The problem: fishing discards

It is widely accepted that discards are a waste of resources from the perspective of the exploited stocks and from a macro-economic human perspective. There is thus a strong commitment to reduce the discards of European fisheries by enforcing the landing obligation of the unwanted catch. The European Common Fisheries Policy (CFP) aim to eliminate the discards of managed species. In Iberian waters (ICES Divisions VIIc and Ixa), some fishing fleets currently discard a significant proportion of their catch and by the discard-limiting regulation they must reduce their discards. This can be achieved by reducing unwanted catches, by landing a larger proportion of the unwanted bycatch that is currently discarded or by a combination of the two. In northwestern Iberian waters, technical measures research has focused on the bottom trawl fisheries, as most of the discard choke situations affect these fleets and there are difficulties in improving selectivity.

Fishing selectivity

Research of fish stocks requires the study of the composition of species, sizes and ages of the catches, which should be similar to those of the population. Therefore, it is very important to know the selectivity of the gear and of the species, since in this way it is easier to establish regulatory measures in the fisheries and allows studies on the populations and their degree of exploitation to be more precise.

Fishing selectivity

The DESCARSEL project works on the aim to improve fishing strategies, gear selectivity and discard survival through the use of better practices and technological development of more selective fishing gears, to improve compliance with the landing obligation under the reformed CFP. This research follows a collaborative approach, working with fisher associations and the stakeholders related to landing obligation rules. Selectivity trails have been conducted focused on mesh netting geometry (T90), square mesh panels and mesh size able to balance the roundfish by-catch avoidance. The aim is to test and to compare the configurations of meshes that are more suitable (mesh size and number of meshes) and study the effectiveness of the T90 codends mainly for hake as well as for blue whiting, horse mackerel and megrim. Selectivity parameters are presented here for codends using different mesh sizes, both diamond and 90º turned mesh (T90).

Fish morphology: functional traits

The objective of this work has been to study whether the morphology and size of the individuals of the different species studied European hake (Merluccius merluccius), blue whiting (Micromesistius poutassou), mackerel (Scomber scombrus), horse mackerel (Trachurus trachurus) and four spotted megrim (Lepidorhombus bosci) is related to the selectivity of the fishing gear. Therefore, we analyzed the shape of the fish, its size and features related to swimming capacity which influence their catchability and, therefore, the selectivity of the gear. We tested the functional traits [individual morphological, physiological, or behavioral characteristics that influence growth, reproduction, and even individual survival] of five species subject to TACs Functional traits of 301 fish were analysed by PCA. The results suggest that the morphological traits are related to the type of species (benthic or pelagic in this case), and to the ability to escape through the net, although it would also be interesting to consider the behavior of the fish inside the net.

- Hake morphology was characterized by traits of body surface (Bfl, Blh)
- Mackerel was characterized by traits of visual acuity (Eps, Edit)
- Hake was characterized by traits related to body size (length and weight) (M, L, B)

Selectivity parameters for codends using different mesh sizes, both diamond and 90º turned mesh (T90) for: European hake (Merluccius merluccius), blue whiting (Micromesistius poutassou), horse mackerel (Trachurus trachurus), four spotted megrim (Lepidorhombus bosci).

Selectivity curves for codends using different mesh sizes, both diamond and 90º turned mesh (T90).