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B. Sobradillo, G. Boyra, U. Martinez, P. Carrera, **M. Peña** and X. Irigoien, 2020. [Target Strength and swimbladder morphology of Mueller's pearlside \(*Maurollicus muelleri*\)](#).
[Scientific Reports](#), 9:17311 (2019). <https://doi.org/10.1038/s41598-019-53819-6>

Abstract: In the last few years, there has been increasing interest in the commercial exploitation of mesopelagic fish and a trawl-acoustic methodology has been recommended to make estimates of abundance of these resources. This study provides relevant information on the scattering properties of a key mesopelagic fish species in the Bay of Biscay, Mueller's pearlside (*Maurollicus muelleri*), necessary to convert the acoustic density into numerical abundance. The target strength (TS) of pearlside was estimated for the first time at five frequencies commonly used in acoustic surveys. A high-density filter was applied to reduce the bias derived from overlapping echoes erroneously assigned to single targets. Its relationship with fish length (b_{20}) was also determined (-65.9 ± 2 , -69.2 ± 3 , -69.2 ± 2 , -69.5 ± 2.5 and -71.5 ± 2.5 dB at 18, 38, 70, 120 and 200 kHz, respectively). Biomass estimates of pearlside in the Bay of Biscay during the four years of study (2014–2017) are given using the 38 kHz frequency. Morphological measurements of the swimbladder were obtained from soft X-ray images and used in the backscattering simulation of a gas-filled ellipsoid. Pearlside is a physoclist species, which means that they can compensate the swimbladder volume against pressure changes. However, the best fit between the model and the experimental data showed that they lose that capacity during the trawling process, when the swimbladder volume is affected by Boyle's law.

Keywords: