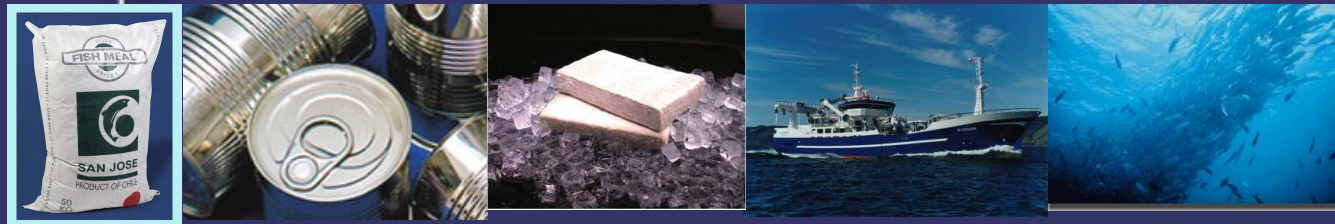


SCIENTIFIC WORKING GROUP - SPFMRO

Research for management of Chilean Jack Mackerel (*Trachurus murphyi*) exploited in the South East Pacific Ocean

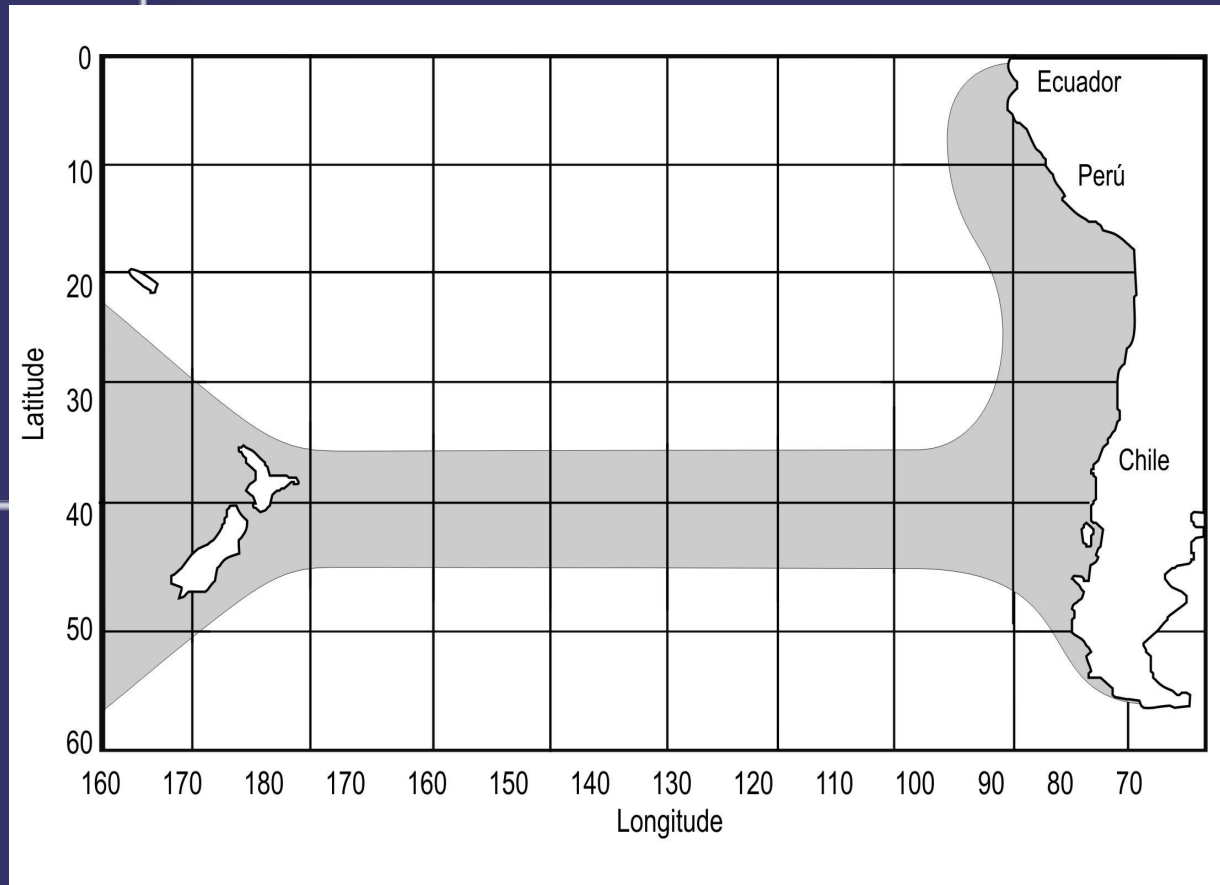
María Angela Barbieri
Undersecretariat for Fisheries
Chile



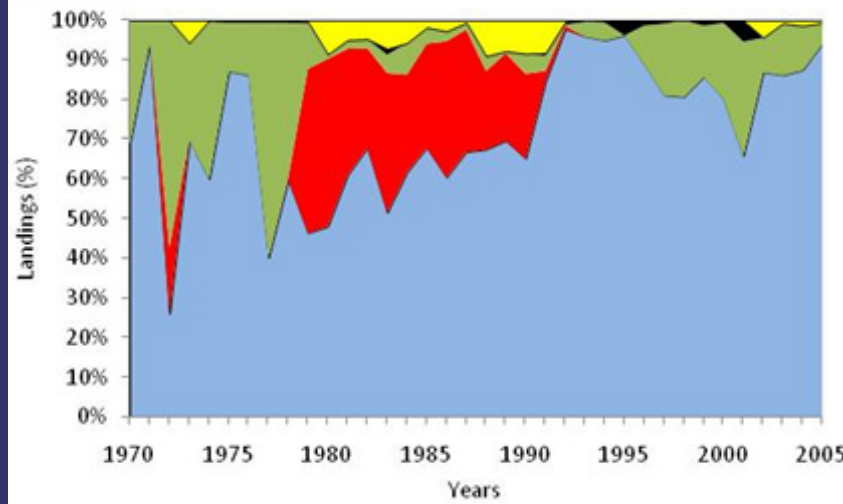
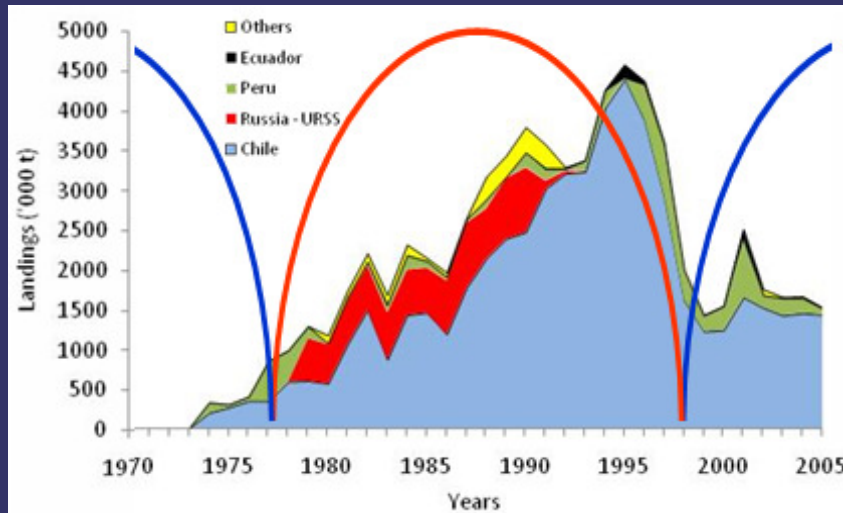
2008



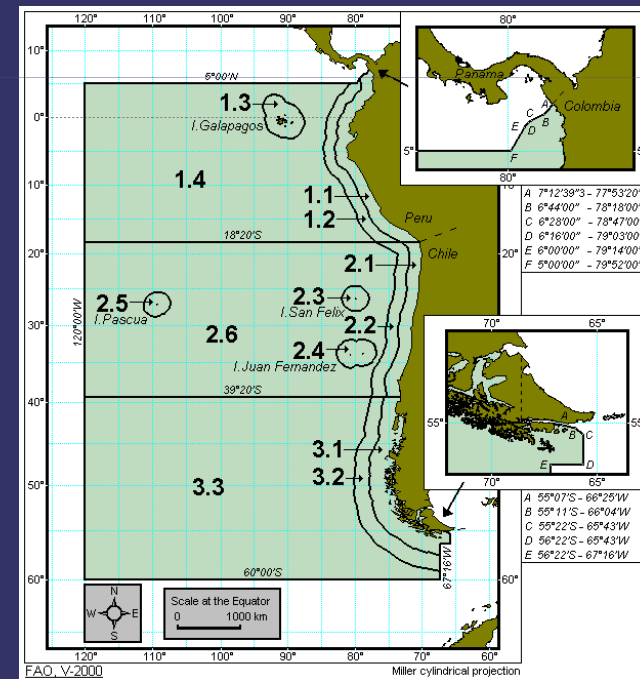
Distribution of jack mackerel (*Trachurus murphyi*) in the South Pacific Ocean

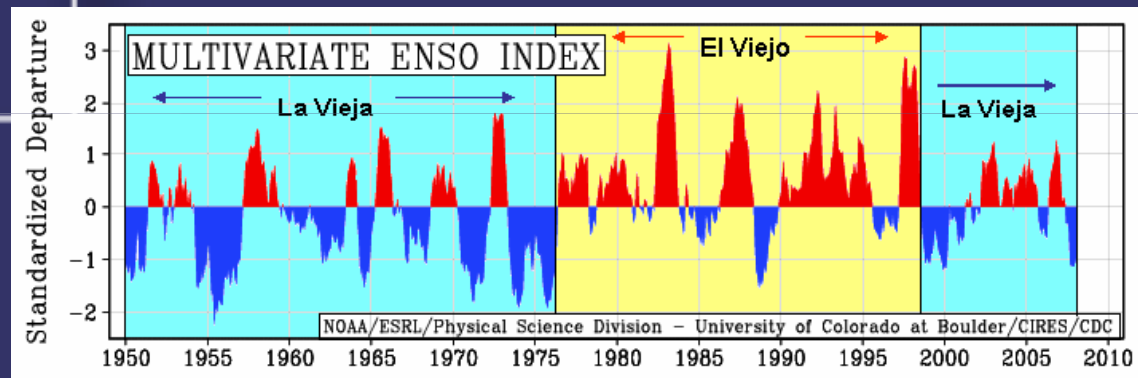


Jack mackerel landings in South East Pacific (FAO Area 87)

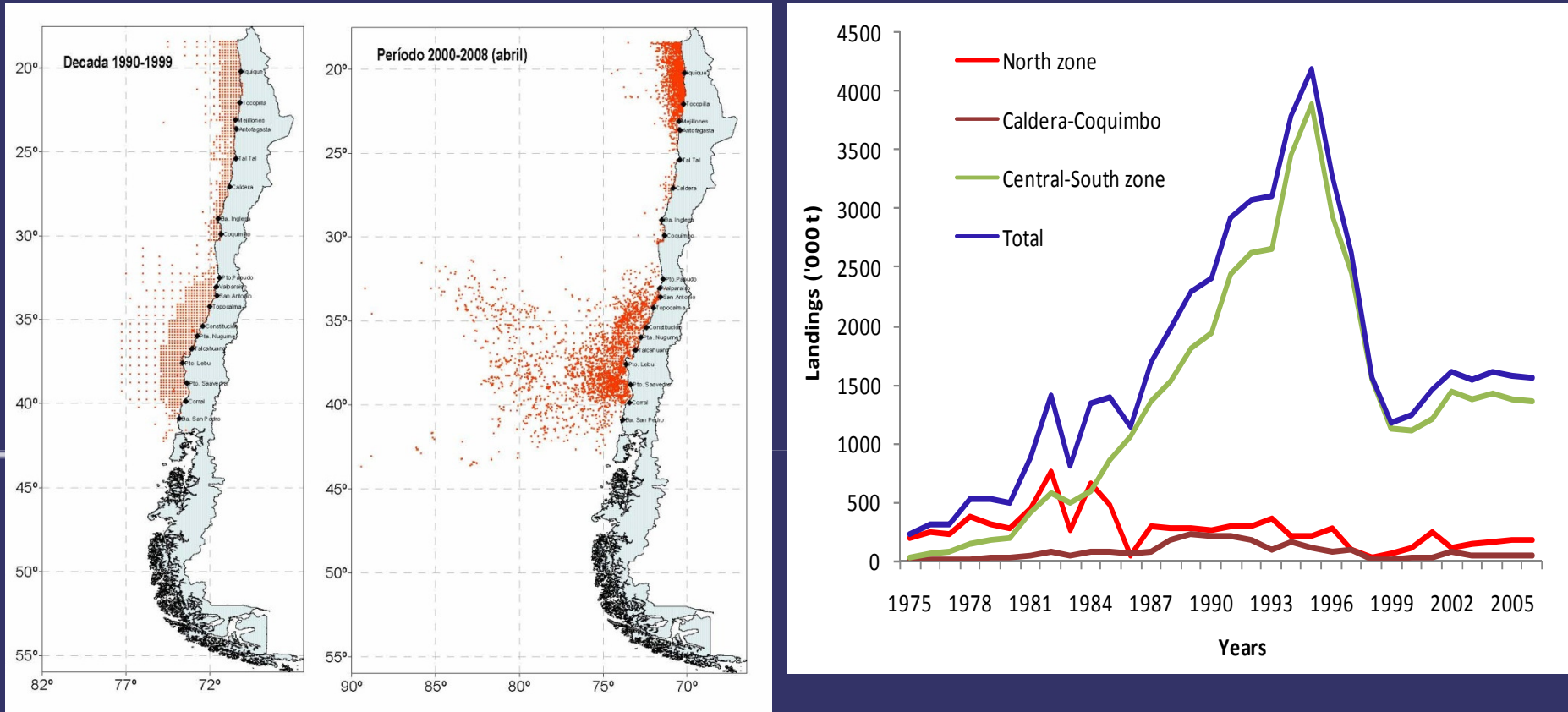


In the past 16 years, average annual Chilean catches have amounted to 86% of the landings recorded in FAO statistical area 87





Jack mackerel landings in Chile



Since 2001, catch levels stabilized at around 1.5 million tons per year, as a result of the maximum allowable catch quotas established by the fisheries authorities.



Governmental research for jack mackerel management

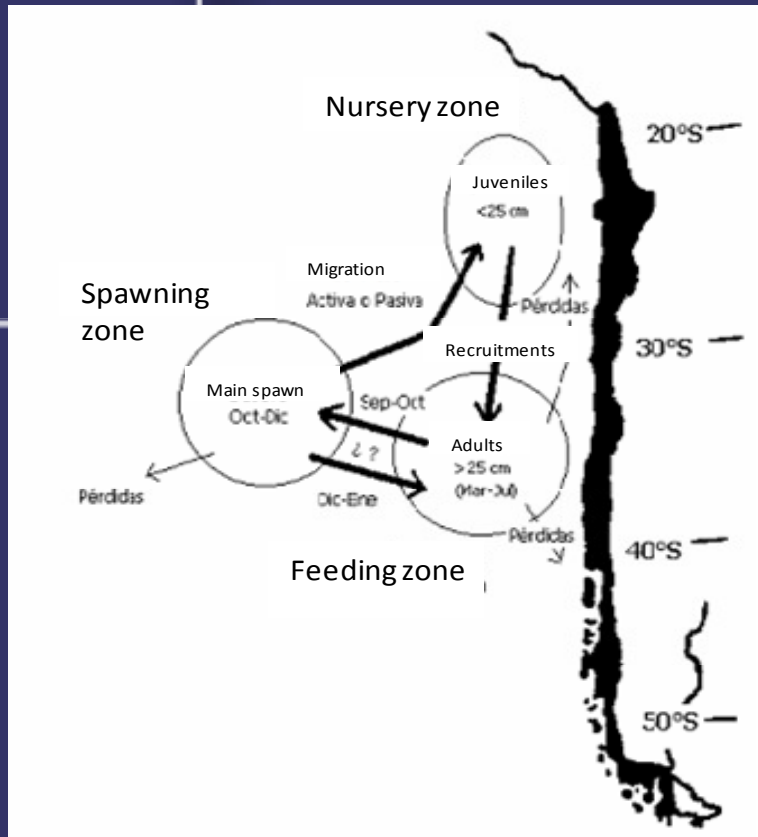
The researches for the jack mackerel management has been conducted by 5 main programs:

- Monitoring of national fisheries
- Acoustic surveys program
- Monitoring of reproductive conditions
- Monitoring of environmental conditions
- Stock assessment and TAC estimation



Migration model

The Chilean research has allowed generate a spatial movement model of jack mackerel (Arcos et al, 2001)

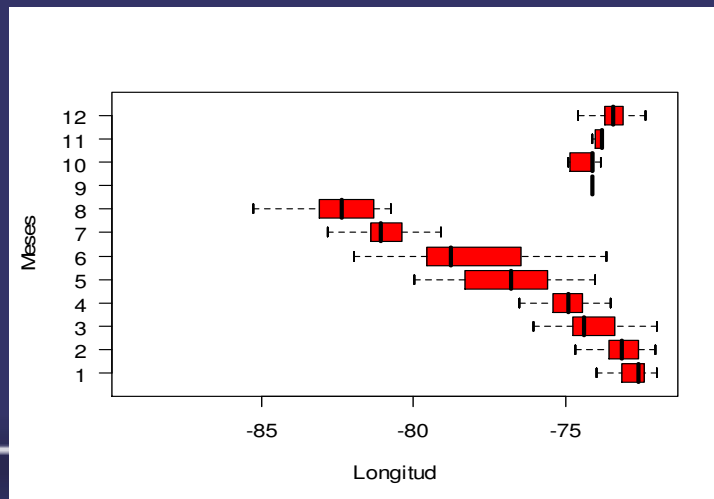
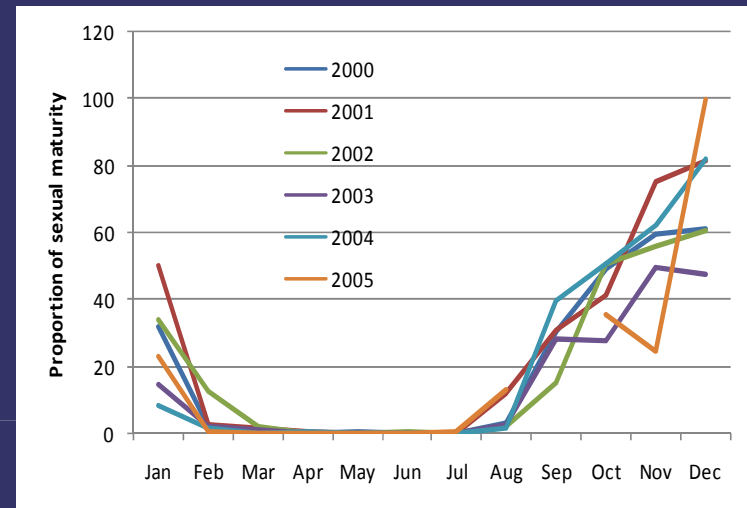
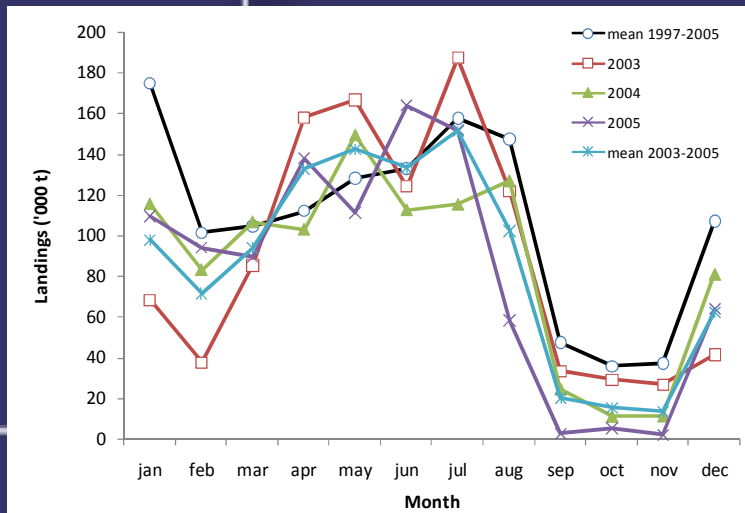


- The main nursery area is found in northern Chile, preferably inside the EEZ
- The main feeding area is located along of the Chilean Coast, inside the high-productivity zones
- The main spawning area is located off the center area of Chile, but this process begins inside the EEZ, extending towards the high seas.



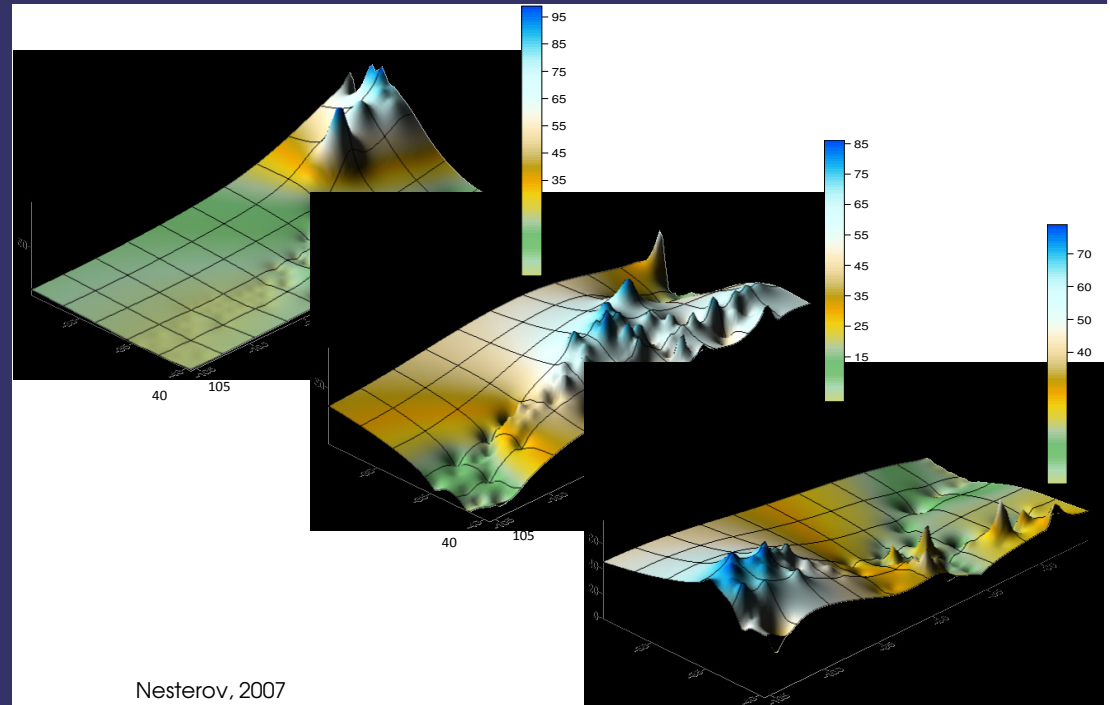
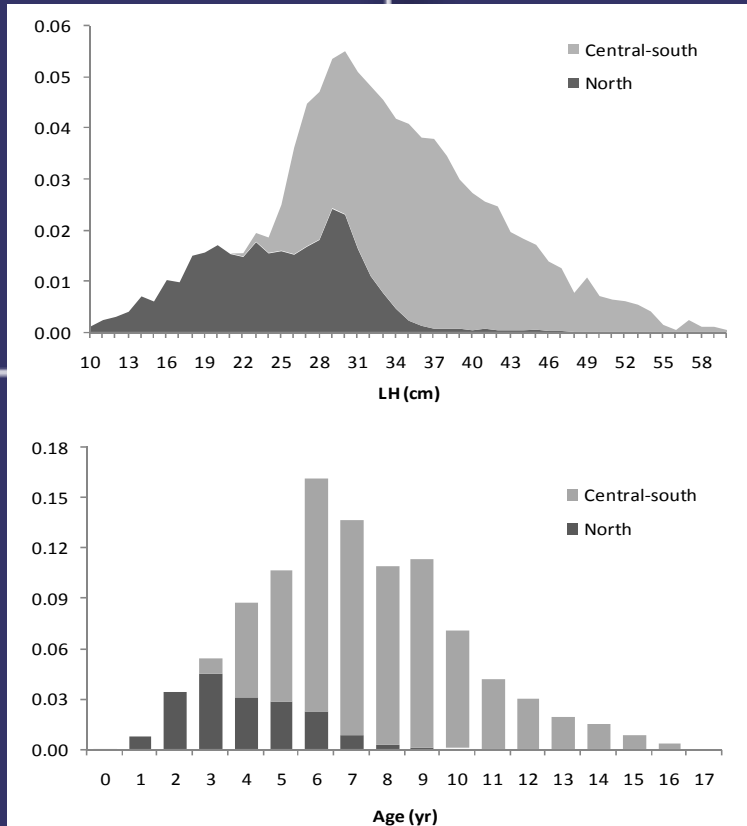
Migration model: fundamentals of spawning and feeding zone

1) The reproductive and trophic migration determine a marked seasonality of the fishery inside and outside the Chilean EEZ



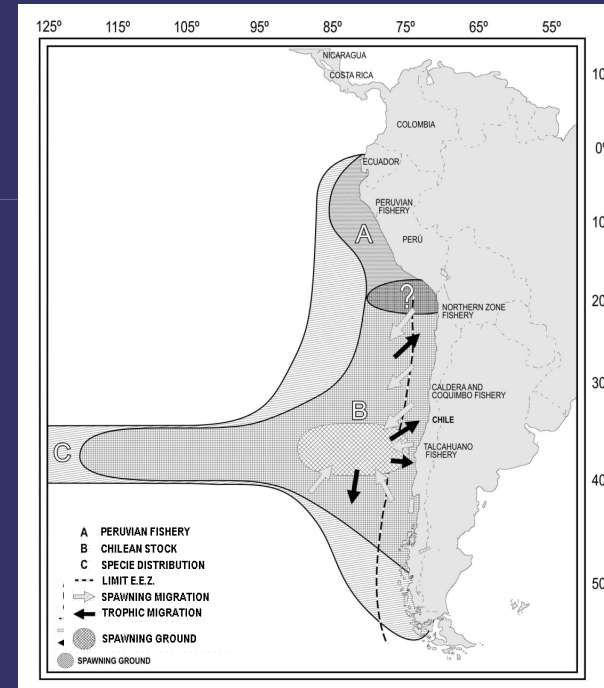
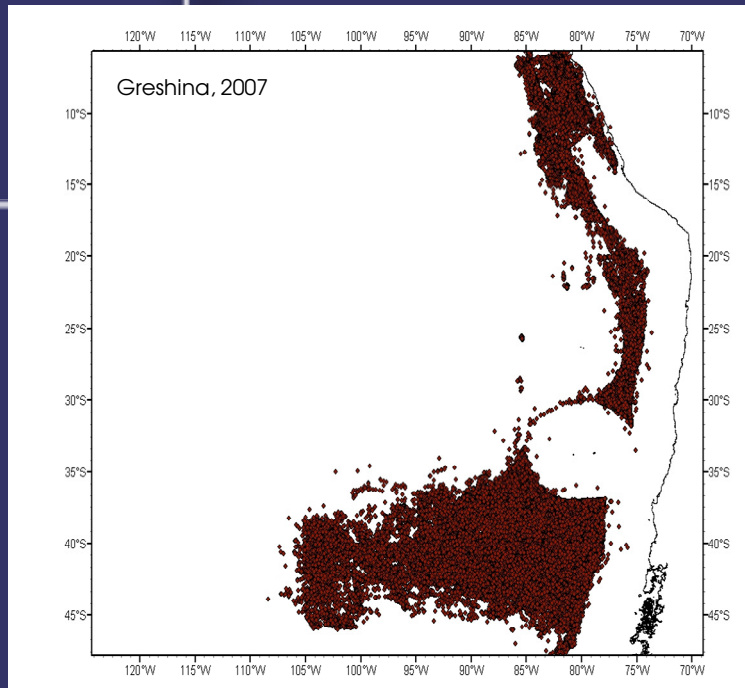
Migration model: fundamentals of the nursery zone

2) The young fishes are concentrated mainly in north zone, and adults towards the central-south zone

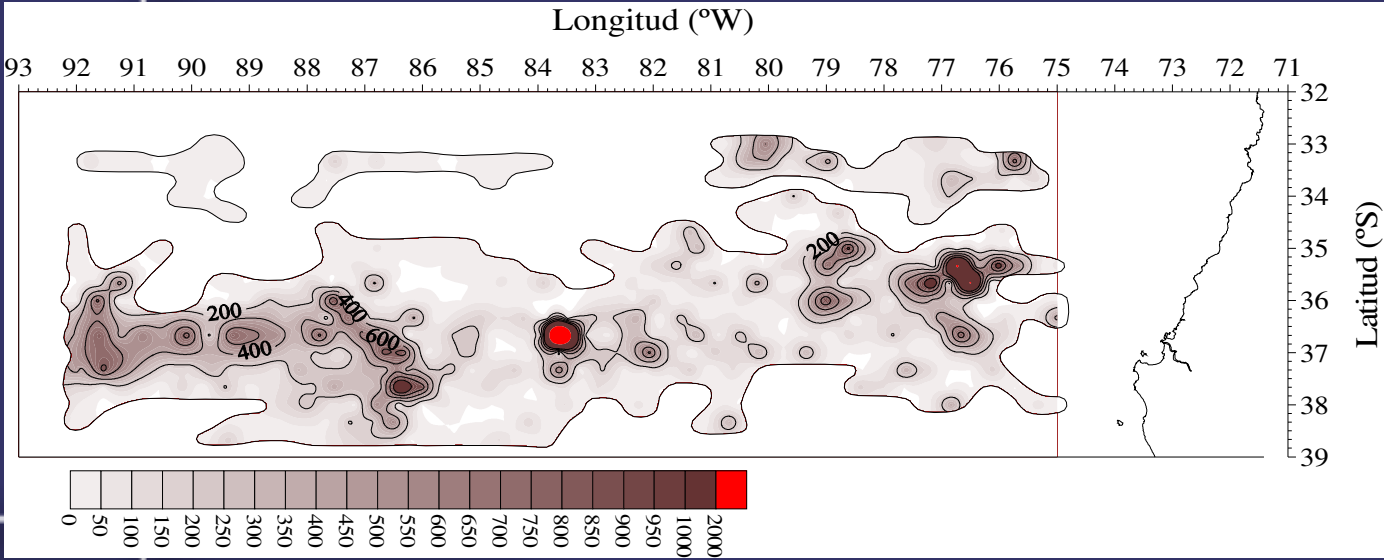
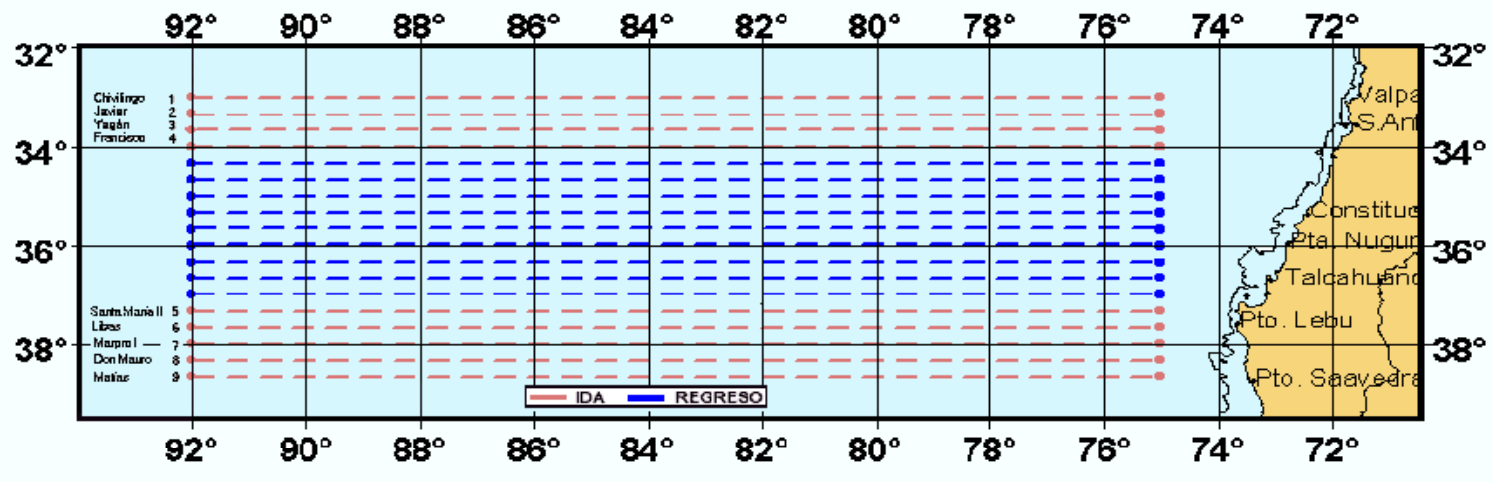


Chilean jack mackerel stock

Several complementary researches made by Chile, has allowed concluding that, at least in the current and historical operating area of the national and foreign fleets in the area adjacent to the EEZ, the fishery is supported by a single stock, named "Chilean jack mackerel stock"

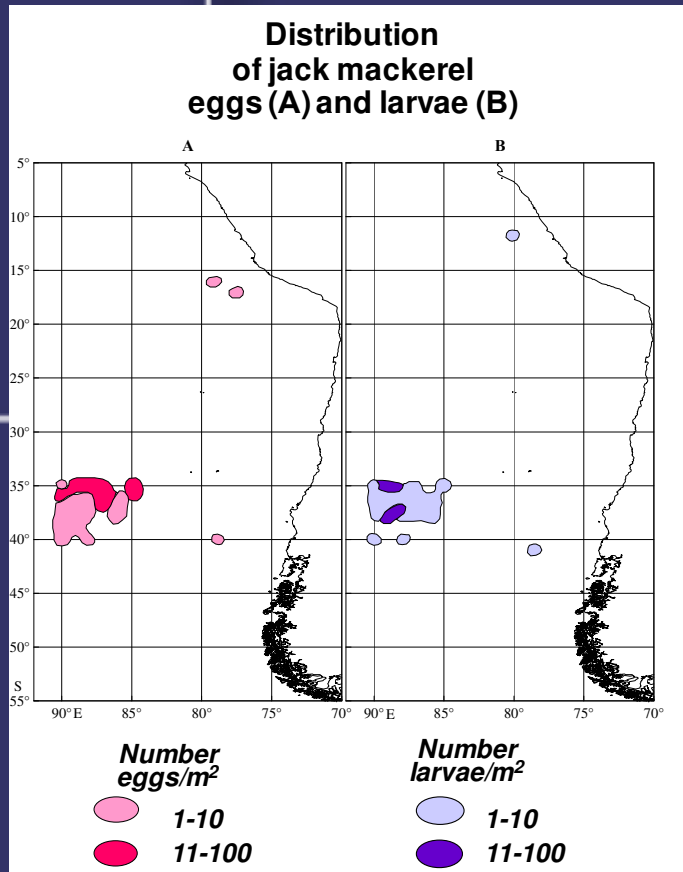


Chilean jack mackerel stock: Spawning area indentified by Chilean Researches



Chilean jack mackerel stock: Spawning area indentified by Russians Researches

The most important spawning ground is found off central Chile



Nesterov, 2007

DNA studies

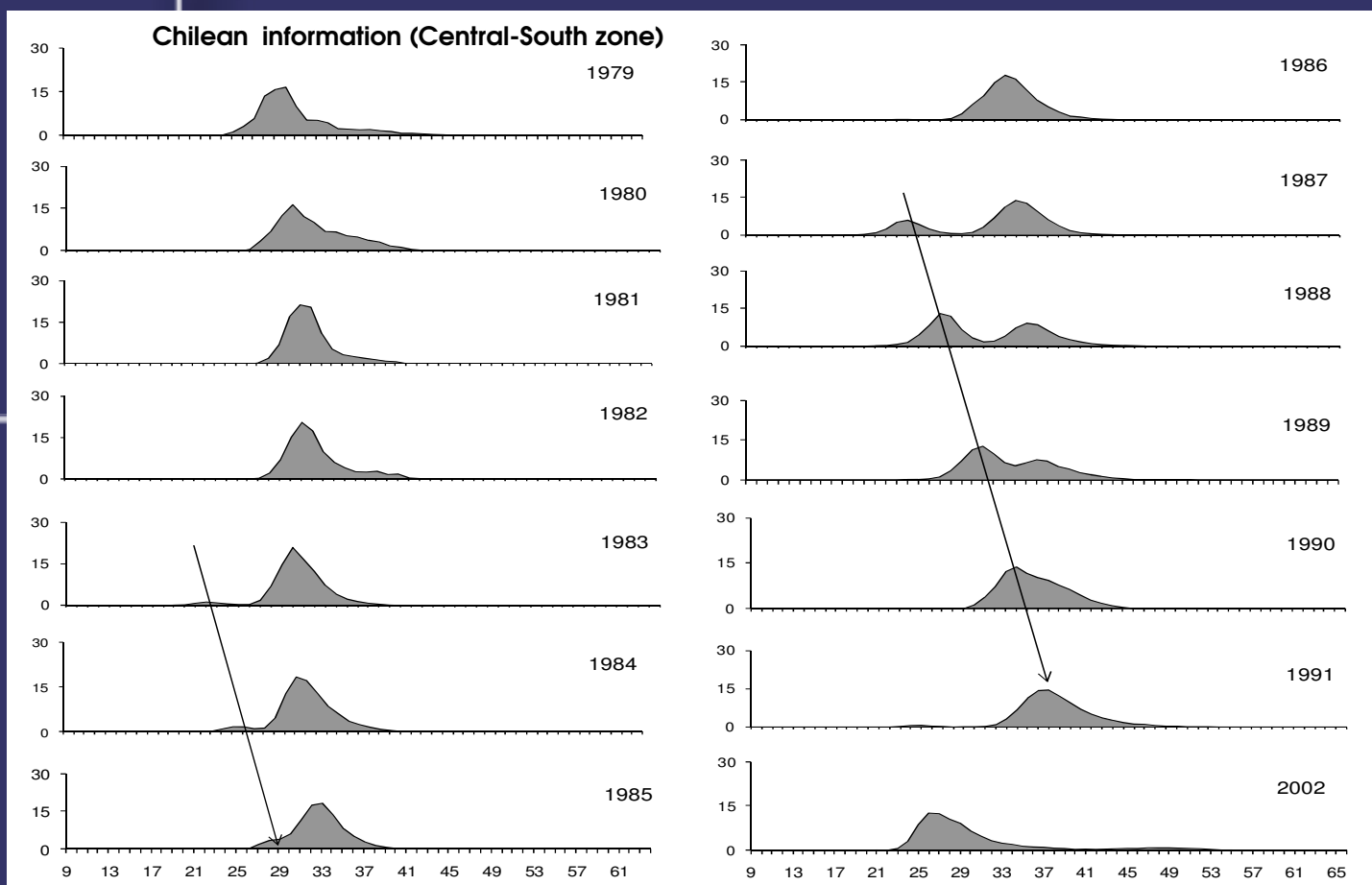
Cardenas et al, 2005:

Analyses of the mitochondrial DNA of individual specimens collected off Chile (Iquique and Valdivia) and New Zealand (Tauranga), did not found genetic differences among the samples analyzed.



Chilean jack mackerel stock: some fundamentals

Similarity between the catch-at-length frequencies registered by the Chilean fleet (inside ZEE), and the ex-URSS fleet

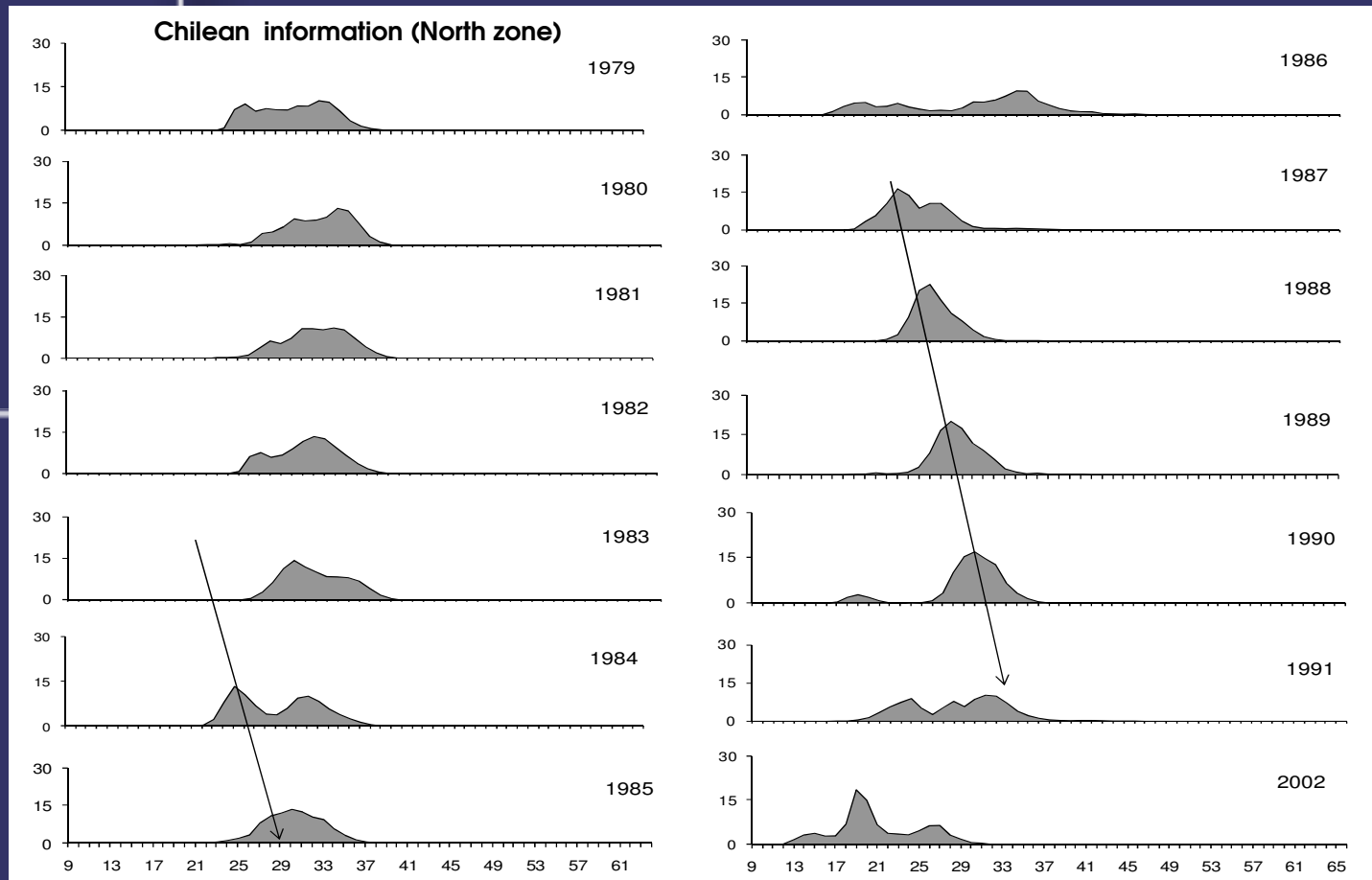


Source: IFOP



Chilean jack mackerel stock: some fundamentals

Similarity between the catch-at-length frequencies registered by the Chilean fleet (inside ZEE), and the ex-URSS fleet



Source: IFOP



Conclusions

Current knowledge on jack mackerel establish that jack mackerel fished inside and outside the Chilean EEZ is a biologically self sustained single stock. Evidence supporting this conclusion is based on the following:

1. Marked seasonality of the fishery inside and outside the Chilean EEZ, as a result of migration to the high seas for reproduction and subsequent trophic immigration towards the coast.
2. Main spawning ground located off the center area of Chile, a process that begins inside the EEZ and extends towards the high seas.
3. Main nursery grounds located in the north of Chile and inside the Chilean EEZ.



Conclusions

4. Similarity in the size composition of catches by different fleets operating inside and outside the Chilean EEZ
5. Genetic convergence of specimens taken from inside and outside the Chilean EEZ, as shown by DNA studies.

