Acoustic identification of krill (*Nyctiphanes couchii* & *Nematoscelis megalops*) in the Spanish Mediterranean Sea

Ana Ventero, Dolores Oñate, Pilar Córdoba & Magdalena Iglesias

MEDIAS
MEDiterranean International Acoustic Survey

Introduction

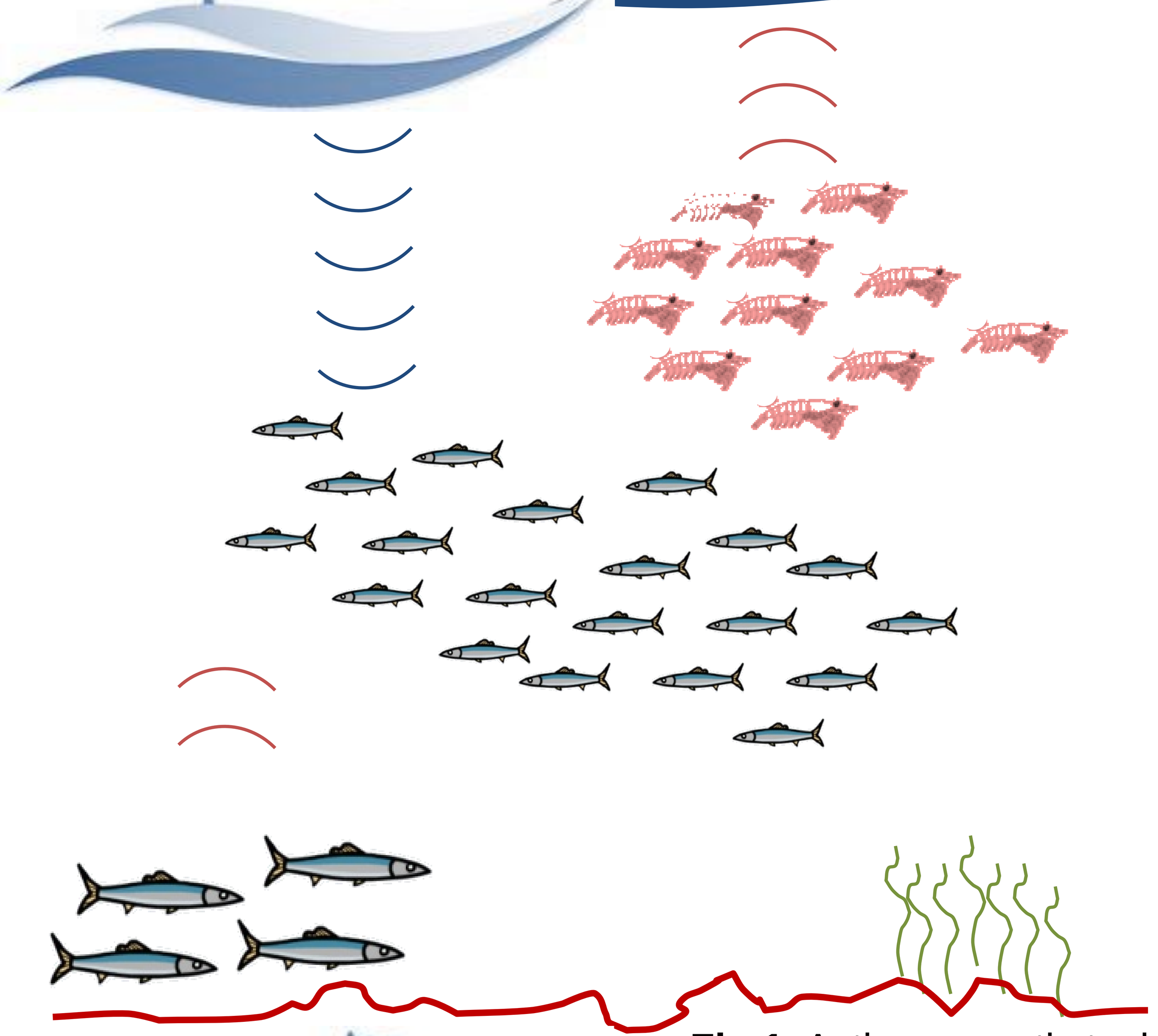
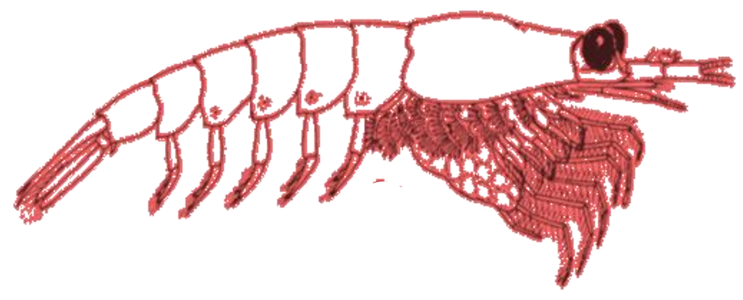


Fig.1: Active acoustic techniques

Active acoustic techniques, involve producing sound and receiving signals from organisms, provide a synoptic view of the water column and constitute an **effective tool** for the **integrated study of the pelagic ecosystem** (Fig 1)**.**

Krill resonance occurs at high frequencies, around 120 or 200 kHz.

Acoustic multifrequency classification exploits differences in the acoustic frequency response of aquatic organisms to deduce their identity.



Objective

Acoustic identification of *krill swarms* in the Spanish Mediterranean Sea (Fig 3)

Material & Methods

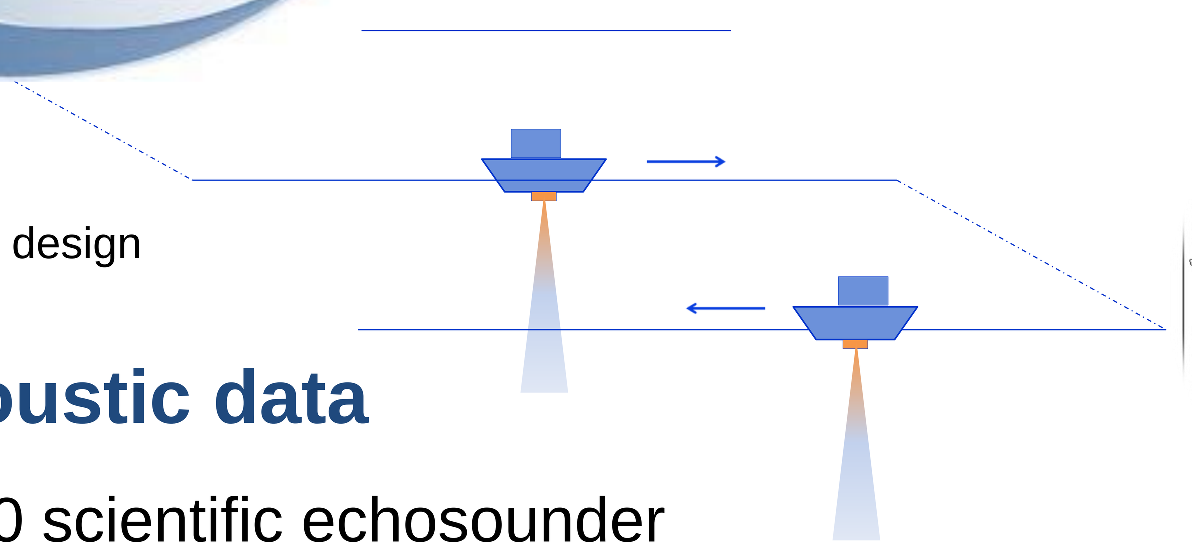


Fig.2:Survey design

Acoustic data

EK60 scientific echosounder
5 difference frequencies: 18, 38, 70, 120 &200 kHz

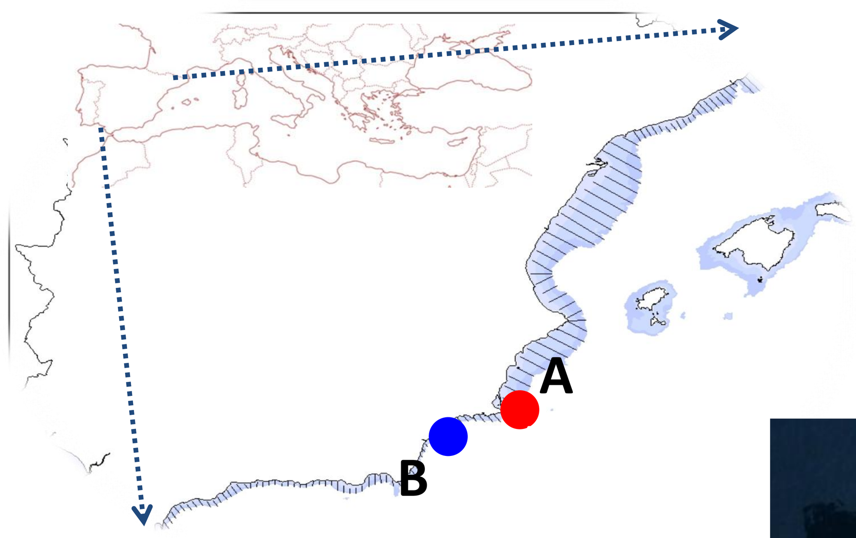


Fig.3: Study area and identification hauls

Biological identification

Plankton net **Bongo 90**
500 & 2000 µm mesh sizes (Fig. 4)
Deep sensor to monitoring the net track in real time (Fig 3)

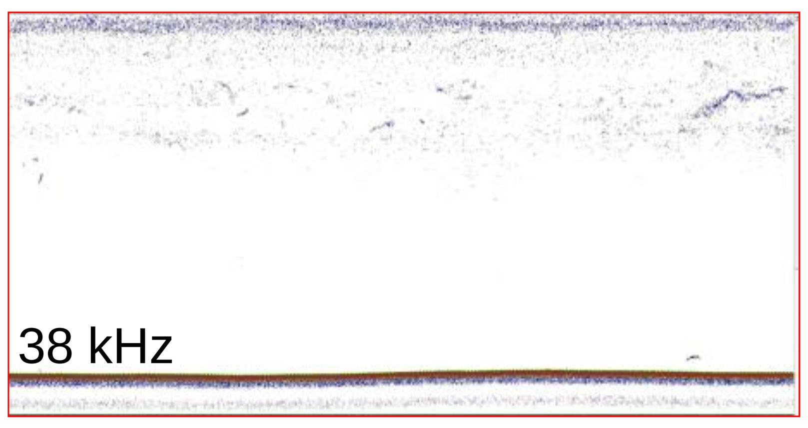
Fig.4:Bongo net

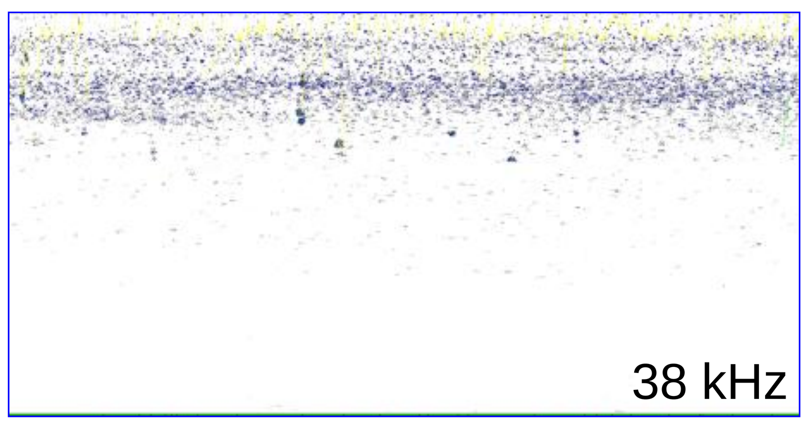
Fig.5: ITI sensor

Results & Conclusions

Fig.6: Krill echograms at 4 frequencies
In red: Station A. In blue: Station B.

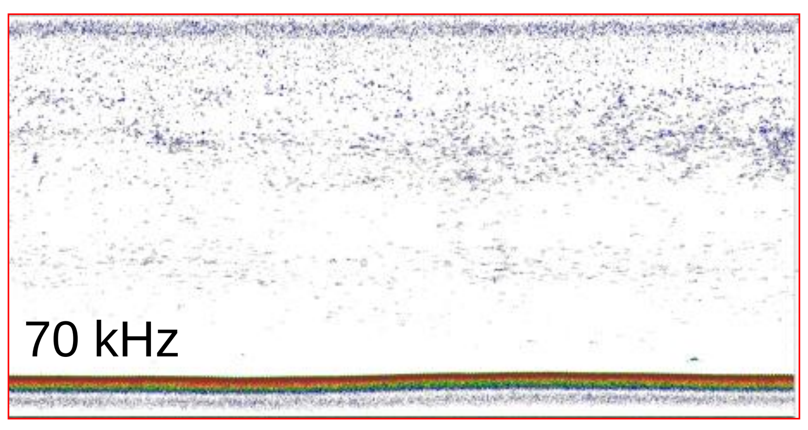
Station A: Continental shelf
Swarms depth: 50m
Bottom depth: 144 m
Date: 16/07/2015





Station B: Shelf break
Swarms depth: 86 m
Bottom depth: 256m
Date:18/07/2015

Fig.7: **A**) ***Nyctiphanes couchii.***
B) Taxonomical detail .



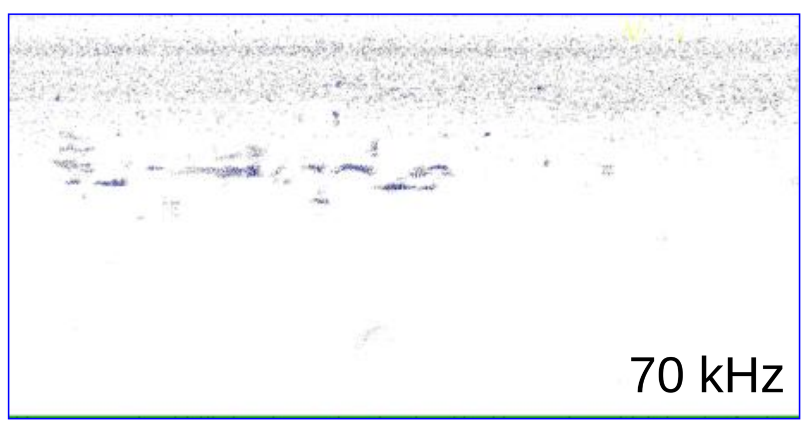
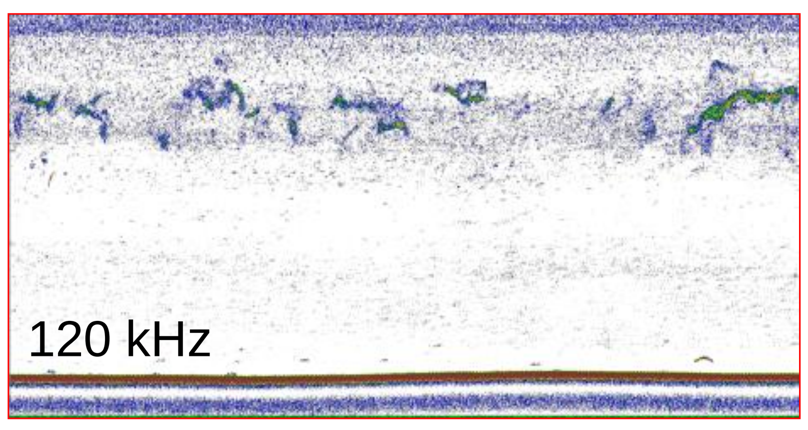
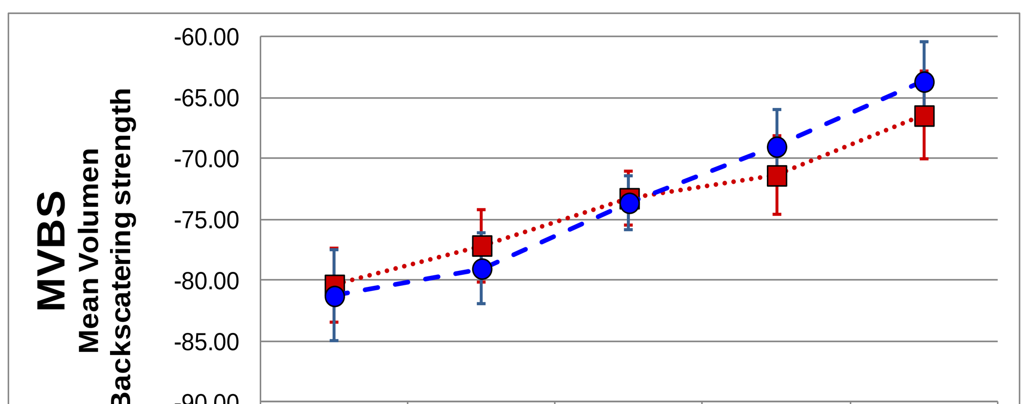


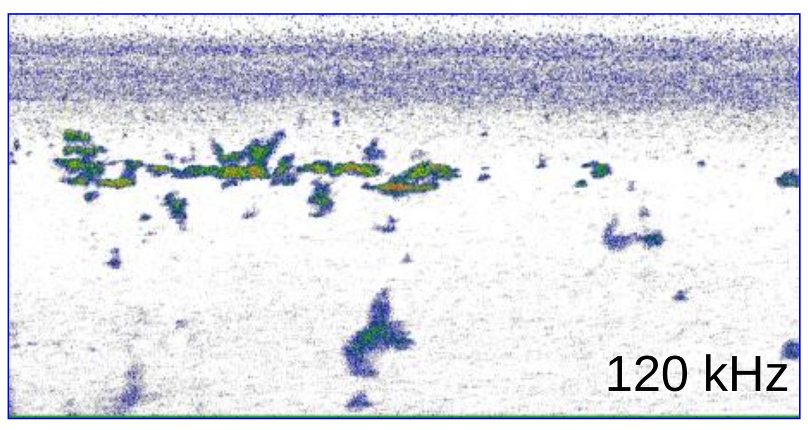
Fig.8: **A**) ***Nematoscelis megalops***,
B) Taxonomical detail .

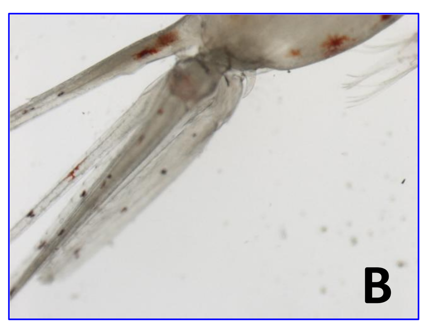


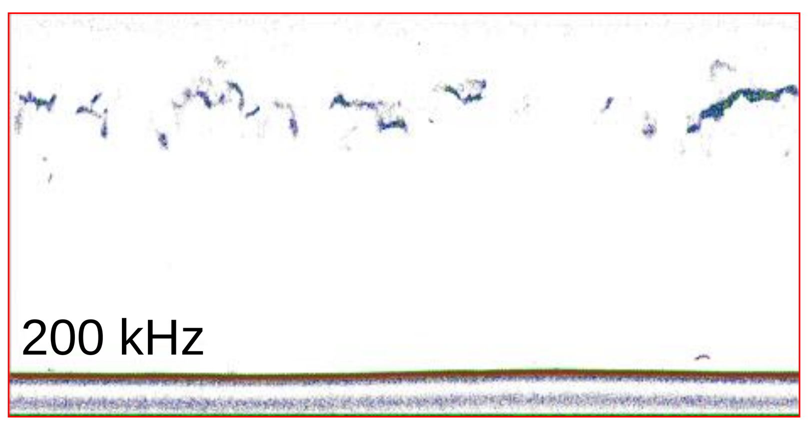


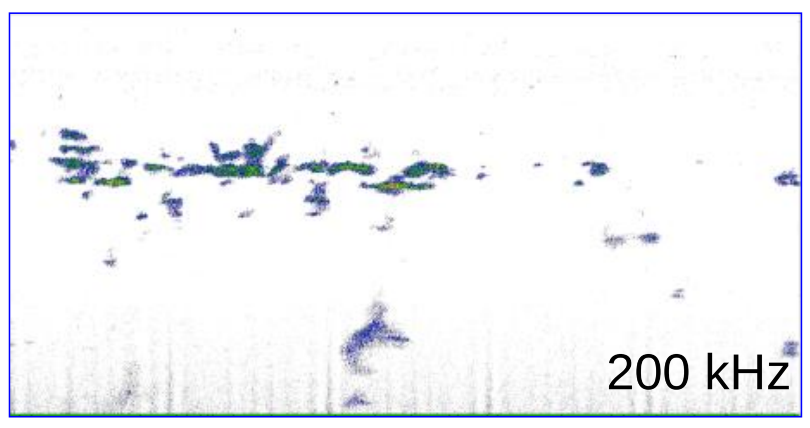
	18 kHz	38 kHz	70 kHz	120 kHz	200 kHz
N. couchii	-80.36	-77.13	-73.24	-71.36	-66.44
N. megalops	-81.27	-79.02	-73.62	-69.00	-63.65

Fig.9: Mean volume backscattering strength at different frequencies for the two species analyzed









Differences in the MVBS (Fig. 9) were exhibited between ***Nyctiphanes couchii*** (Fig.7). and ***Nematoscelis megalops*** (Fig 8)

Further research is needed to separate accurately this two species based on their frequency response in the study area.

41st CIESM Congress – Kiel, Germany
12 - 16 September 2016
THANKS TO EVERYONE WHO HAS MADE THIS WORK POSSIBLE