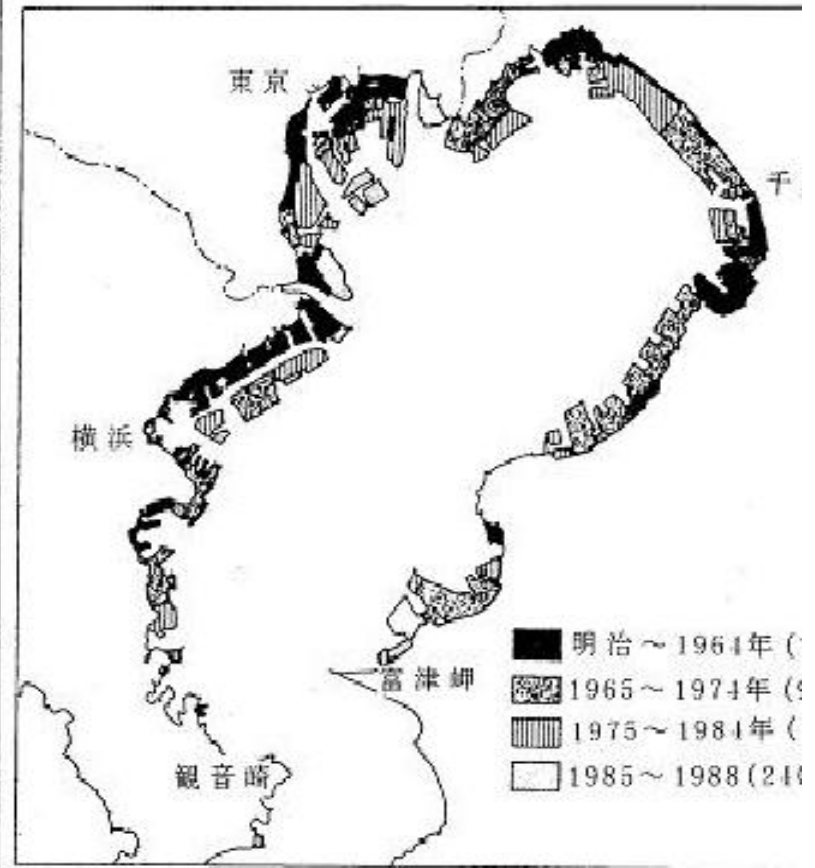


Tokyo Bay

Tokyo Bay

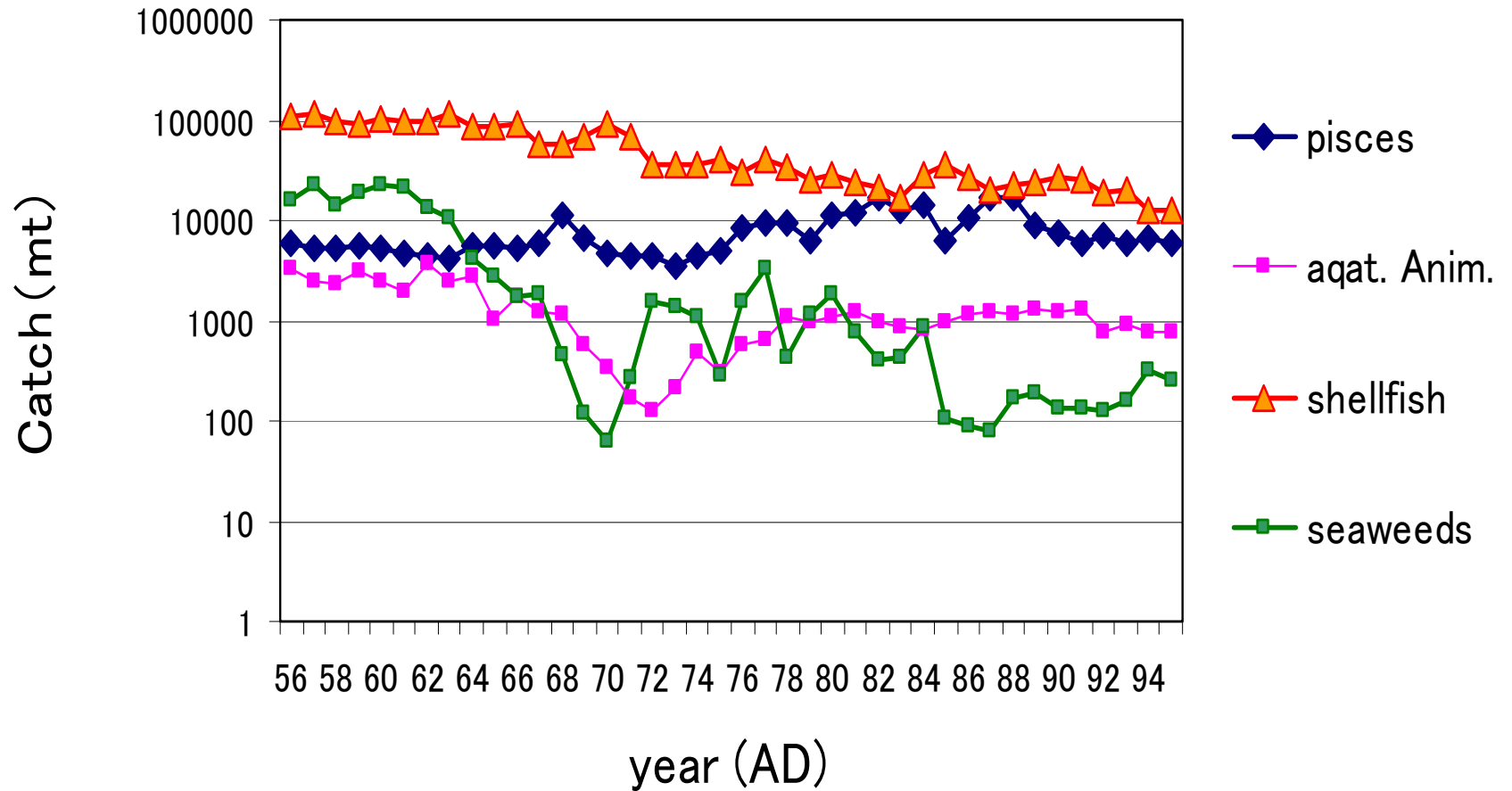


Tidal flat and shallow waters in 1936

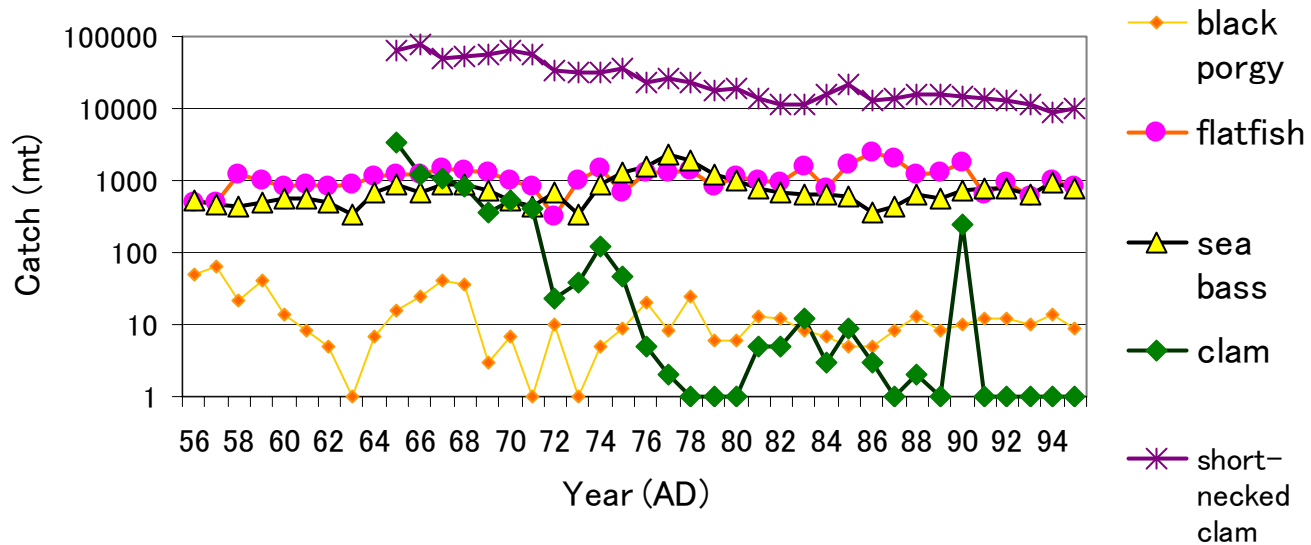
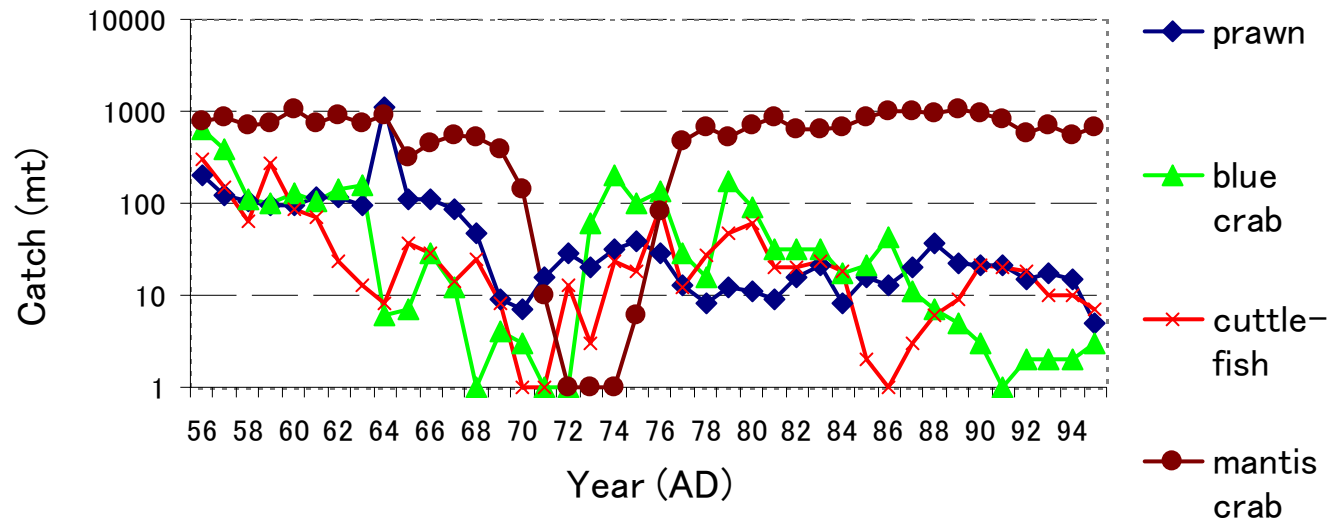


Reclaimed land in 1988

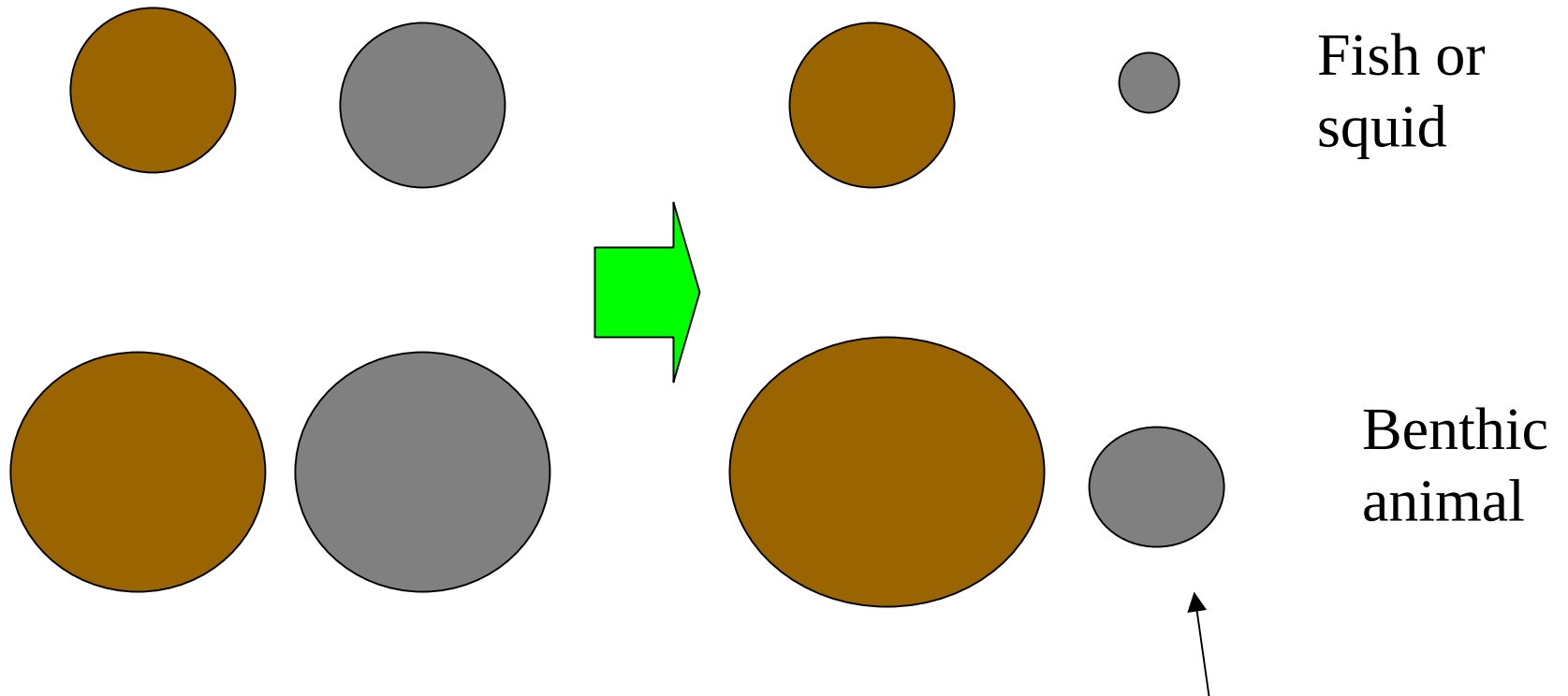
Yearly change of catch in Tokyo Bay



Yearly change of catch in Tokyo Bay



Schematic diagram of change of ecosystem in Tokyo Bay



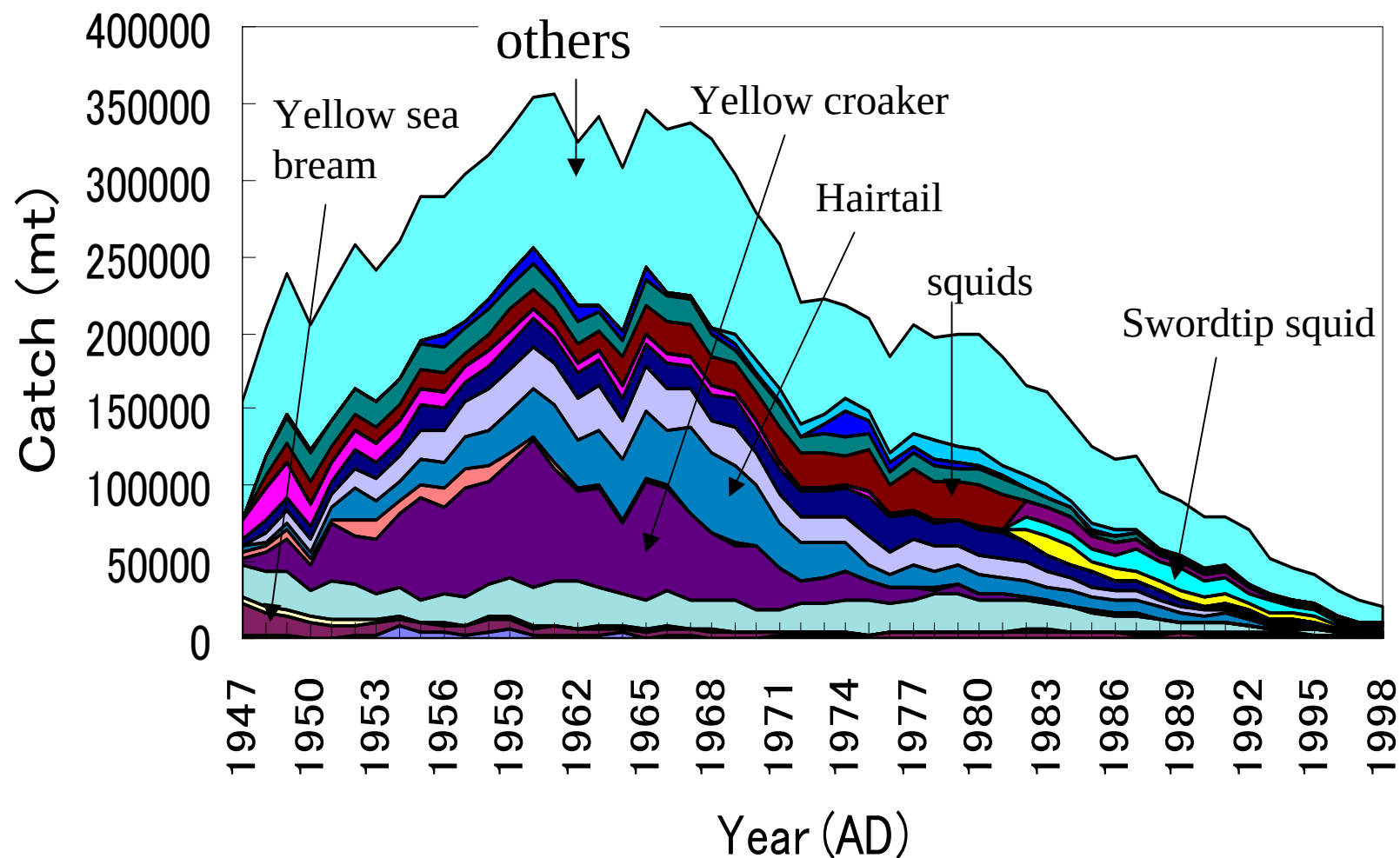
loss of habitat or nursery ground for a certain species caused a decrease of diversity of species



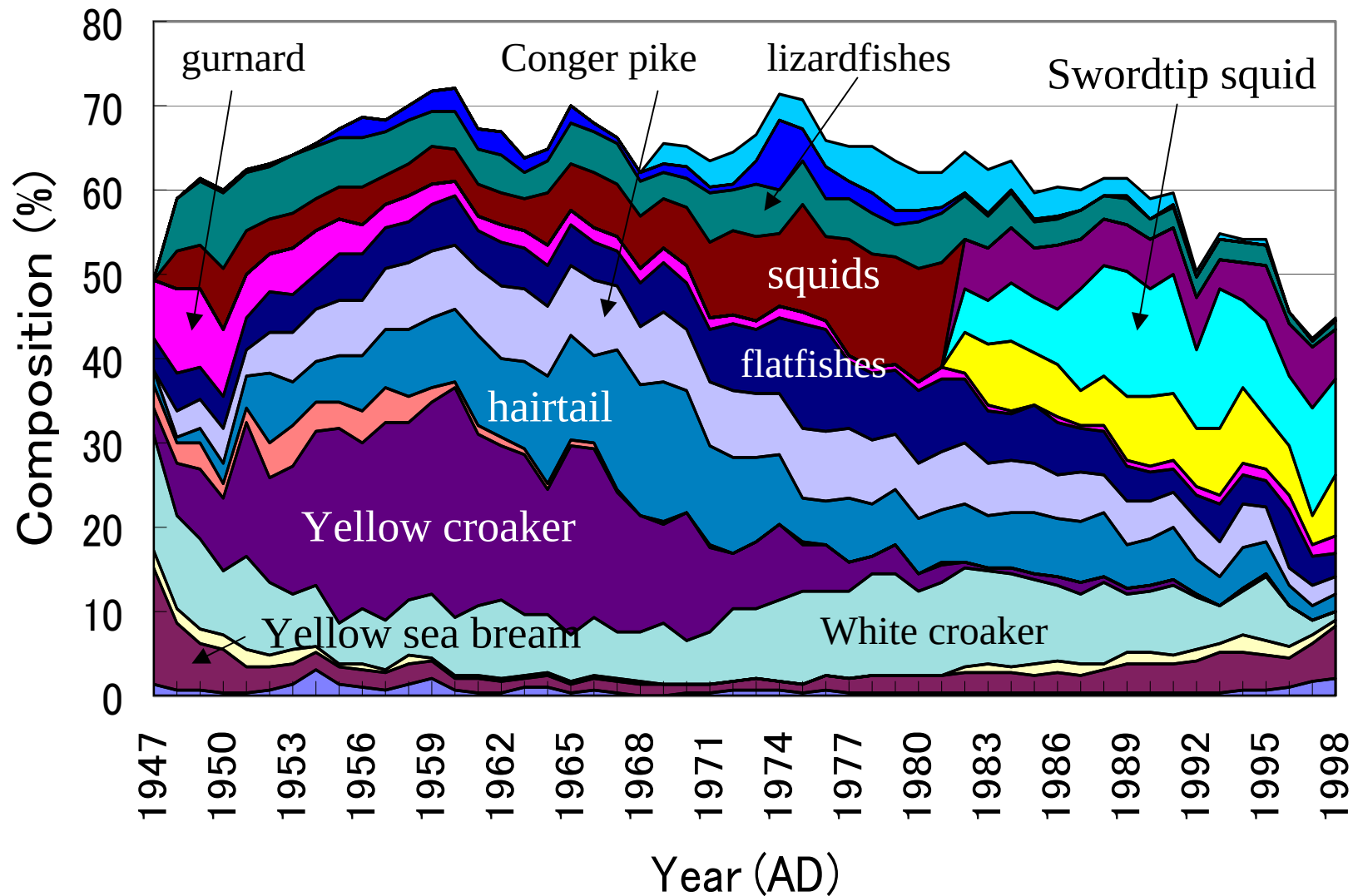
East China
Sea

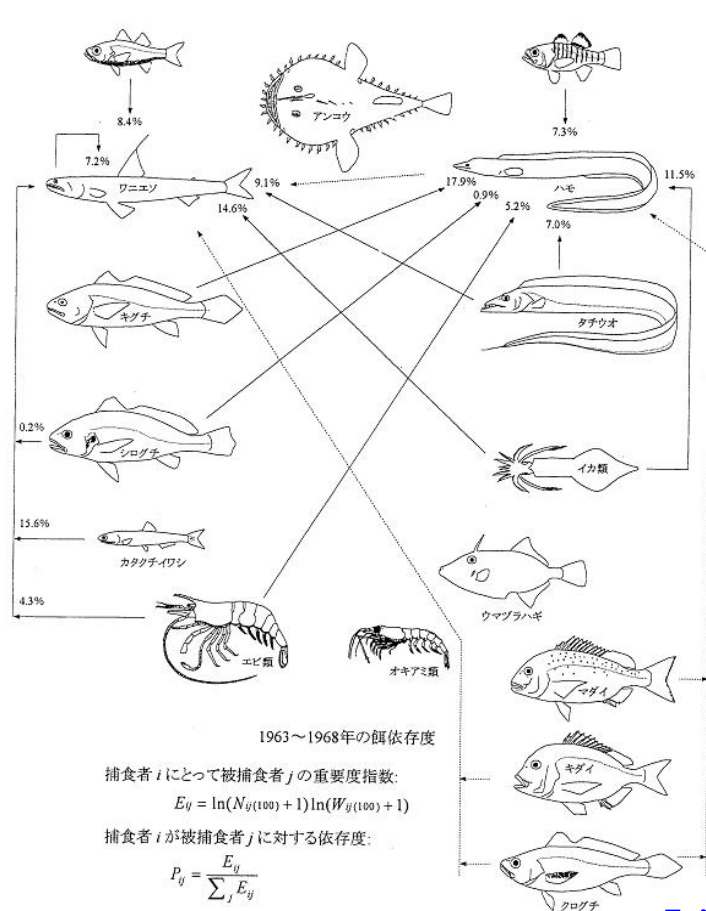
Tokyo Bay

Yearly catch by Japanese pair trawler in East China Sea

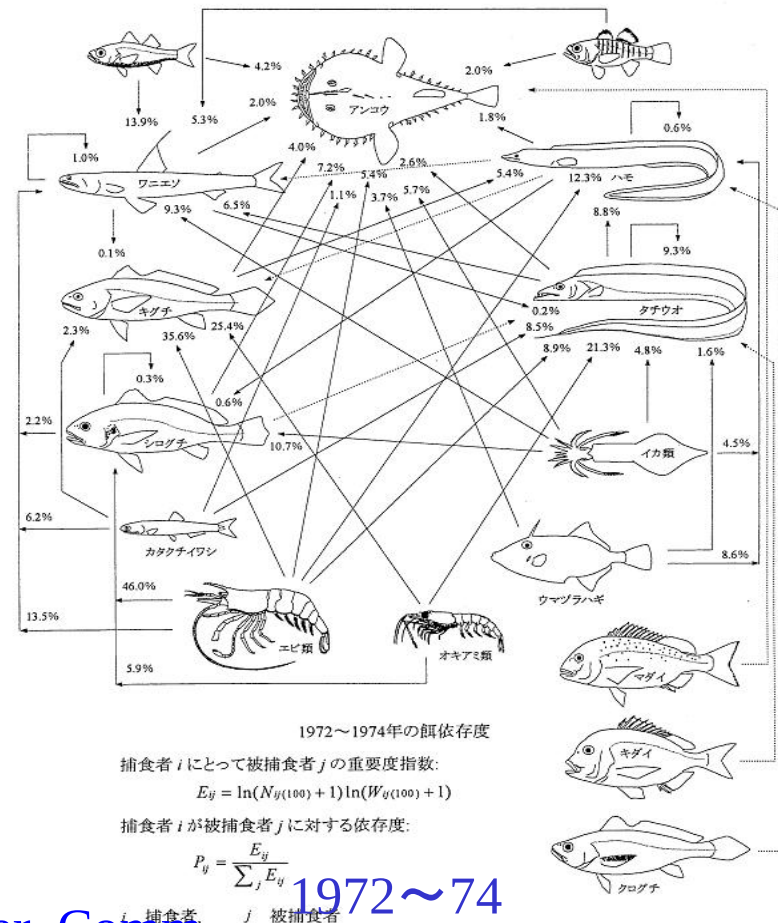


Species composition of catch by Japanese pair trawler





1963~68



1972~74

Liang per. Comm.

- 1) Adaptive management intend to all target species by trawl fishery.
- 2) Input control management, i.e., reduction of fishing effort
- 3) Other management measures such as setting marine preserves.