

Preliminary estimates and causes of Anglerfish Discard in the Spanish Trawl fishery in the Northeast Atlantic

Díaz, P.* , J. Santos** , I. González Herraiz *** , A. Punzón**** , F. Velasco**** J. Ruiz*** and N. Pérez*

* Instituto Español de Oceanografía. Cabo Estay-Canido. 36200 Vigo, Spain.

** Facultad de Biología, Universidad de Santiago de Compostela. Spain.

*** AZTI Tecnalia. Txatxarramendi Irla z/g. 48395 Sukarrieta (Bizkaia), Spain.

**** Instituto Español de Oceanografía. Promontorio de San Martín, s/n. 39080 Santander, Spain

ICES CM 2007/ K-28

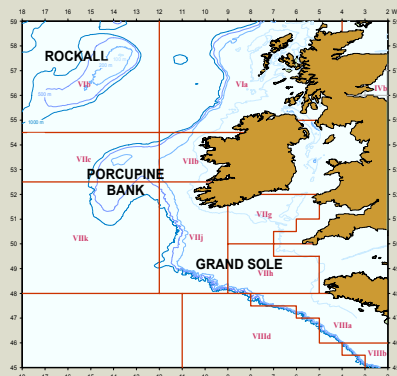
INTRODUCCION

Anglerfish are valuable commercial species for the Spanish otter-trawl fisheries operating in ICES Sub areas VI-VII and Divisions VIIIabd. Nevertheless, discard data of these species have never been used in stock assessment. Most of the specimens discarded are juveniles, and the motive argued by skippers, interviewed on board about the reasons for discarding anglerfish, are the small fish size and little market value (Project 98/095).

The Council Regulation (2406/96) laying down common marketing standards for certain fishery products, set a minimum landing weight of 500 g for anglerfish. As this regulation was implemented in 2000, an increased anglerfish discard in trawl fleet should be expected since that year. Total estimates and causes of anglerfish discard are presented in this poster.

OBJETIVE

Provide information of total discard estimates for anglerfish and investigate the causes of these discarding practises on the Spanish otter-trawl operating in ICES sub areas VI, VII and Divisions VIIIabd.



MATERIAL & METHODS

Discard data were obtained by observers on board in different discard programs carried out by two Spanish Research Institutes, and are available for the periods 1988-1989, 1994, 1999-2000 and 2003-2006 (Table 1).

Total discard (weight and number) and discard length distribution, were estimated by fishing unit. Preliminary total discard was estimated for both anglerfish by sampling trip, and raising by landings, the only available auxiliary variable.

Annual estimates in number of juveniles discarded were compared to recruits abundance (No.) in Spanish Porcupine trawl survey, carried out on Porcupine Bank, part of the distribution area of these stocks. Period data compared has been 2003-2006. In the case of black anglerfish only the shallower depth strata (150-300 m) in the survey was used, since this species, especially the juveniles, is more abundant in these depths.

A generalised linear model (GLM) with a binomial distribution and logic link was used to analyse the discards patterns observed on board.

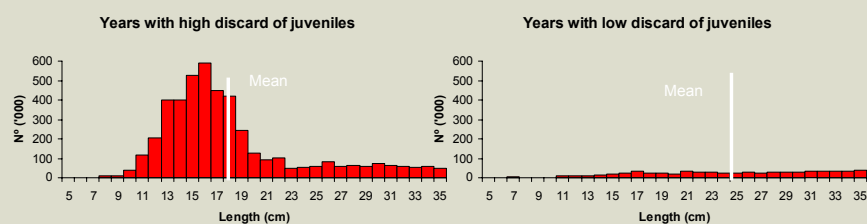
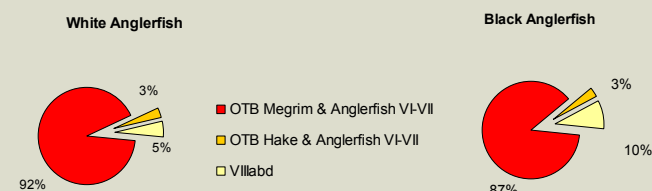
In order to compare our results with those from the ICES assessment (WGHMM 2004) lengths frequency samples were transformed into age using NORSEMP method (Pauly and Caddy, 1985) a modification of Bhattacharya's method for the analysis of mixtures of normal distributions.

RESULTS

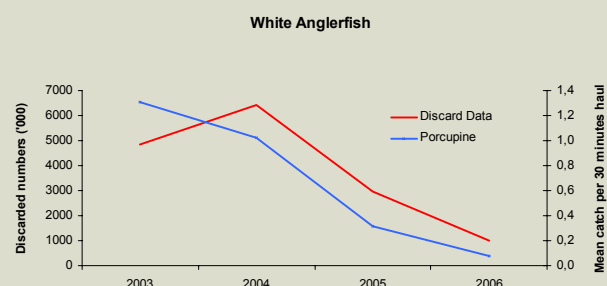
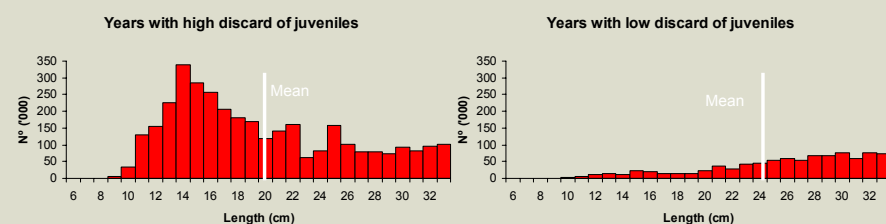
	Sub-area VI - VII										Divisions VIIIabd			
	1988	1989	1994	1999	2000	2003	2004	2005	2006					
Trips	14	8	20	6	14	9	11	10	13	6	4	11	10	
Vessels	14	7	15	6	9	9	11	10	13	4	3	7	5	
Hauls	371	236	703	230	388	370	400	337	377	96	104	264	219	
White anglerfish														
Weight	0,1	0,2	1,2	5,9	1,4	6,9	11,5	4,7	2,1	0,5	0,5	-	0,9	
Discards rate %	6,4	6,7	23,6	74,4	28,2	55,6	71,5	53,9	25,5	10,5	12,4	-	7,2	
Black anglerfish														
Weight	0,2	0,4	2,5	2,4	2,3	2,4	6,8	6,3	11,9	1,2	-	-	2,2	
Discards rate %	1,8	9,8	24,9	45,7	72,8	27,8	58,9	53,5	53,5	31,2	-	-	18,6	

Anglerfish estimated discards present annual differences in abundance and biomass in some of the fishery unit analysed, with the highest value found in 2004 for white anglerfish and in 2006 for black anglerfish (Table 1)

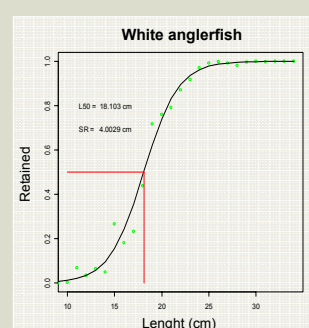
Differences in the discarding patterns are evident when analyses of discard data are done by each of the three fishery units. The fishery unit that contributed to the majority of discards is the OTB targeting megrim and anglerfish.



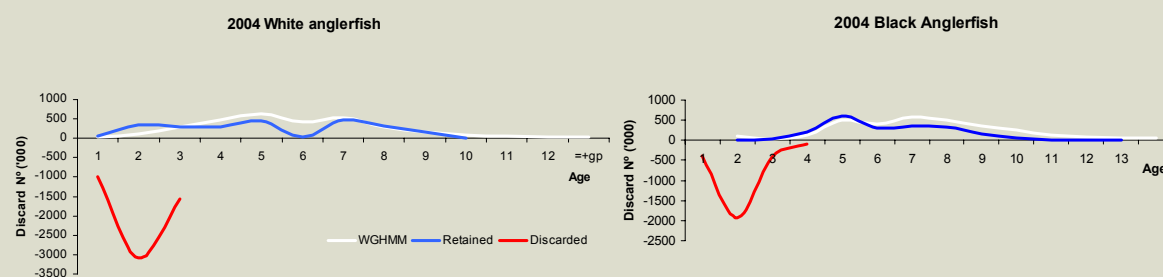
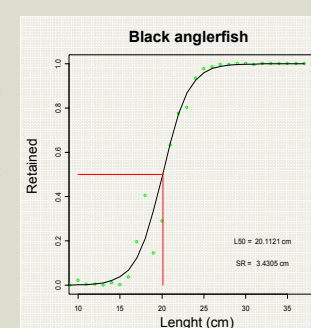
Length distribution of discarded catches, show most of specimens discarded are juveniles. An increase in the number of juveniles is evident after year 2000 and different pattern in length distribution is observed for years with high and low discard of juveniles.



For white anglerfish there is the same tendencies between the number discarded and the recruitment index in Spanish Porcupine trawl survey. On the other hand, no correlation has been found for black anglerfish.



All the annual discarded and retained individuals were added to calculate the retention index for each length class. Black anglerfish is retained at a larger size (L50=20 cm) than white anglerfish (L50=18 cm) in spite of the higher value of black anglerfish in Spanish markets. No statistically significant differences in L50 between the periods before and after the regulation implementation have been found.



Plots show a high correspondence between observed on board retained catch and ICES WGHMM data. Plot below the x-axis represent the estimation of the discard values by the discard program data and not taken into account in working group.

CONCLUSIONS

➤ Preliminary estimates of Anglerfish discard in the Spanish trawl fishery in the Northeast Atlantic show that discard has increased both in number and biomass terms after year 2000.

➤ Discard practises are highly dependent on recruitment abundance as shown by the positive correlation between quantities discarded and recruitment index in Spanish Porcupine trawl survey, at least in White Anglerfish.

➤ Discard data could be a complementary index to determine the strength of annual recruitment in case surveys do not detect it (Black Anglerfish).

➤ Discard pattern is strongly driven by market forces in combination with annual recruitment strength and minimum landing weight regulation.

➤ The inclusion of (quality) discard data in the assessment would produce remarkable variations in the perception of the status of the stock, short term projections, and recommendations for TAC constrictions.

References

ICES 2006 Report of the Working Group on the assessment of Southern Shelf Stock of Hake, Monk and Megrin (WGHMM) ICES CM 2006/ACFM:29

Monitoring of discarding and retention by trawl fisheries in western waters and the Irish Sea in relation to stock assessment and technical measures. Project 98/095

Pauly, D. and J.F. Caddy, 1985. A modification of Bhattacharya's method for the analysis of mixtures of normal distributions. *FAO Fish. Circ.* (781): 16p



Acknowledgements

We kindly thank all the help and assistance given by the Spanish Fisheries Organisation and the vessels owners, as well as to the skippers and crews of these vessels. We are also thankful to all observers as well as observers' coordinator José Lorenzo. Special thanks are given to Hortensia Araujo who has all responsibility on observers on board. AZTI Discard Project is funded by the Department of Agriculture, Fisheries and Food of the Basque Govern.