Tugores, M. P., Iglesias, M., Díaz, N., Oñate, D., Miquel, J., and Giráldez, A. (2010). **Latitudinal and interannual distribution of the European anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) in the western Mediterranean, and sampling uncertainty in abundance estimates**. ICES Journal of Marine Science, 67: 000–000.

Abstract: On the Spanish Mediterranean continental shelf, late-autumn echo-integration acoustic surveys have been performed annually since the 1990s. The surveys coincide with the recruitment season of anchovy (Engraulis encrasicolus) and the start of the spawning season of sardine (Sardina pilchardus), and they provide estimates of stock size for the main fisheries in the area. Latitudinal distribution of the abundance of the two species from 2003 till 2006 is evaluated, and transitive geostatistical techniques applied to estimate the sampling uncertainty of the overall abundance estimate. The anchovy stock was found mainly in areas influenced by river run-off, in well-known anchovy spawning areas, suggesting that anchovy remained on their spawning grounds until late autumn or that survival was higher in these regions of enhanced productivity. By the time of the surveys, sardine were already occupying their spawning grounds over the continental shelf. The precision of the abundance estimates was generally high. The few cases of low precision were re-examined and found to stem most probably from processing errors, so the re-examination has contributed to an improvement in the accuracy of the estimates. The greater precision obtained in the southern subarea suggested a greater homogeneity in the spatial distribution of both species.

Keywords: acoustic surveys, Mediterranean Sea, pelagic fish, sampling uncertainty, transitive geostatistics