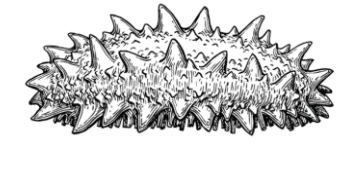


Identification of fatty acid profiles and lipid biomarkers in two holothurian species (*Holothuria polii* and *H. tubulosa*) along the Italian coast

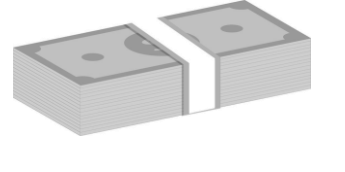
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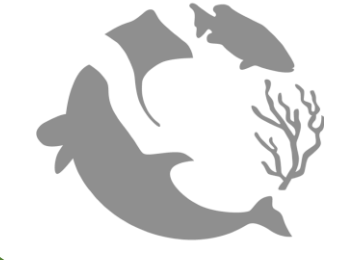
Background



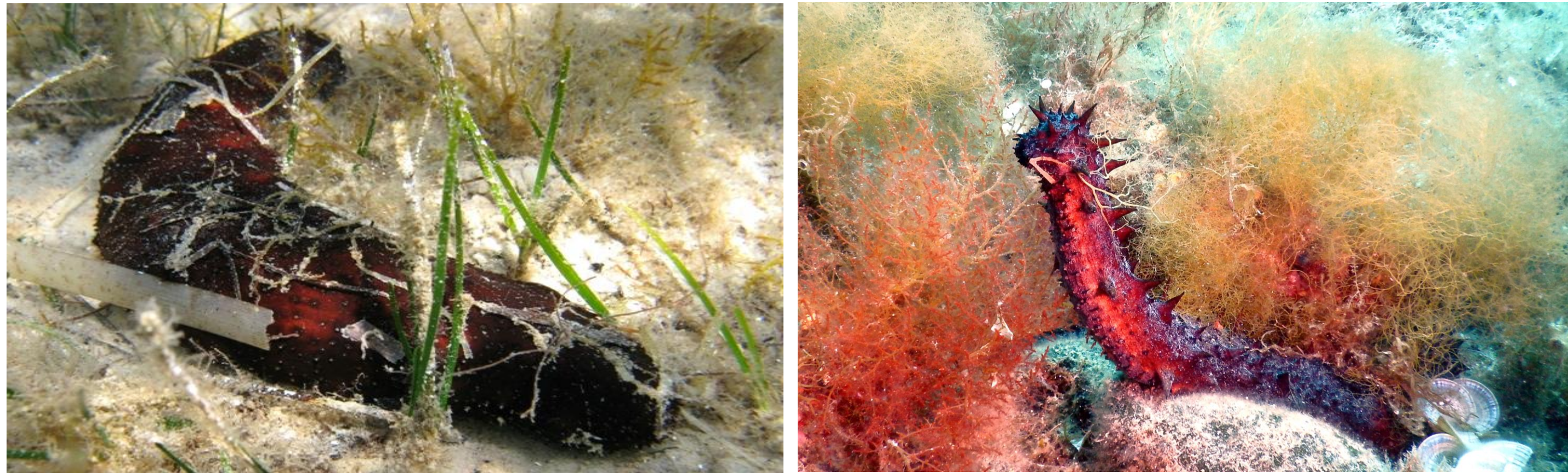
Holothurians are considered "ecosystem engineers" given their key role in the dynamics of the seabed, where they process sediments



Sea cucumbers are an important economic resource in the food, pharmaceutical and cosmetic industries, especially in Asian markets



Intensive fishing (hundreds of tons/year) is considered to have a negative impact on Mediterranean benthic ecosystems and biodiversity



Methods

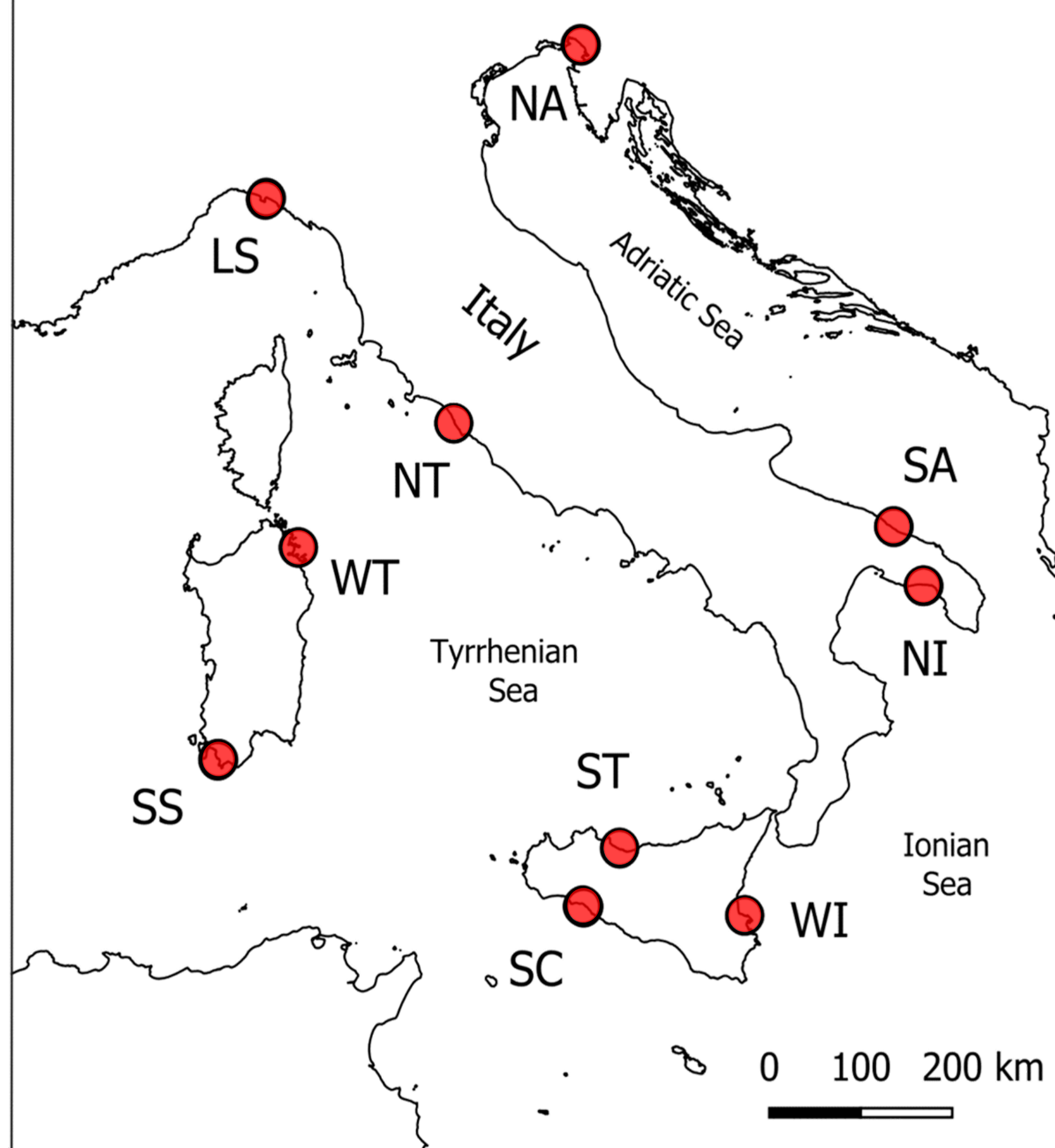


- ❖ Sea cucumber samples (n=285) were collected from 10 sites at depths between 8 m and 22 m on different types of substrate
- ❖ Fatty acids (FA) were extracted from dried body wall using methanol/toluol 2:1 (v/v)
- ❖ 43 FAs were identified by gas chromatography with flame-ionization detection (GC-FID) and mass spectrometry (GC-MS)
- ❖ Principal Component Analysis (PCA) performed to investigate the variation in FA profiles between species and areas
- ❖ 6 FA biomarkers were used to determine food sources in the diets of sea cucumber

Study goals

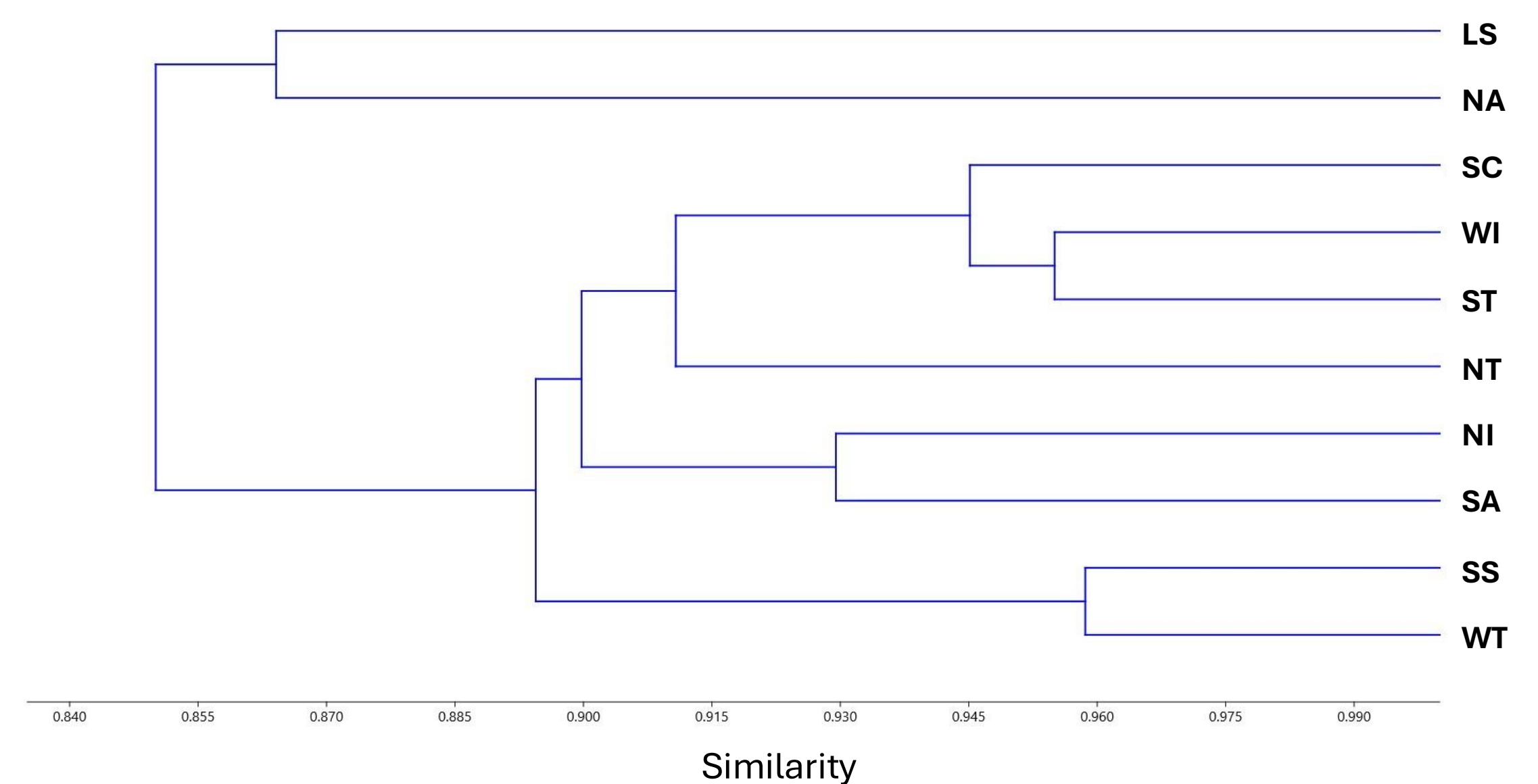
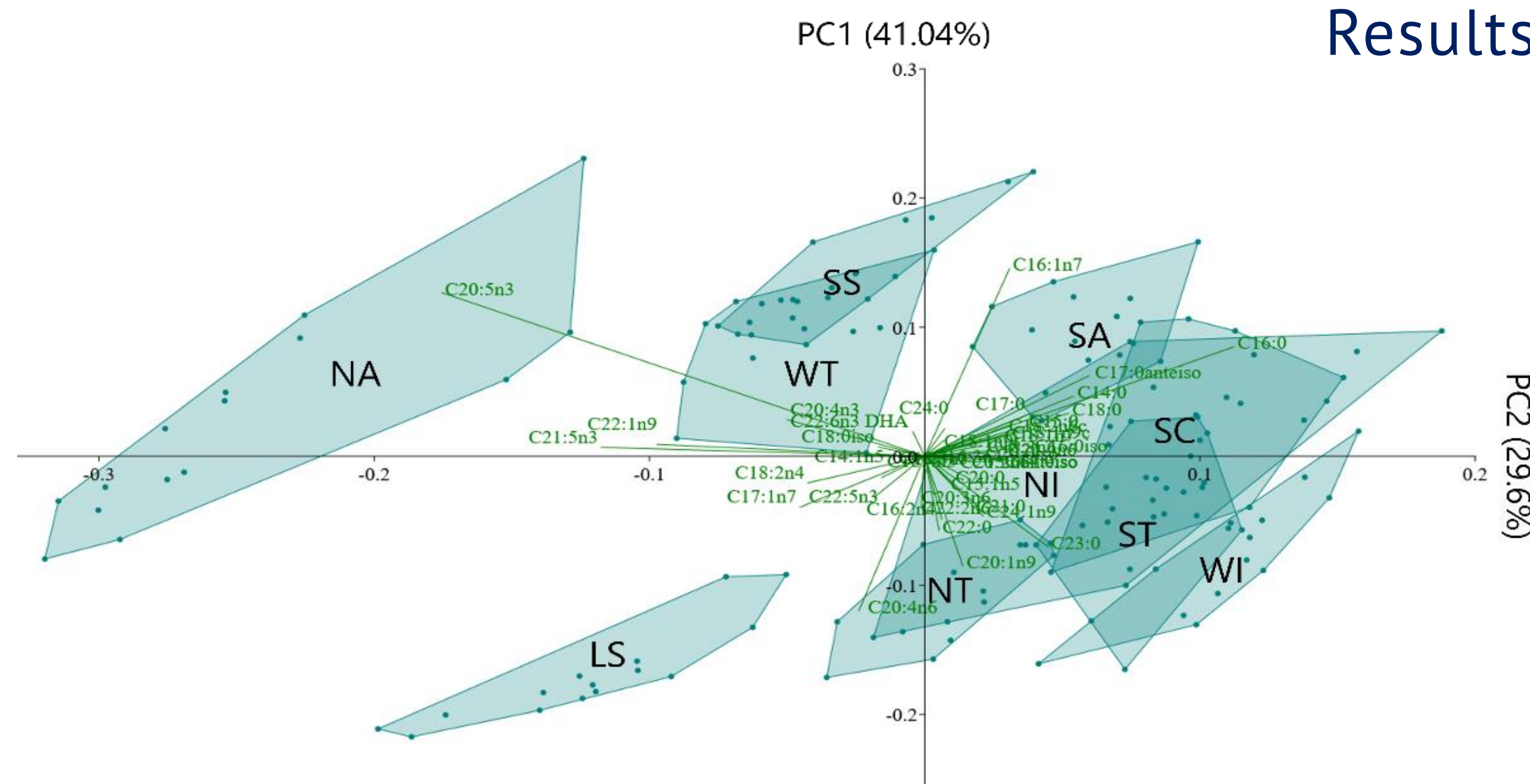
- Determine the fatty acid profile to characterize populations of the most common sea cucumber species in Italy: *Holothuria tubulosa* (Gmelin, 1788) and *Holothuria polii* (Delle Chiaje, 1823)
- Use lipid biomarkers to infer ecological and geographical patterns and provide more information for the management of these species

Study area

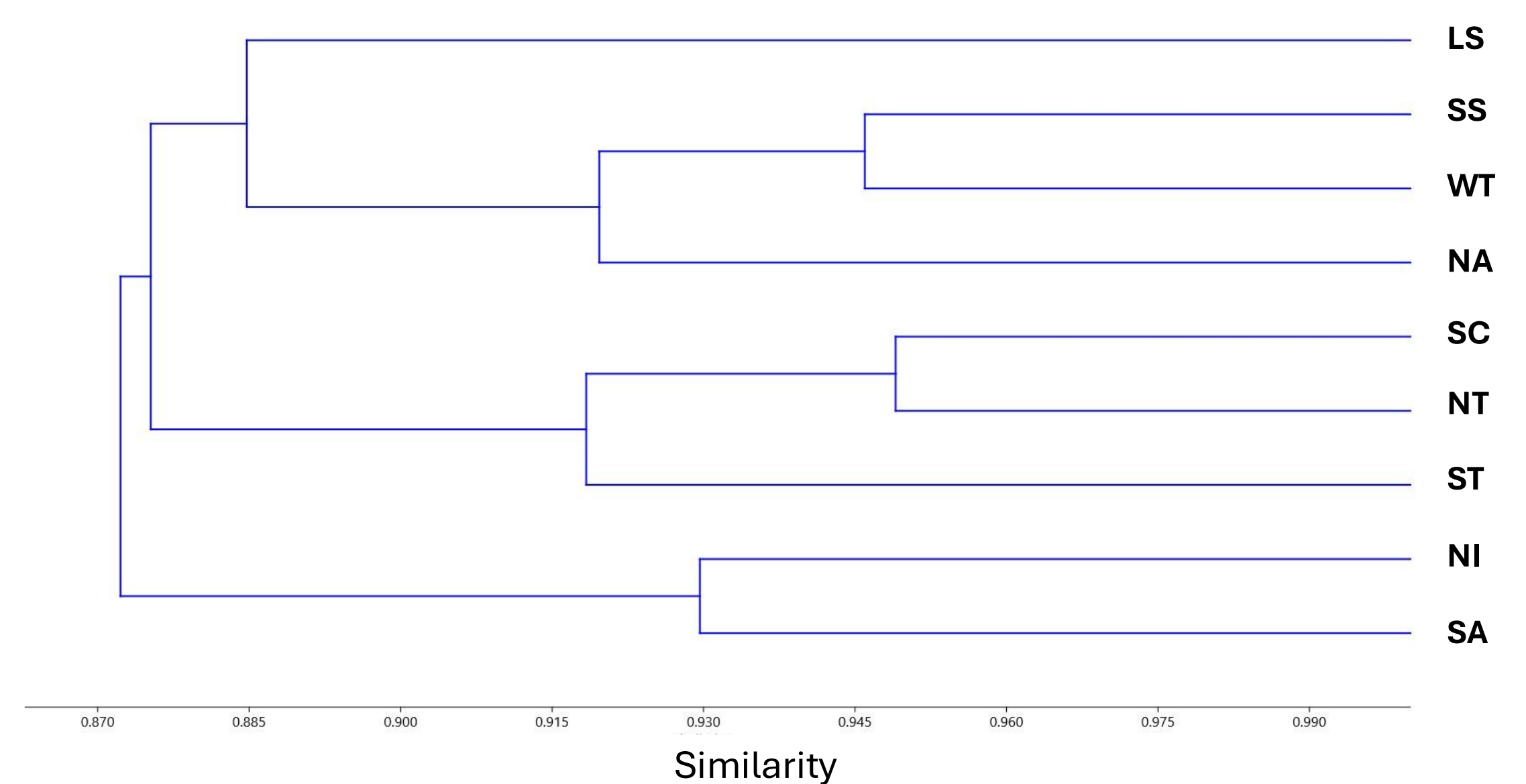
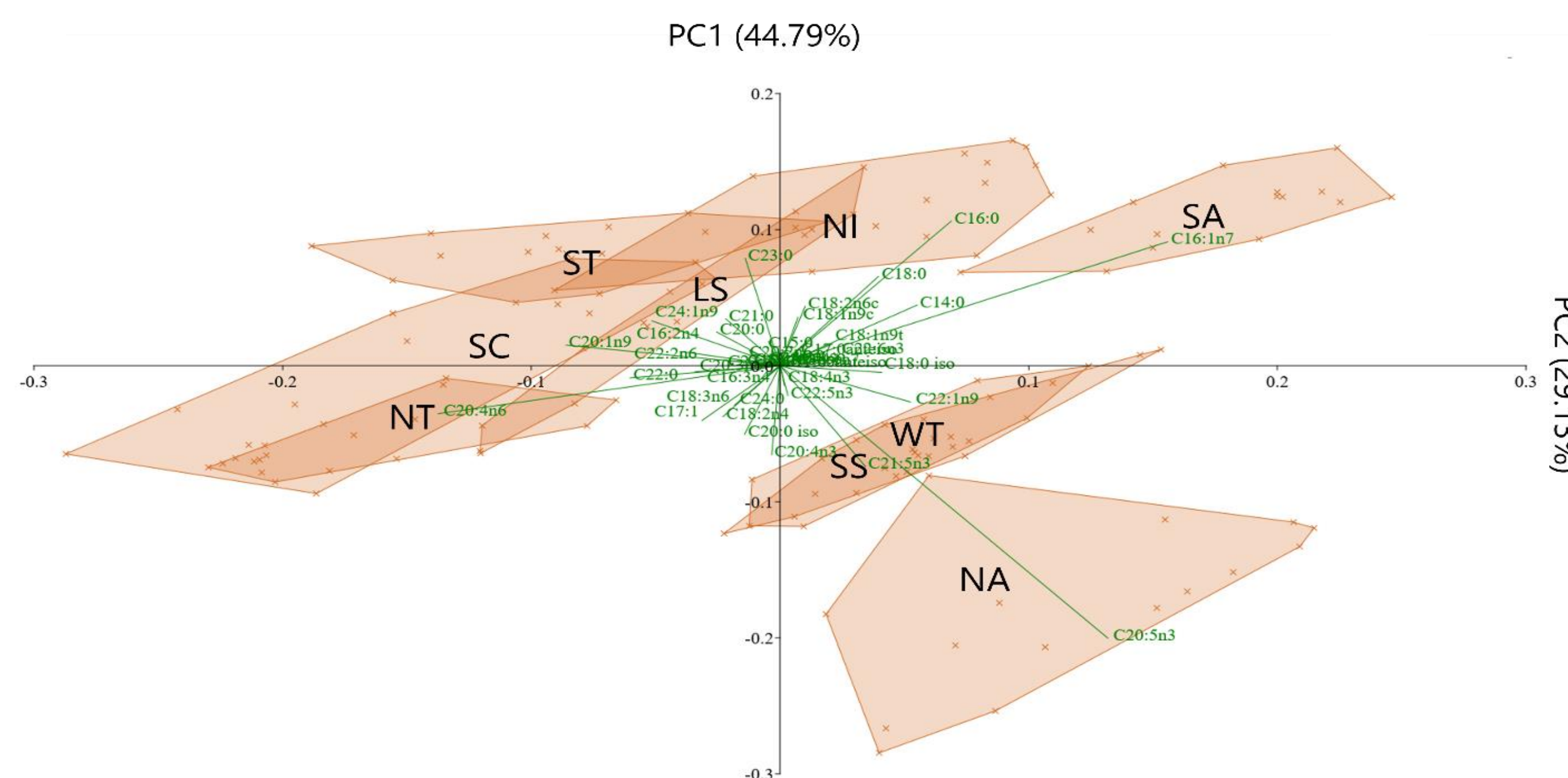


Results

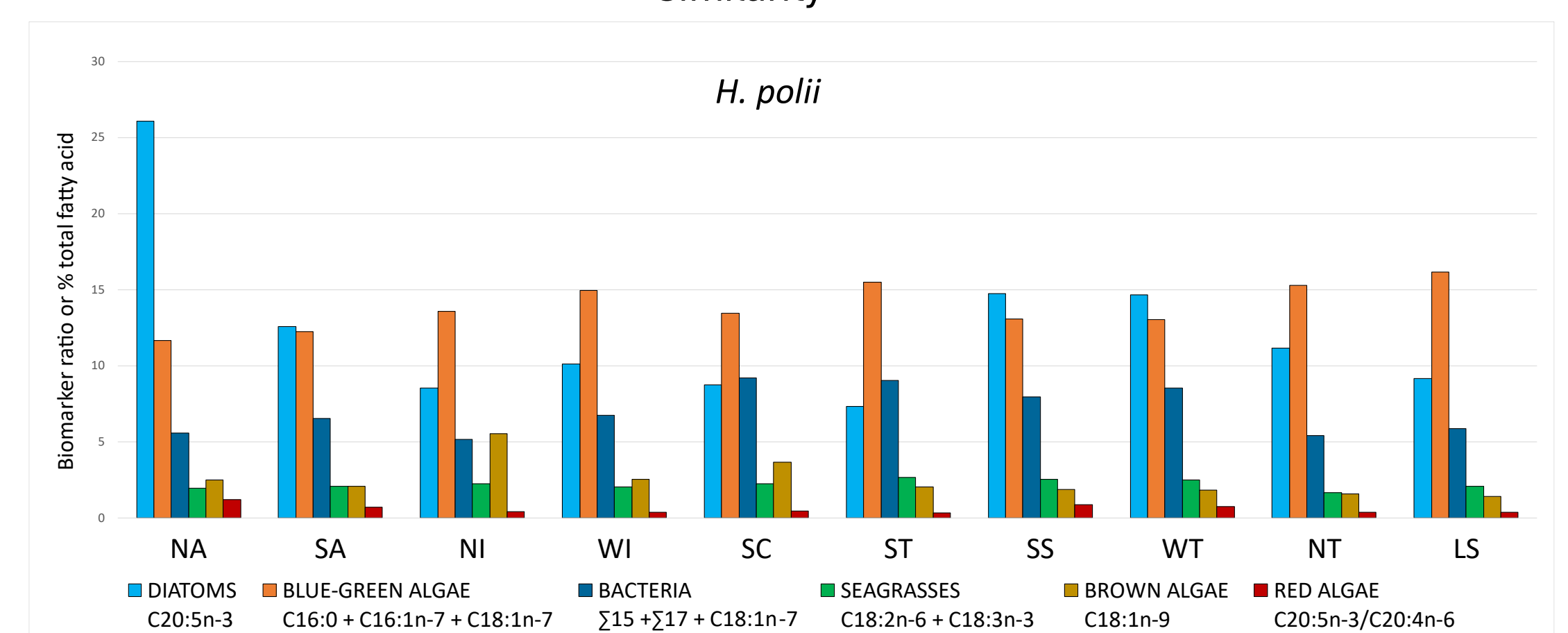
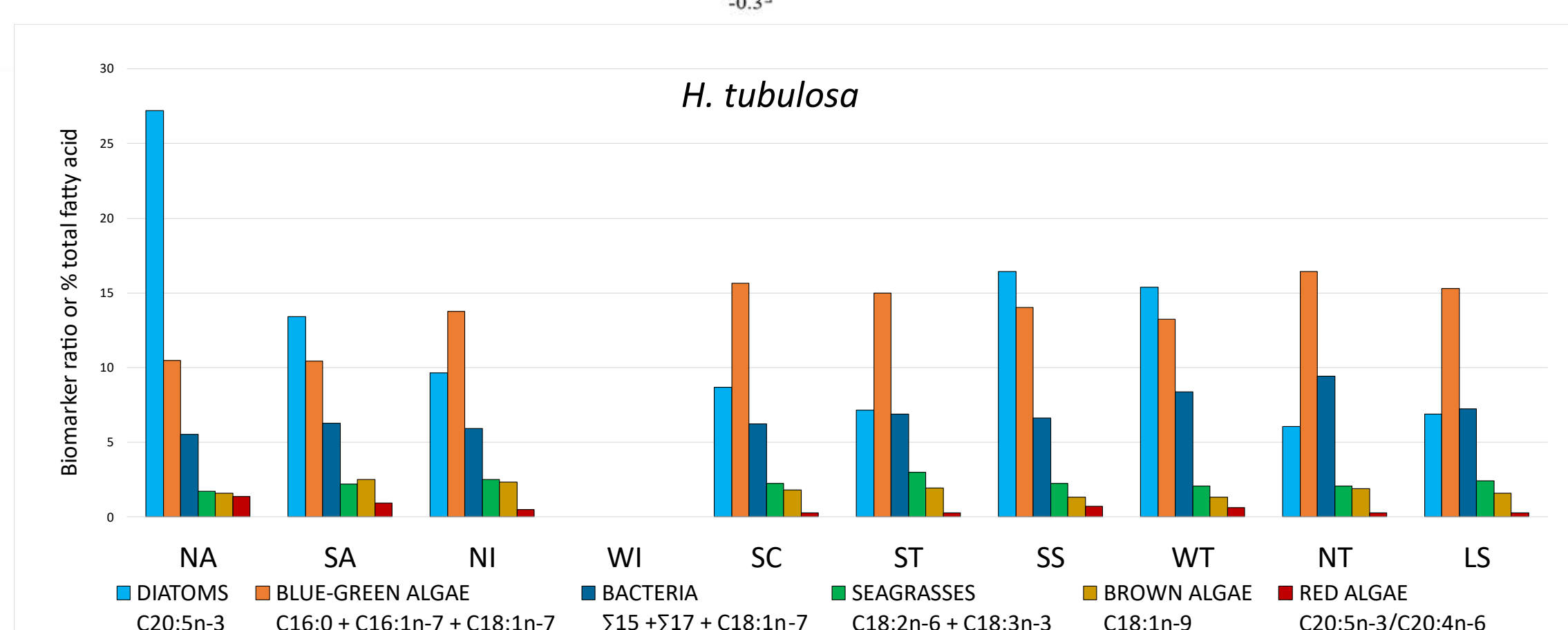
Holothuria polii



Holothuria tubulosa



FA biomarkers



Conclusions

- ✓ Fatty acid profiles represent a useful tool to discriminate sub populations of sea cucumbers in the Mediterranean area
- ✓ FA biomarkers give powerful insights in characterizing trophic ecology of *H. polii* and *H. tubulosa*
- ✓ The selected FA biomarkers might represent a reliable tool to be used for future assessment studies and management strategies