

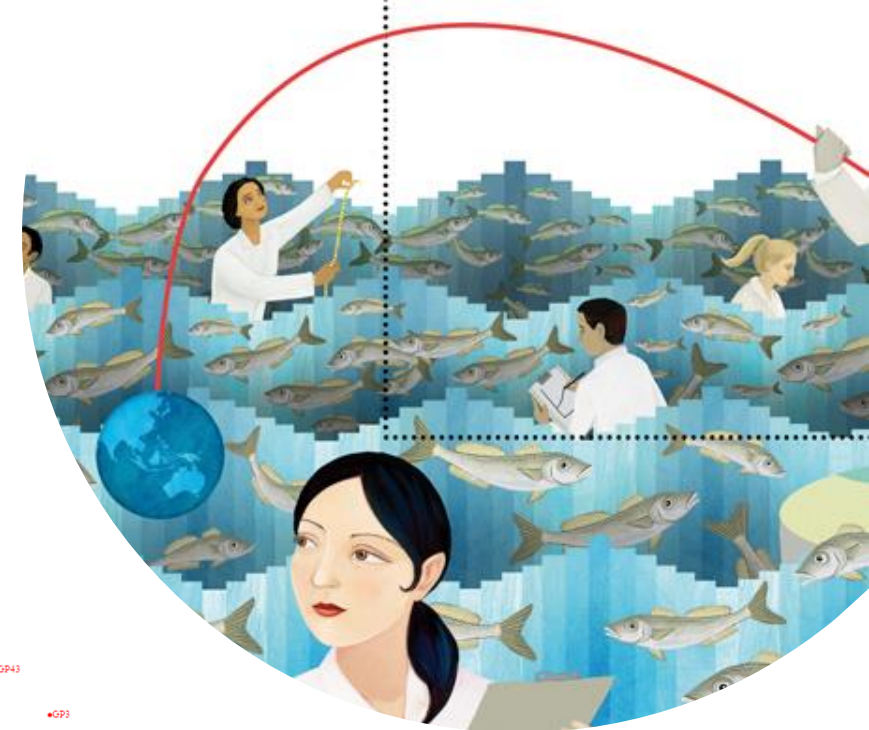
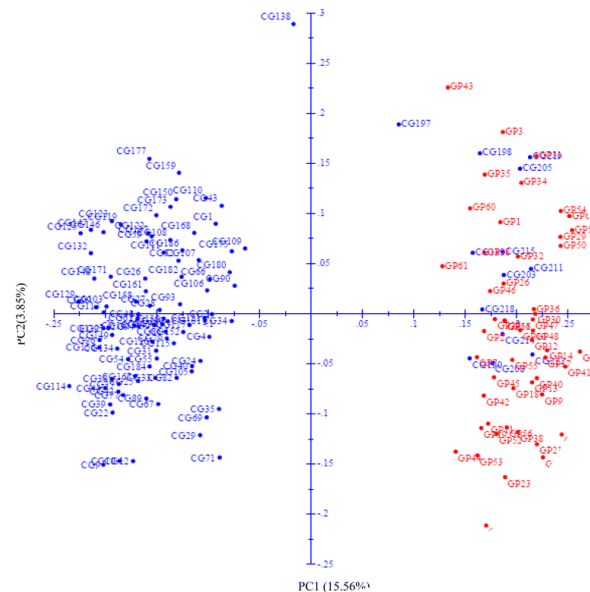
# Genetic connectivity and hybridization with its sister species challenge the current management paradigm of white anglerfish (*Lophius piscatorius*)

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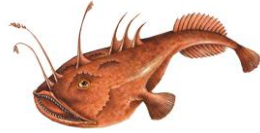


# Stock assessment

- ✓ **Fish stocks** are **management units** of a particular species of **fish** used to **assess** the status of the population and to **manage** marine resources in a **sustainable** way.
- ✓ **Parameters** (growth, mortality,...) measured between stocks recruitment, independently
- ✓ If stocks fail to align **biological structure** = **bad assessment** and **management measures** not effective

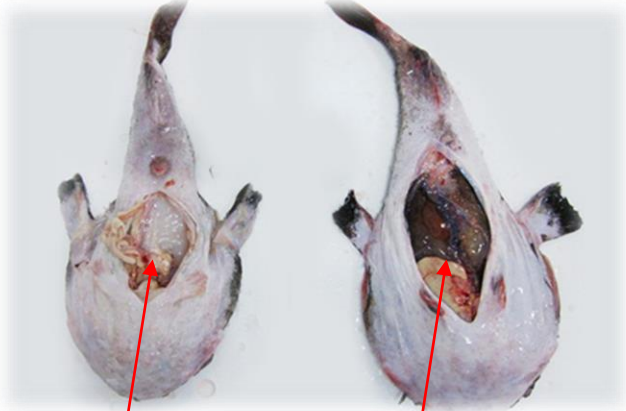


# Case Study *Lophius piscatorius*



White anglerfish

Black anglerfish



White peritoneum

Black peritoneum

The two species assessed and managed as one assuming black anglerfish in this area rare

Northern shelf stock

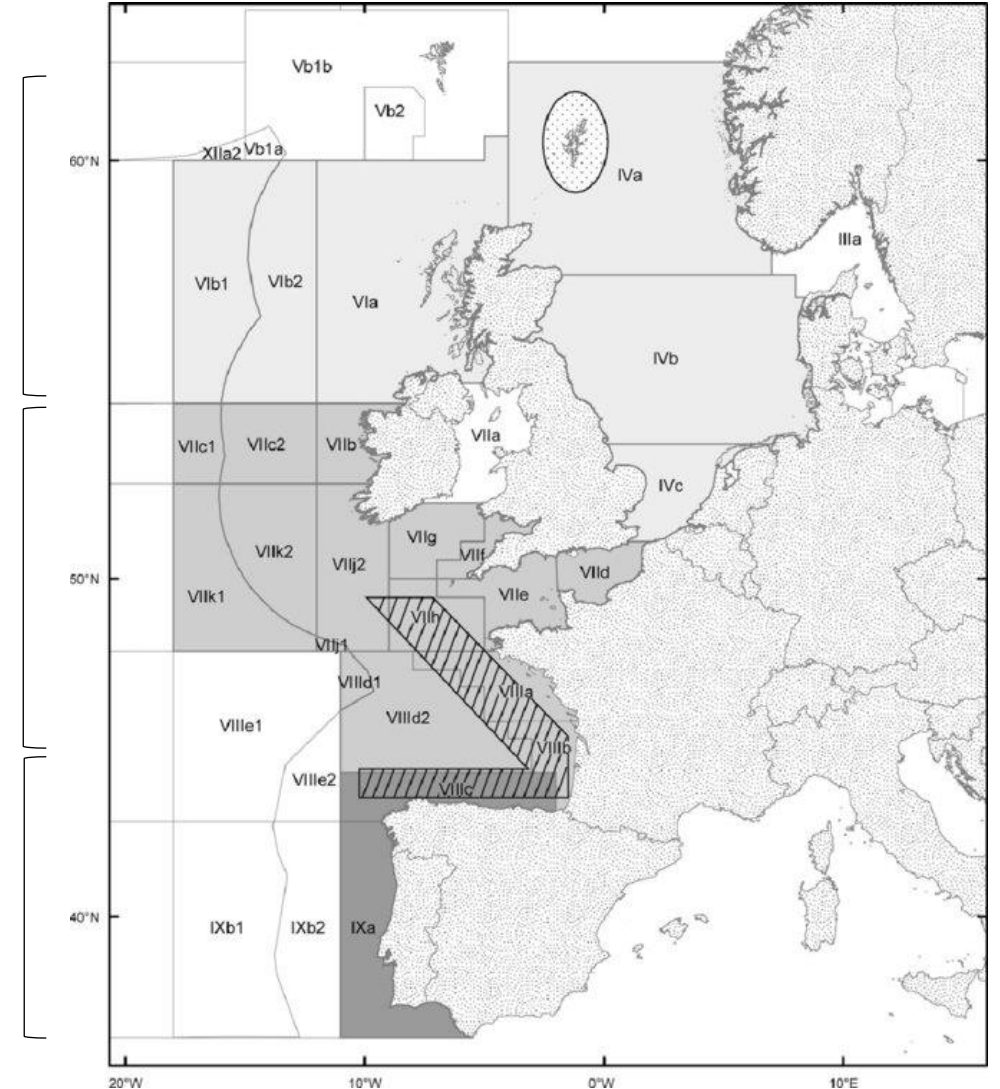
Northern stock

Assessment separately for white and black anglerfish, but combined for management = Total Allowable Catches (TAC) for *Lophius spp.*

Southern stock

## Objective:

Understand the population structure of *Lophius piscatorius* and its connectivity with *L. budegassa*



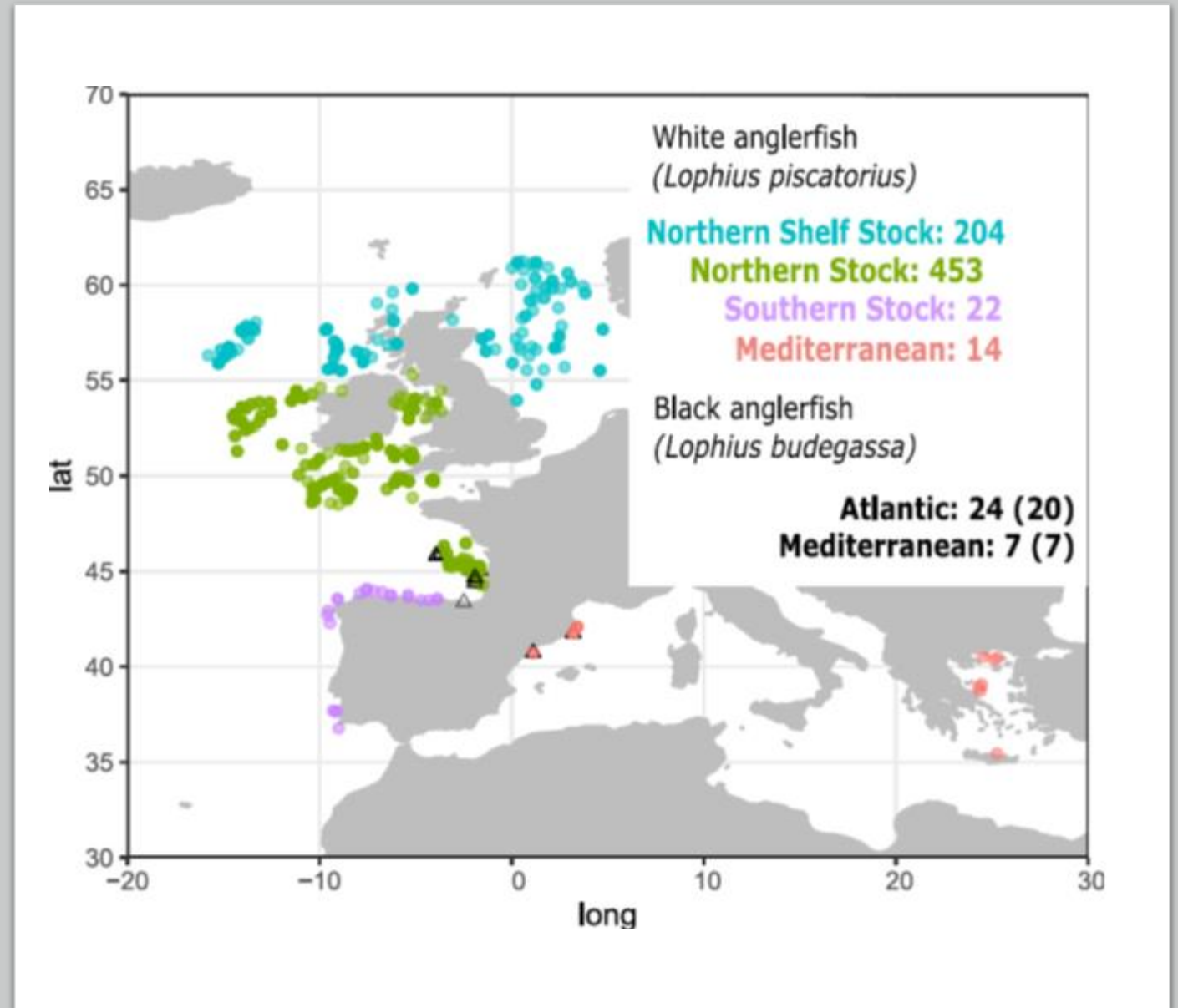
## Mismatch between peritoneum and genetic identification

Genetic mitochondrial marker >> cytb gene seq / PCR-RFLP (All samples)

From the 693 specimens identified as *L. piscatorius* (peritoneum), 76 genetically identified as *L. budegassa*



\*Sample genetically identified as black anglerfish with a white peritoneum

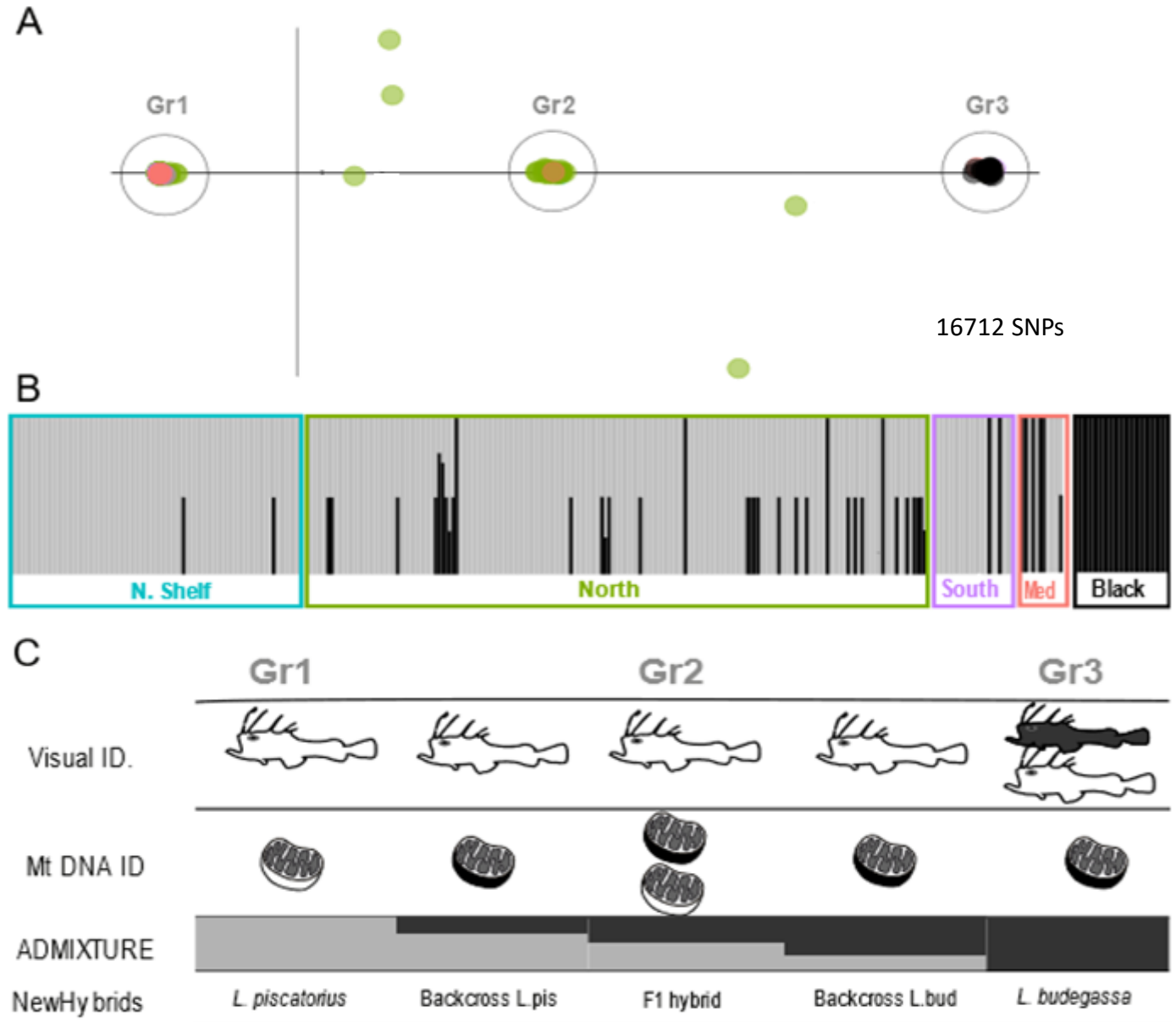


# 3 MAIN GENETIC GROUPS

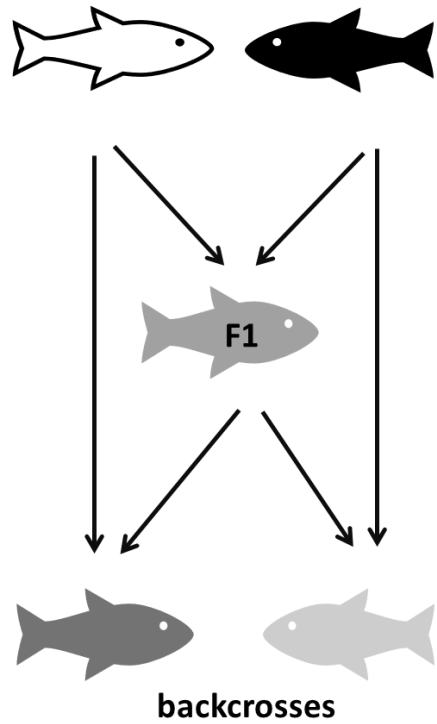
Genetic nuclear marker >> SNPs from RAD-seq data (306 *L. piscatorius* + 27 *L. budegassa* samples)

Samples given as **white anglerfish** actually **distributed** into the **three groups** in PCA/ADMIXTURE.

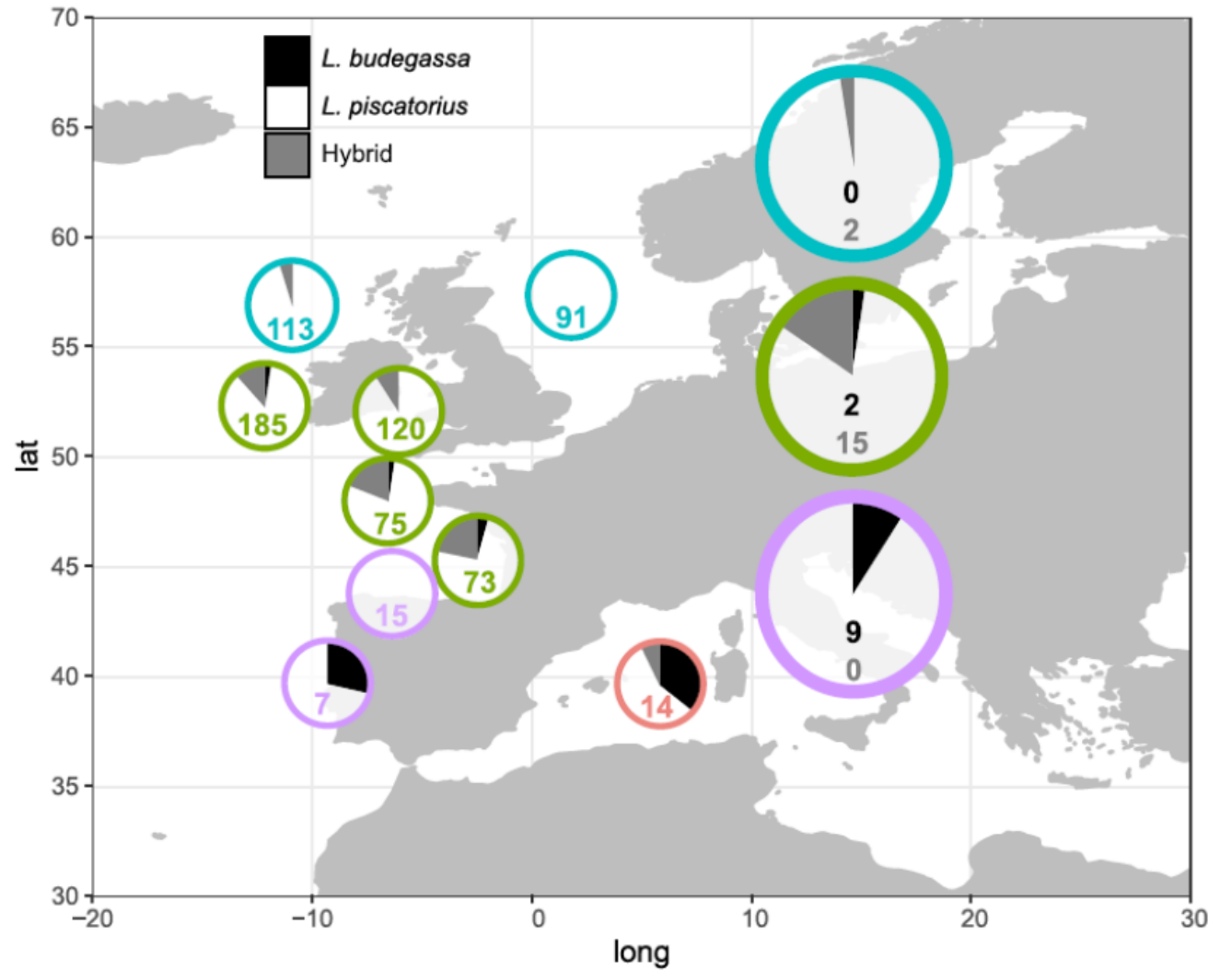
- Gr1: White mitochondria
- Gr2: Black or White mitochondria
- Gr3: Black mitochondria



# Misidentification and Hybridization

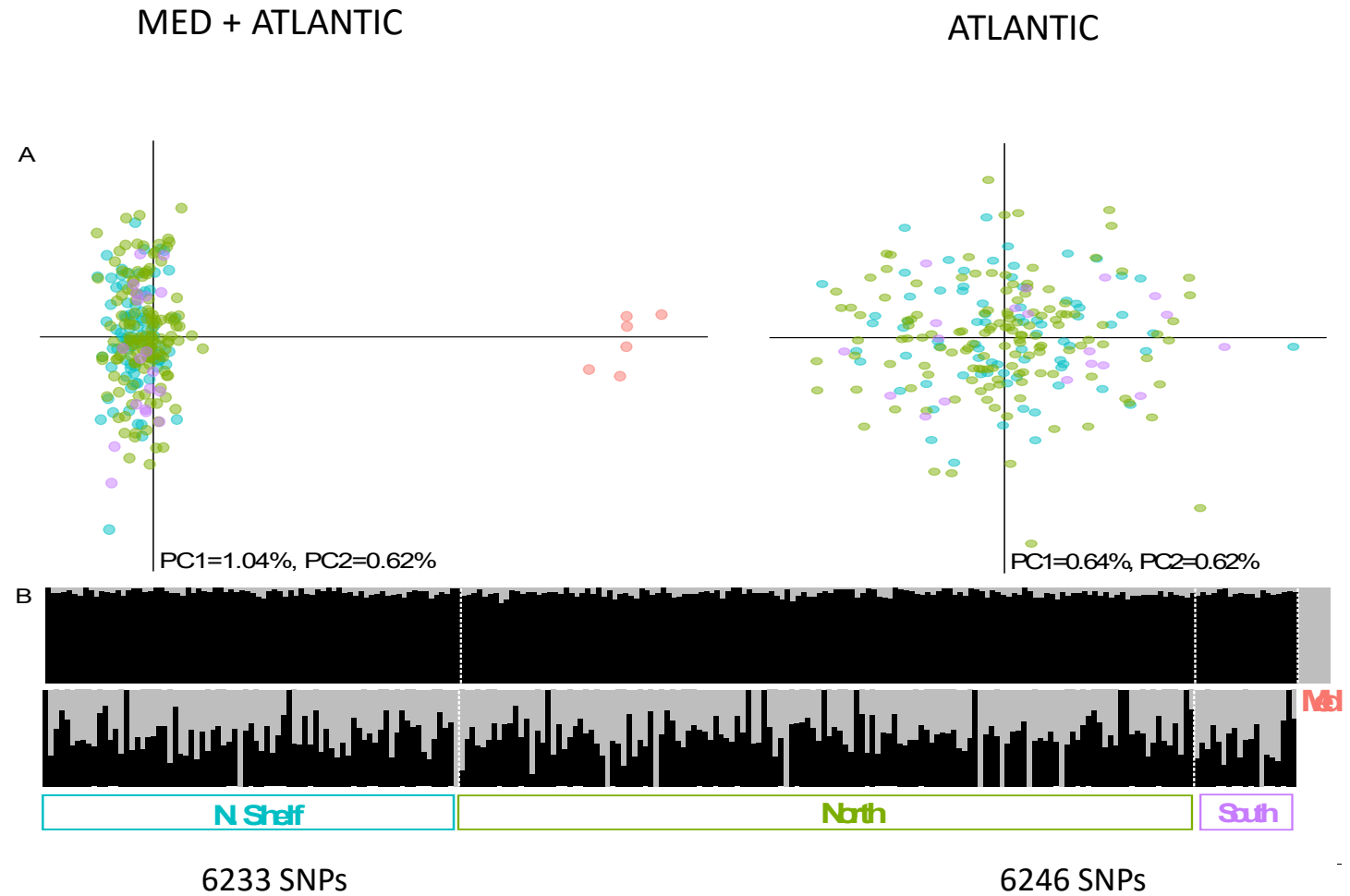
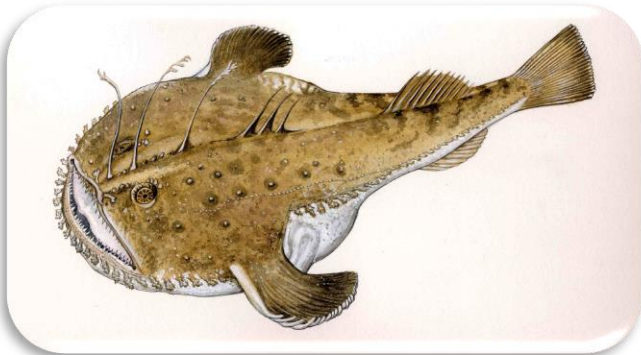


25 F1 – 22 mother *L. budegassa* / 3 mother *L. piscatorius*  
 5 backcrosses – all mother *L. budegassa*



\*It is a frequent phenomenon but it occurs at different rates along Europe

*Lophius piscatorius* forms a unique population in the Atlantic



# Take home message



*L. piscatorius* forms a unique population in the Atlantic



Presence of hybrids between *Lophius piscatorius* & *L. budegassa*



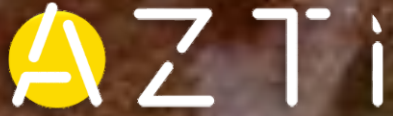
Misidentification



✓ This information should be taken into account for *L. piscatorius* and *L. budegassa* assessment



# Thank you!



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