

# An Introduction to the South African Sardine Resource and Fishery

International Stock Assessment Workshop

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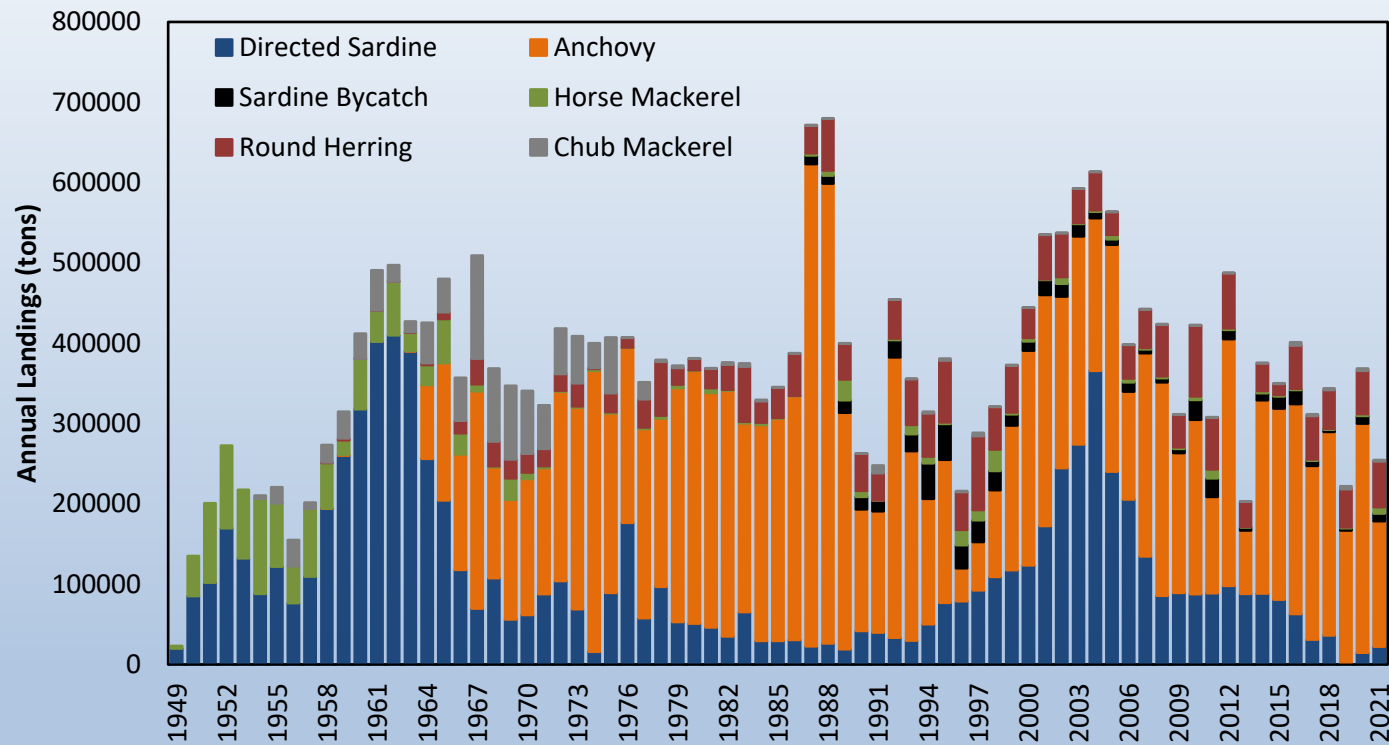
forestry, fisheries  
& the environment

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Department:  
Forestry, Fisheries and the Environment  
REPUBLIC OF SOUTH AFRICA



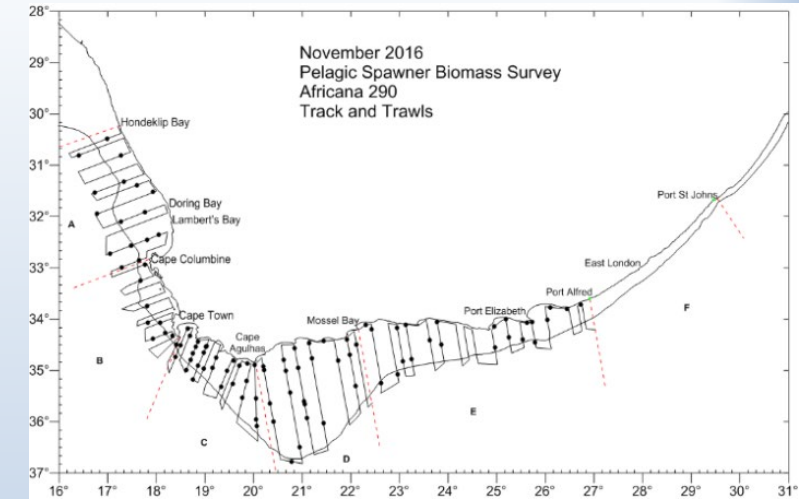
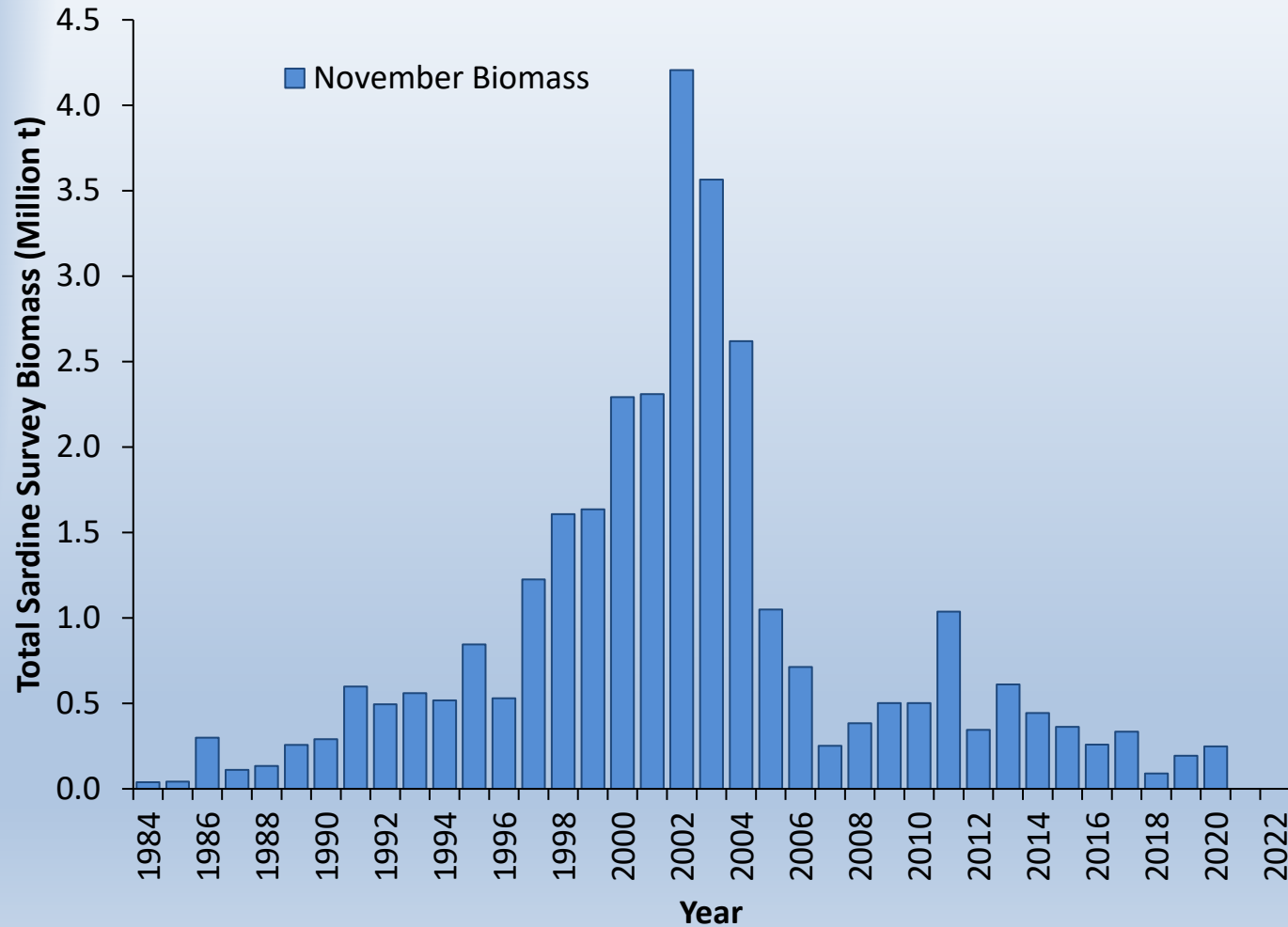
# History of Fishery



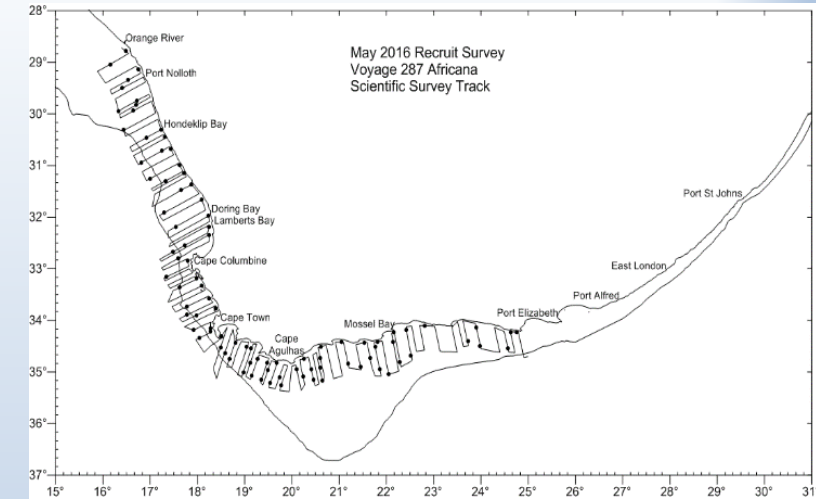
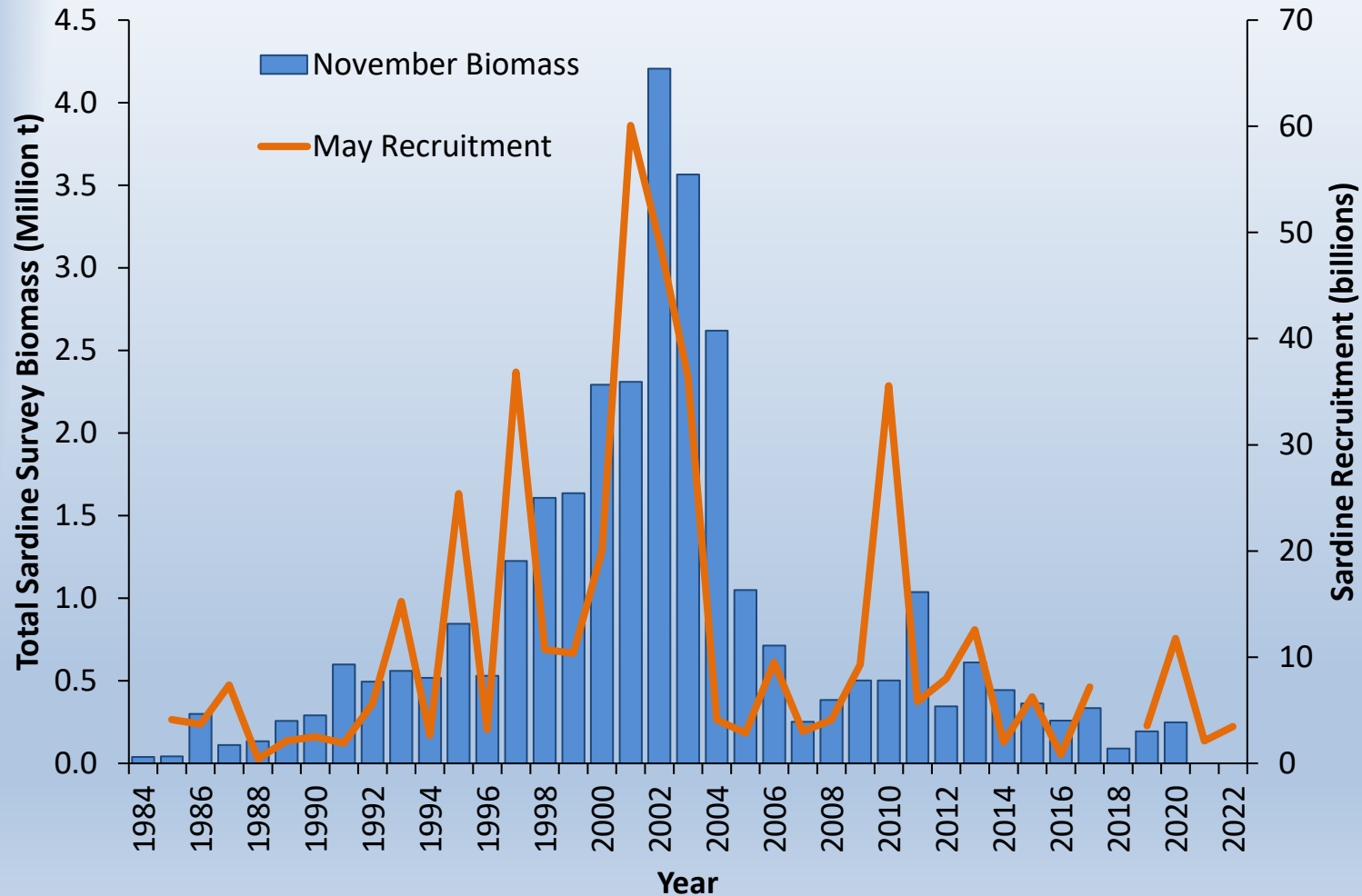
Small pelagic  
purse-seine fishery:

- Mixed fishery
- Largest by landed mass
- 2<sup>nd</sup> largest by value

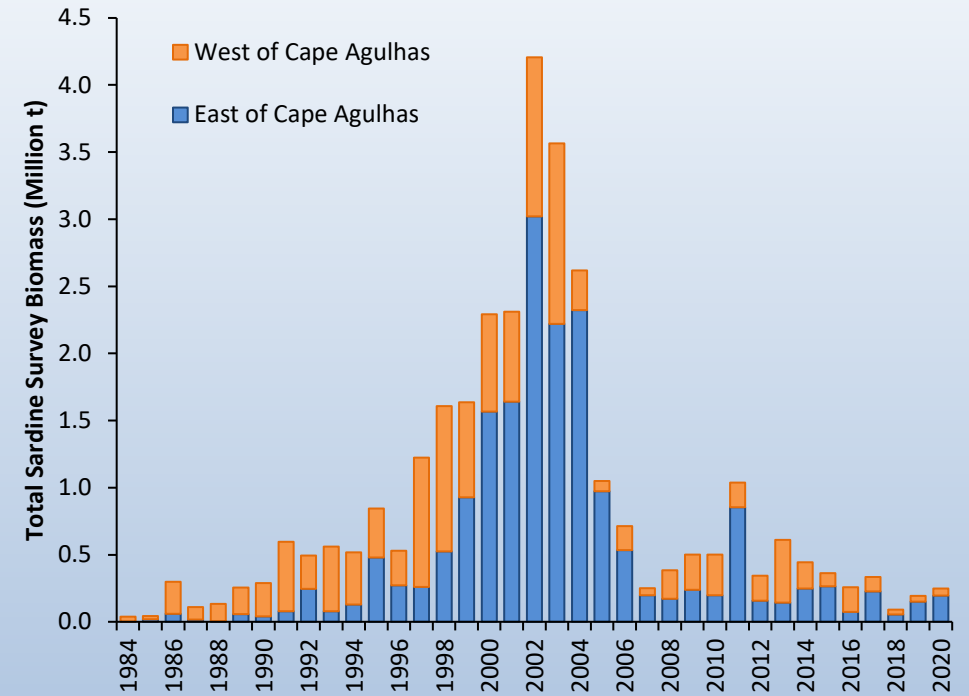
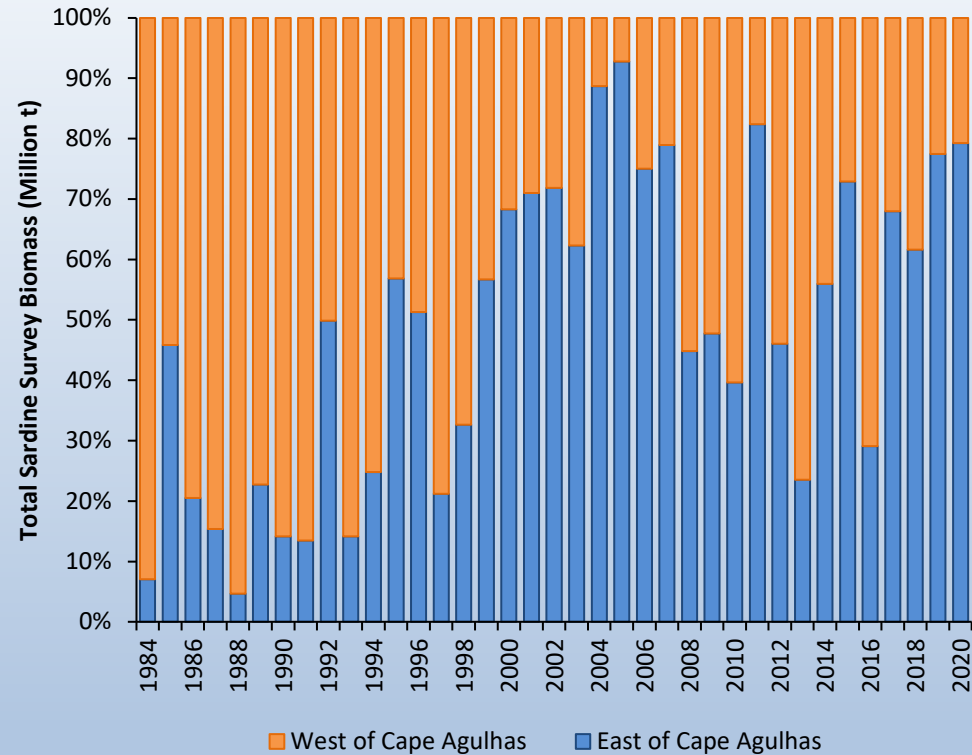
# Hydroacoustic Survey Estimates of Biomass



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# Management Unit

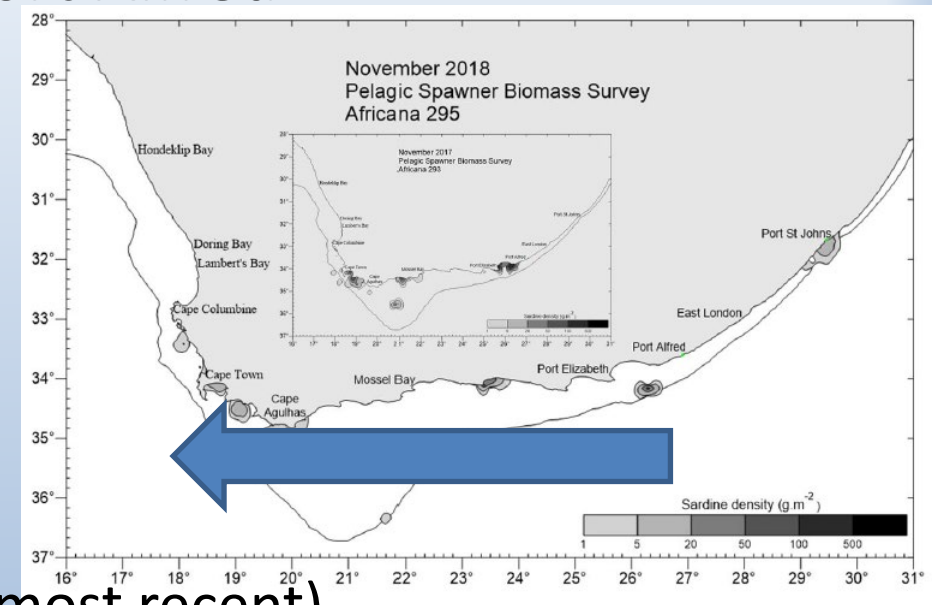


- Commercial management unit is west of Port Alfred

- data availability
- stock assessments

- East of Port Alfred : sardine run

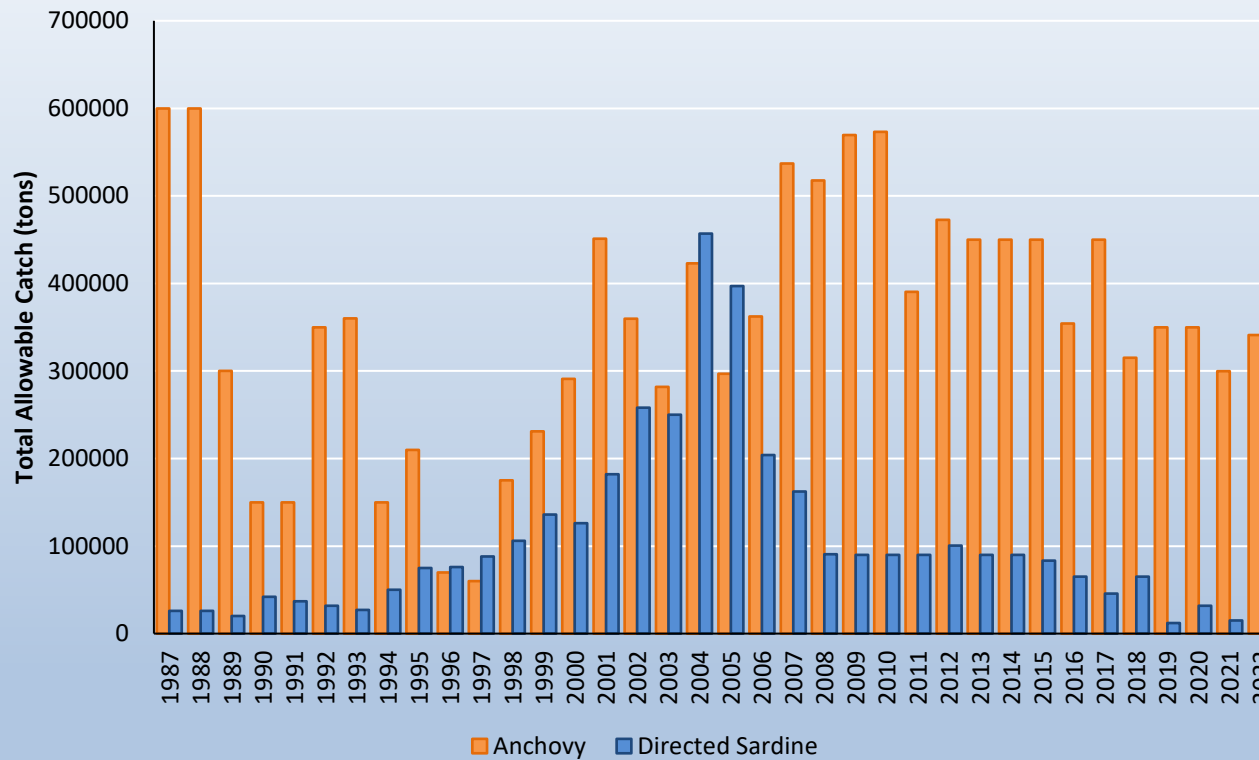
- smaller biomass (~30 000t in 3 surveys; '05 most recent)
- no catch limit for beach-seine fishery
- controlled with TAE; 20 RHs; many don't exercise their right in some years
- max catch 700t







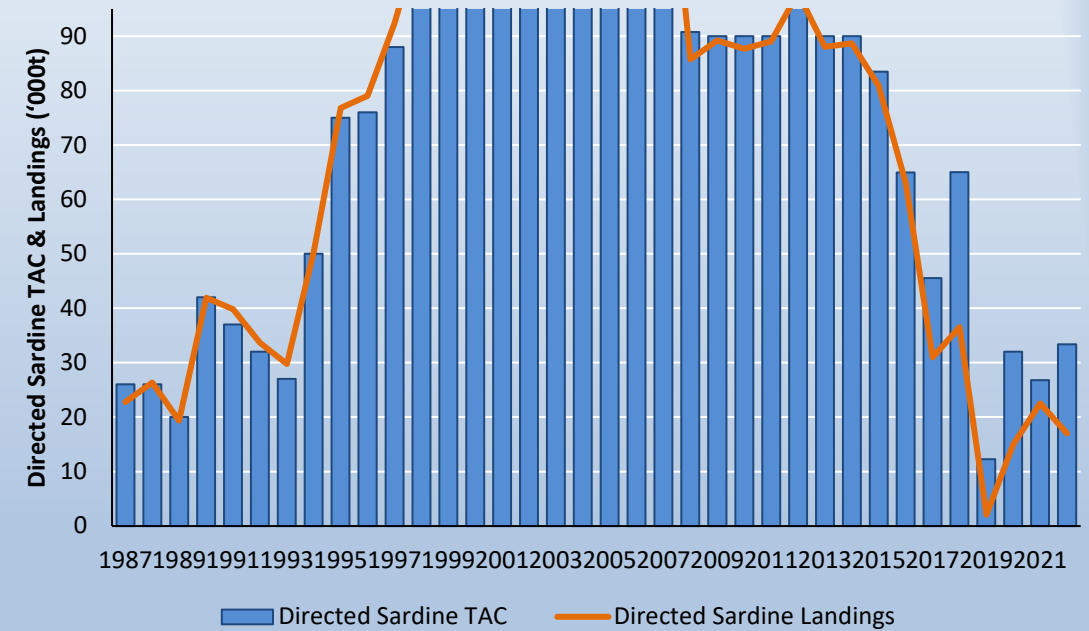
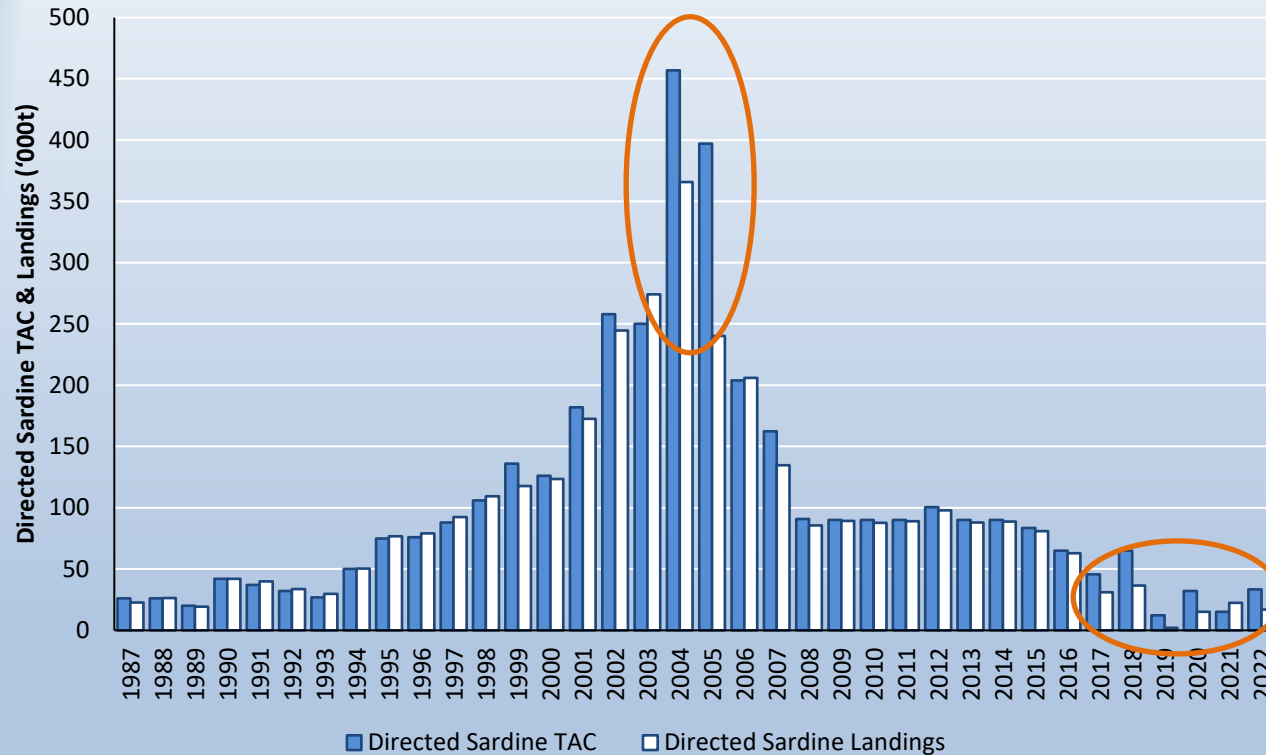
# Total Allowable Catches



- Primarily managed by catch limits (Total Allowable Catches and Total Allowable Bycatches)



# Total Allowable Catches



- Landings tend to be close to the TAC, except 2017-

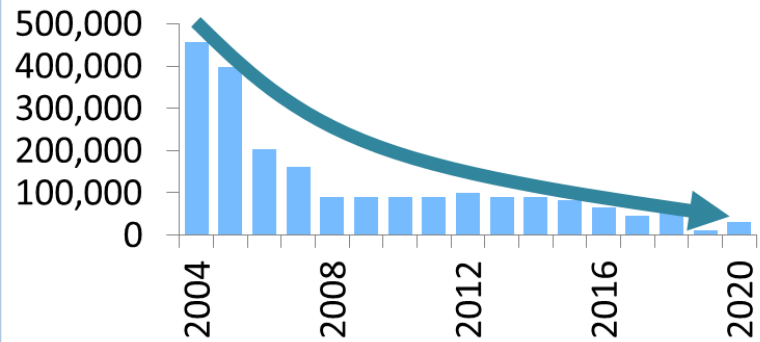




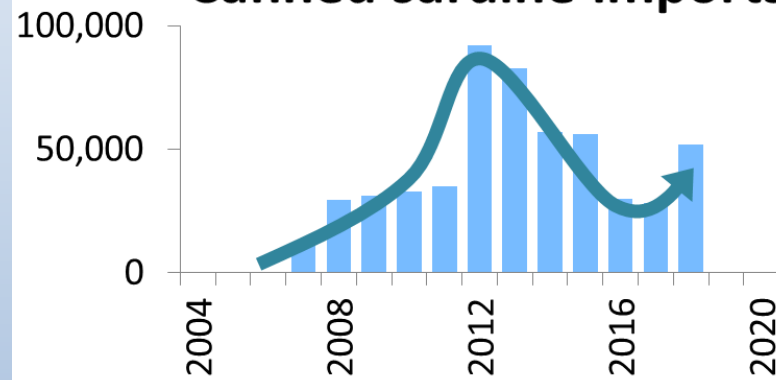
# Total Allowable Catches



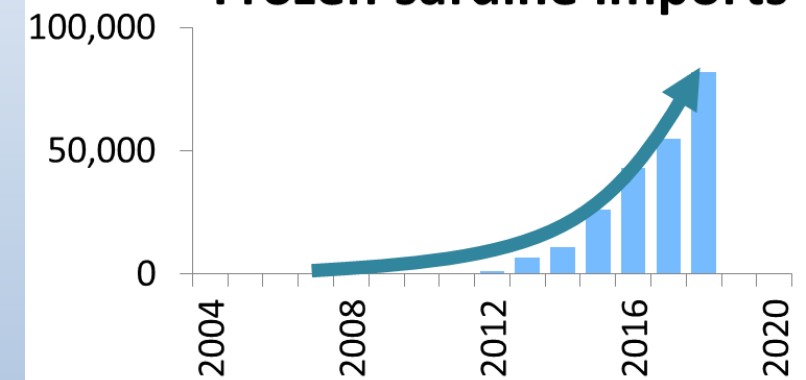
## Sardine TAC



## Canned sardine imports

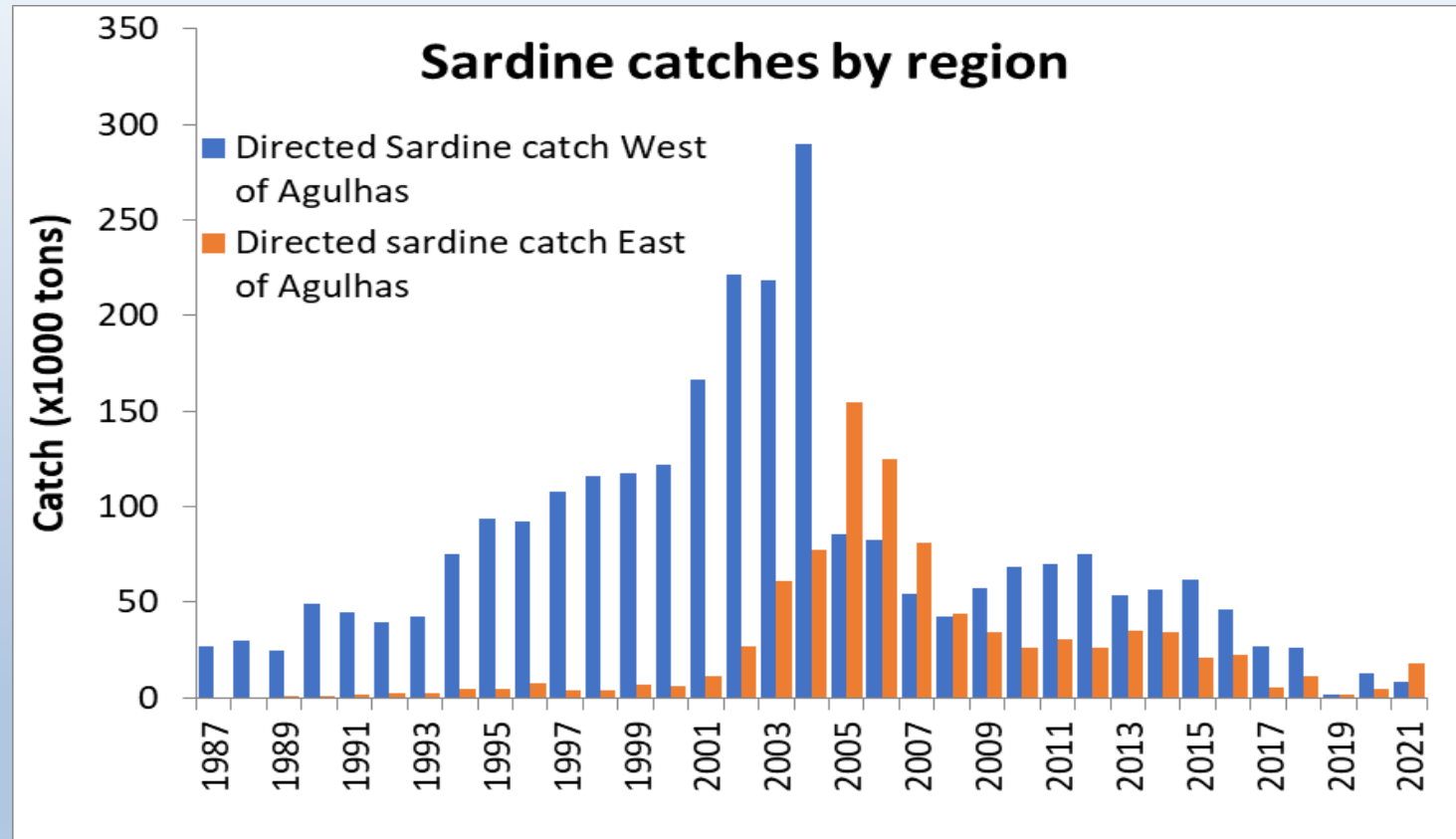


## Frozen sardine imports





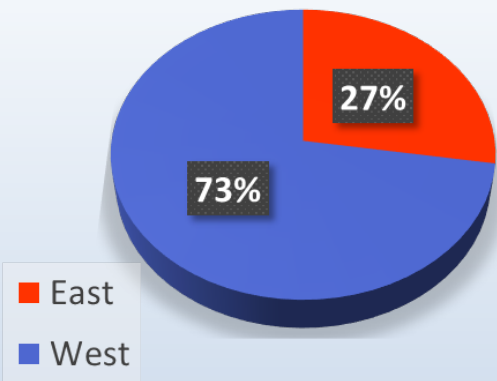
# History of Fishery



Sardine have also been commercially harvested off the south coast since the 1990s

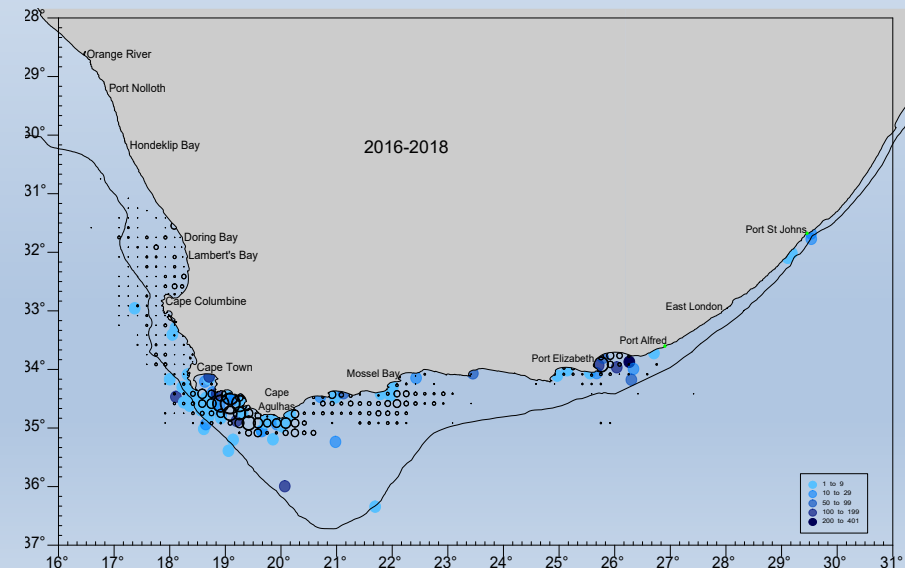
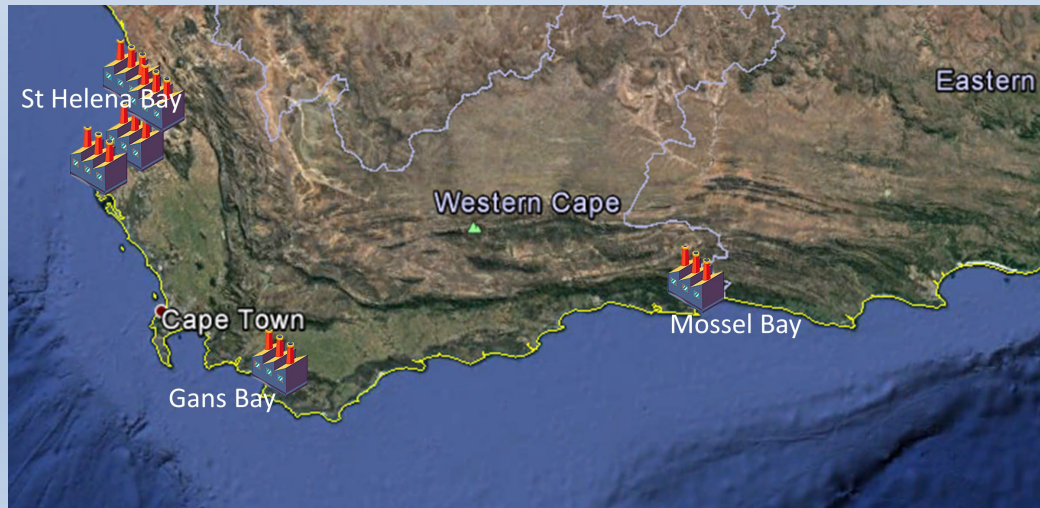
# Sardine Fishery Background

2006-2020



109 long-term rights issued 2006-2020

- **Rights to 73% of the TAC is held by RHs from the West Coast**
- 80% of the catch is canned
- 80% of canned sardine is currently of imported frozen sardine
- 6 canning factories ( 5 on west coast, 1 in Mossel Bay)
- small pack and freeze processors (bait and human consumption) in Port Elizabeth
- New 15 year rights awarded in 2022 for next 15 years

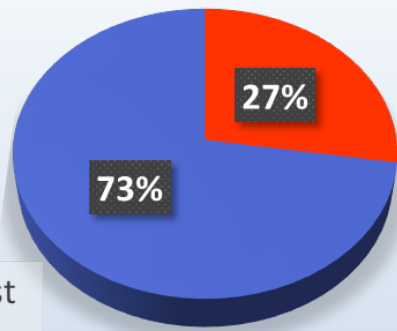




# Sardine Fishery Background

MARAM/IWS/2022/Sardine/BG4

2006-2020

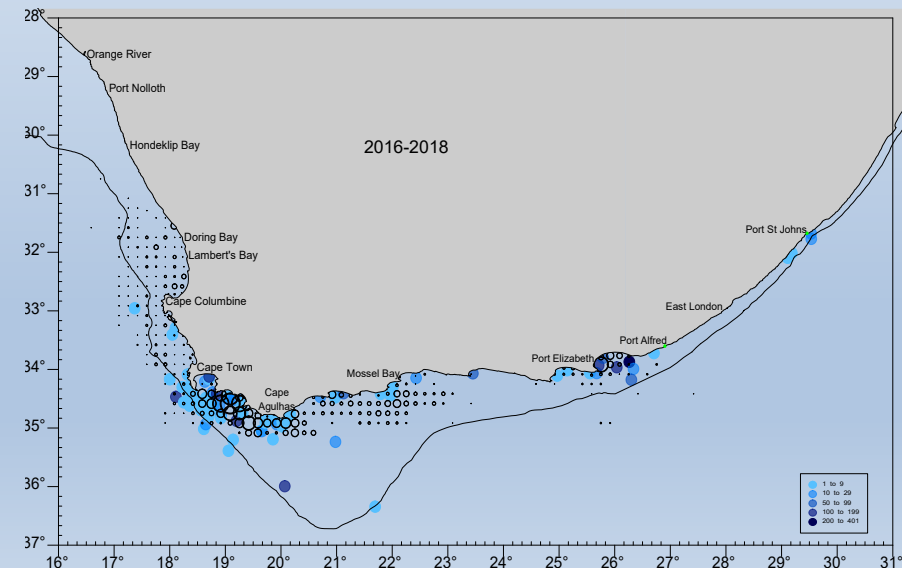
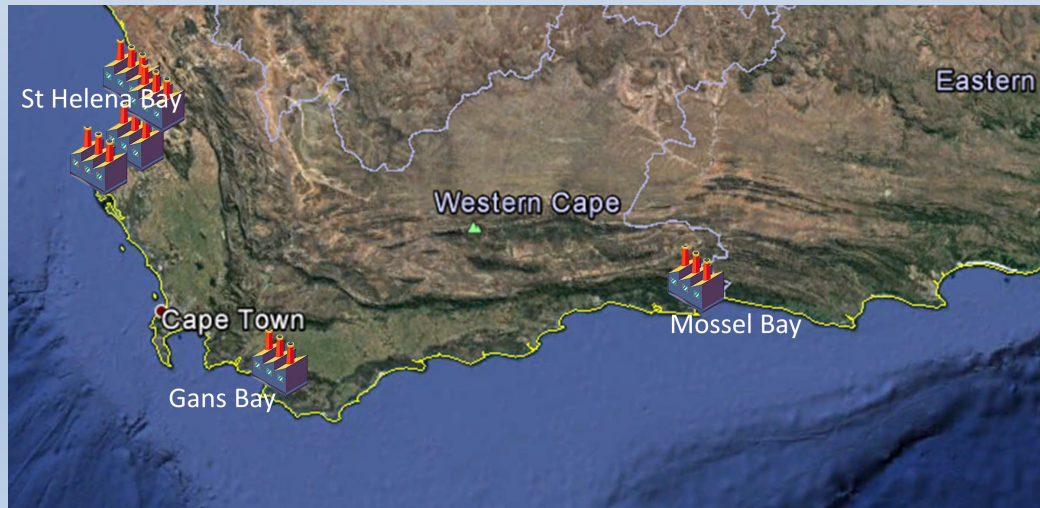
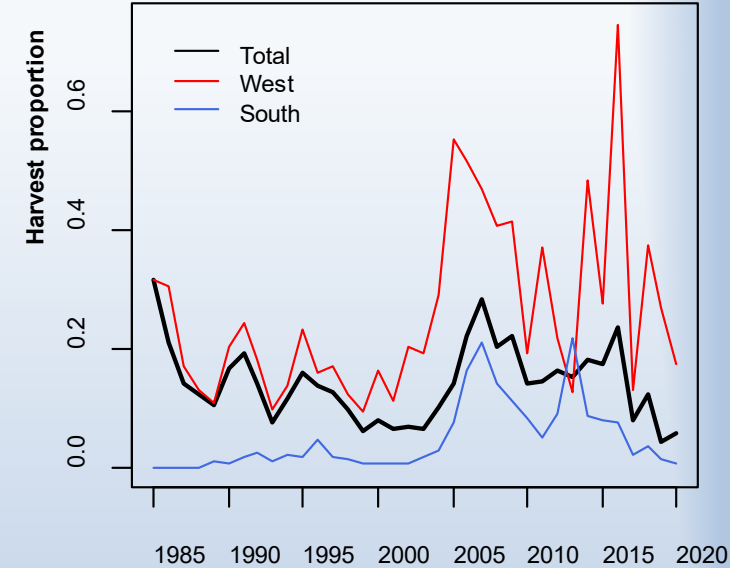


East  
West

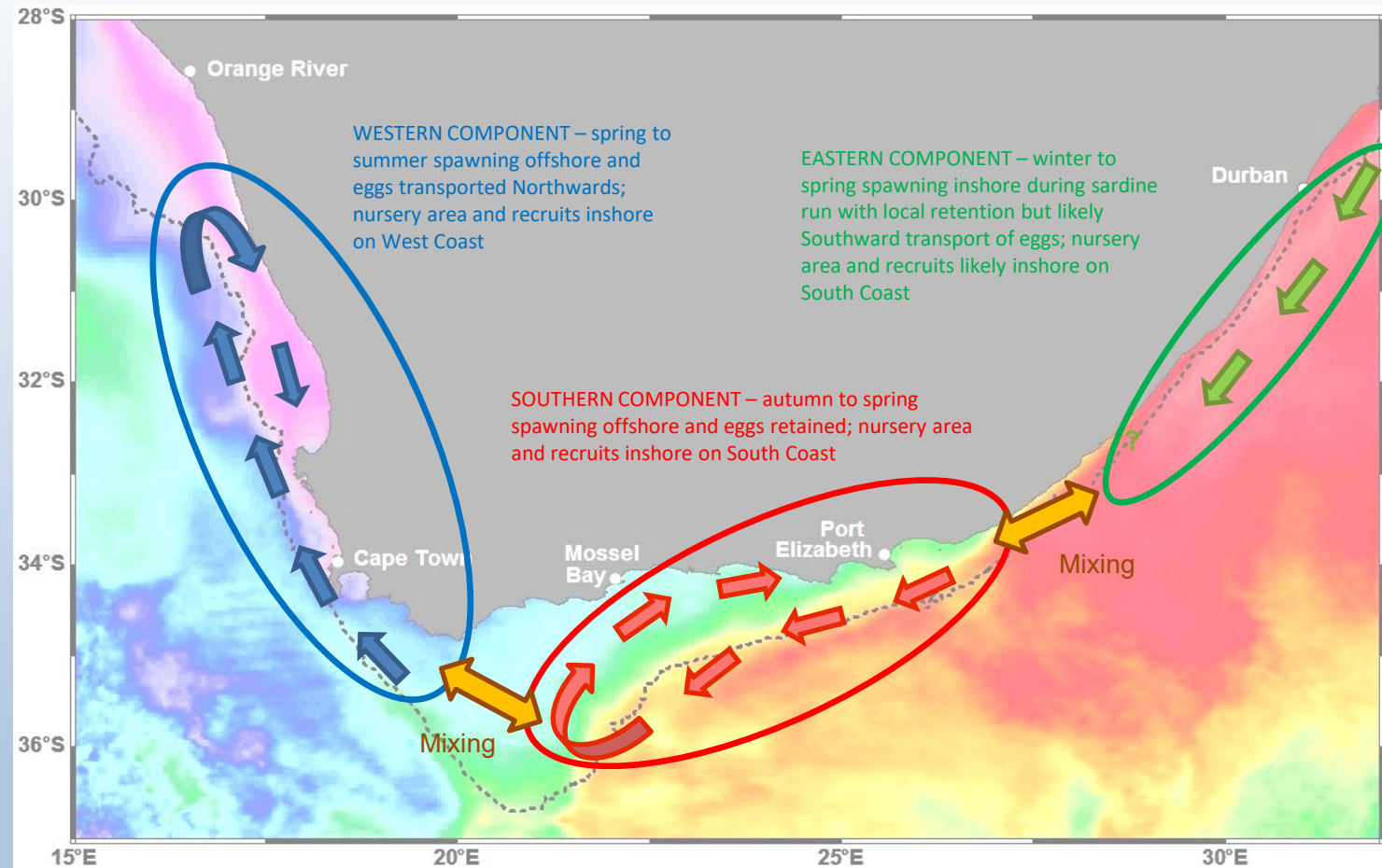
Harvest proportion on “west component” much higher

Of concern given poor recruitment to “west component” in recent decades if this is a “feeder” to both coasts

Formal spatial management introduced  
In 2018



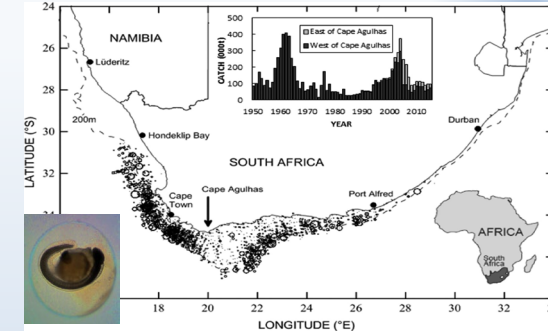
# South African Sardine Distribution and Stock Structure



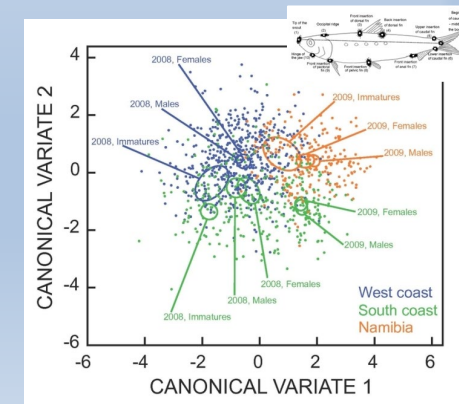
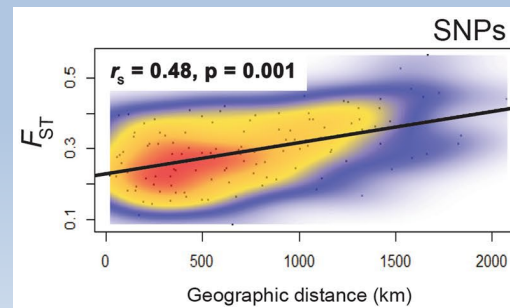
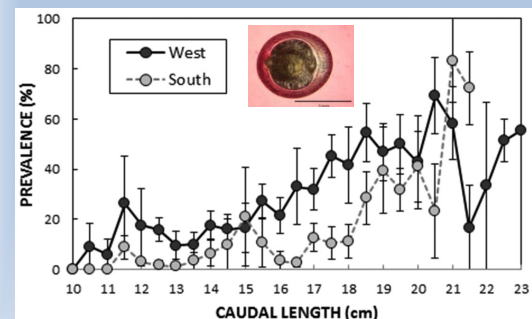
The RSA sardine population has been hypothesised to comprise multiple components, with semi-discrete 'stocks' off the west, south and east coast that are not isolated but show some degree of mixing

# South African Sardine Distribution and Stock Structure

- The sardine multi-stock hypothesis was developed based on observations of significant spatial differences in a variety of sardine characteristics, including:
  - Life history characteristics (distribution patterns, spatially-separated spawning areas, different spawning seasons (Coetzee *et al.* 2008; de Moor *et al.* 2017))
  - Phenotypic meristic (*e.g.* gill raker and vertebral number; van der Lingen *et al.* 2010; Idris *et al.* 2016) and morphological (*e.g.* body shape, otolith shape) characteristics (Groenewald *et al.* 2019)
  - Genetics - single nucleotide polymorphisms or SNPs (Teske *et al.* 2018)
  - Parasite biotag loads (van der Lingen *et al.* 2015; Weston *et al.* 2015)

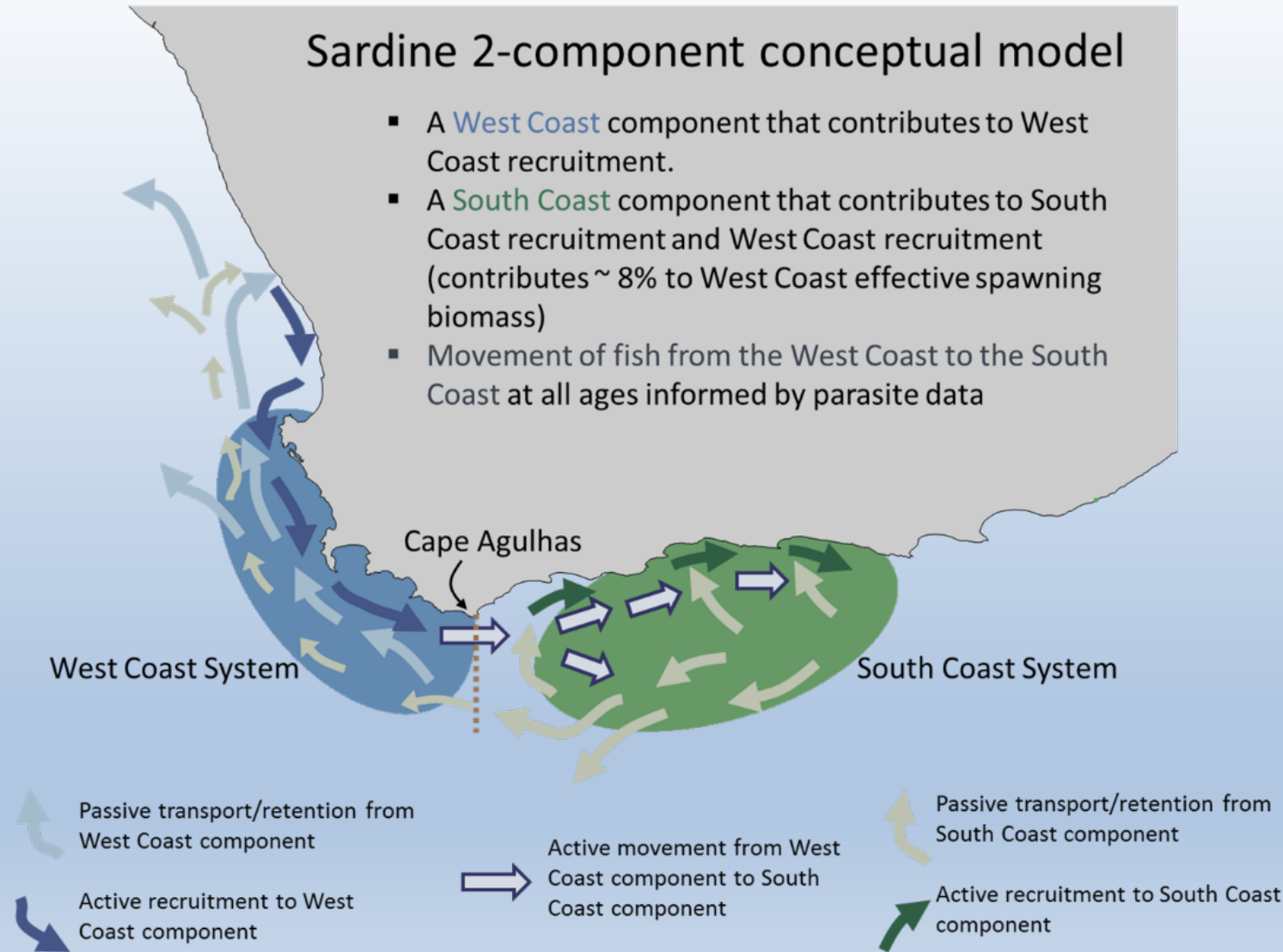


See [MARAM/IWS/2022/Sardine/BG5](#) for further information

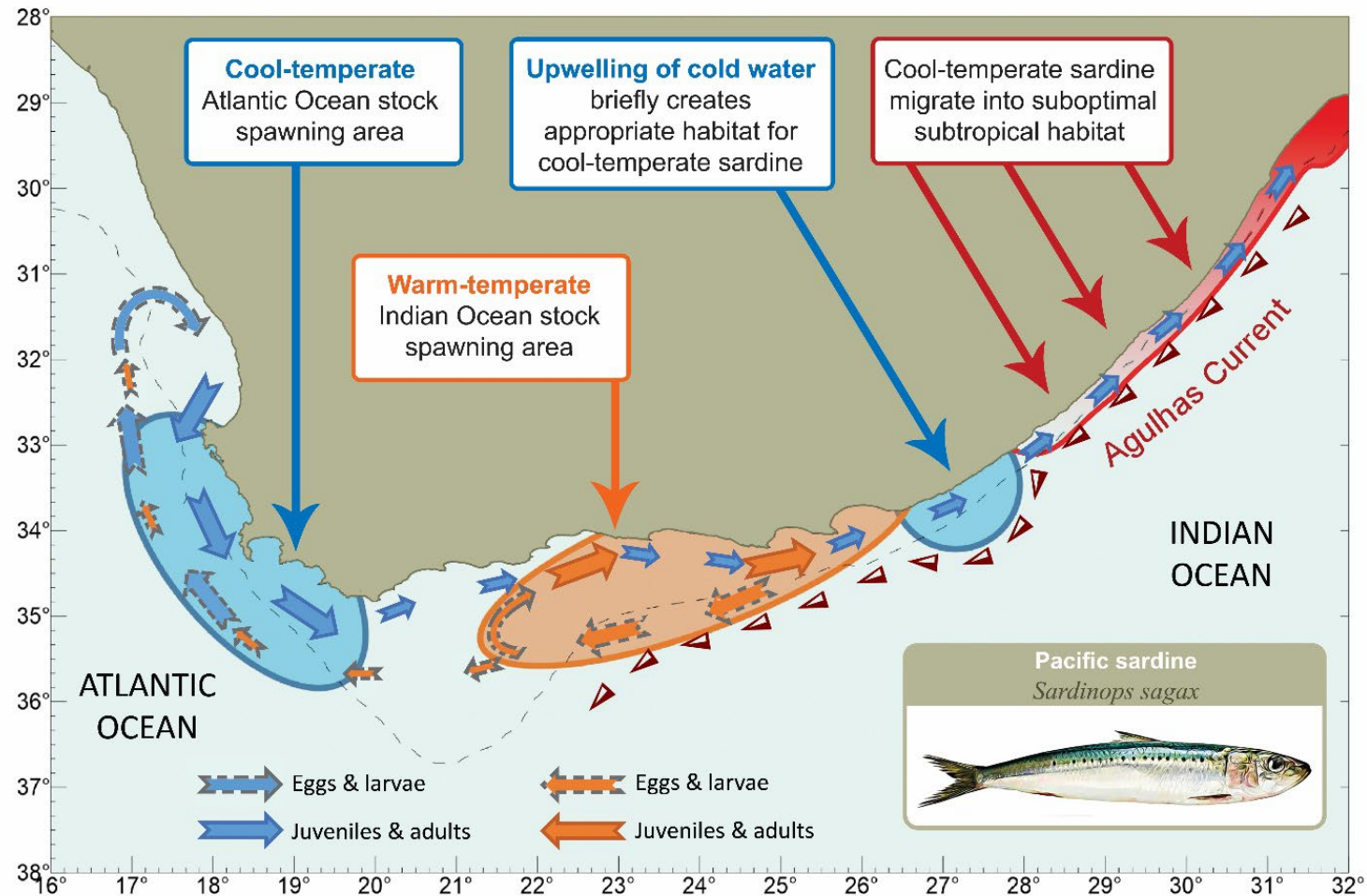




# South African Sardine Distribution and Stock Structure



# South African Sardine Distribution and Stock Structure



# Documents Provided

P1

BG1 – Background

P2 – Key new information re stock structure  
(also see BG5 for other information)

P3 – Conceptual framework of revised hypothesis  
(previous hypothesis in BG2)

P4 – Initial model results of revised hypothesis  
(previous model in BG3, BG4)

WP1 – Discussion re model results

WP2 – Further model results

# Key Question

- What are the most important features of this new stock structure model to explore going forward?

# Additional Question

- If time allows, the industry would like discussion about the selection of the boundary at Cape Agulhas instead of Cape Point or Mossel Bay

e.g.

Coetzee *et al.* (2008)

Coetzee and Merkle (2012)

Sakamoto *et al.* (2020)

Teske *et al.* (2021)

van der Lingen (2022)