

Palmer, Miquel; Quetglas, Antoni; Guijarro, Beatriz; Moranta, Joan; Ordines, Francesc; Massutí, Enric, (2009). [Performance of artificial neural networks and discriminant analysis in predicting fishing tactics from multispecific fisheries](#)

Abstract:

In the Mediterranean, bottom trawlers are multispecific and frequently apply different fishing tactics (FTs) even during the same fishing trip. Up to four individual FTs were distinguished in the study area where fishermen usually use mixtures of different FTs in daily fishing trips. Identifying the FTs actually performed is a key issue in traditional stock assessment methods. In this paper, we compare the performance of discriminant analysis and artificial neural networks for predicting FTs from the species composition of daily sale bills. We used data on the landings of each vessel from daily sale bills along with information on the FT actually performed, which was obtained by onboard observers who interviewed skippers about the FTs that they planned to employ. Discriminant analysis and artificial neural networks achieved comparable overall results and the success of predictions depended on both the sample size of the different data subsets (balancing) and the similarity between the species composition of different FTs (overlapping). Although the percentage of correct predictions was high for FTs with more than 25 cases, success decreased when the sample sizes were small. In addition, success in predicting mixtures of two different FTs increased with increasing dissimilarity between their corresponding species compositions.