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Presence of American plaice (*Hippoglossoides platessoides*)  
at Non-habitual Depths in the Northwest Atlantic

by

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**SUMMARY.-**

In 1992 and 1993 American plaice was detected in the catch of the Spanish fleet at depths not habitual to the species (> 800 m.).

The maximum depth was registered in Division 3L at more than 1.400 m. of depth. The maximum yields of this species at depths over 800 m. were observed in Division 3N.

The presence of American plaice at great depth was mainly detected in the first half of the year and above all at the end of winter and beginning of spring.

No clear relationship between the length distribution and the depth reached has been appreciated.

**INTRODUCTION.-**

The bibliography consulted indicates that the habitat of the American plaice is found over soft bottoms in a depth range of between 10 and 400 m. in the northeast Atlantic (Nielsen, 1986; Quero, 1984) and between 20 and 390 fathoms (37-715 m.) in the northwest Atlantic (Scott & Scott, 1989). To the north of Grand Bank (Div. 3L) migrations by adults are not observed, although in the Gulf of St. Lawrence movement towards deeper waters has been detected in winter, where the fish remain until April. (Scott & Scott, 1989)

Since 1990 Spain has been developing a new trawl fishery with Greenland halibut as the target species, at depths of over 800 m. (Junquera et al., 1992). This fleet trawled at up to 1.800 m. of depth in 1993.

In 1990 the working area of these trawlers was limited to the northern region of Flemish Pass, but this area has been extended year by year and can now be considered as covering the whole slope of the regulatory area from 800 m. and up to a maximum limit which now reaches 1.800 m. in some areas.

**MATERIAL AND METHODS**

The information on catches and efforts corresponding to a total of 159000 hours trawling (39000 hauls) in the second half of 1990 and 1991, and the whole year in 1992 and 1993 has been controlled by means of observers on board the Spanish trawl fleet directed to Greenland halibut. Although the target species of this fleet is not American plaice, this yield (Kg. per trawling hours) can provide information on the presence and temporary concentration of this species at deep strata.

For this reason 4 depth strata have been established, one for hauls at depths between 800 and 999 m., the second corresponding to hauls at depths between 1.000 and 1.199 m., the third for those between 1.200 and 1.399 m. and finally the fourth stratum for hauls made at depths of 1.400 m. and over.

The yield for each depth stratum and month was calculated as the total catch of American plaice in the stratum and month divided by the total number of trawling hours in that stratum and month.

Trawling time was calculated as the difference in minutes between the moment when the operation of shooting was finished and the moment when lifting began.

The yields obtained were represented with the aim of observing their evolution throughout the period.

In those hauls in which a significant number of specimens appeared, lengths by sex were measured rounded down to the cm. With these, the length distributions were obtained of the catches in the depth strata for the months in which higher batimetric dispersion was detected in each division, with the aim of analyzing whether patterns existed in the displacement of the different length groups. These months were February in Division 3L and April in Division 3N.

The length distributions of both sexes were treated separately, given that this species presents sexual differences in growth.

#### RESULTS.-

In the period of study the presence of this species was not detected in the depth strata in 1990 nor 1991.

In the winter months of 1992 and 1993 American plaice was detected at over 800 m. of depth in the three divisions analyzed (Figs. 1 to 3). It was also detected at depths over 1.400 m. in Division 3L (Fig. 1). This pattern bears similarity to the migratory scheme described by Scott & Scott (1989) for American plaice in the Gulf of St. Lawrence.

If the years 1992 and 1993 are compared it can be seen that the phenomenon was much more intense in 1993, higher yields being obtained in all divisions and the presence of American plaice at depths of over 800 m. was detected in more months than in 1992 (Figs. 1 to 3).

The length distributions of the catch by division and depth strata indicate that specimens from Division 3N are slightly larger than those from Division 3L for the same depth strata (Figs. 4 and 5).

In both Division 3L and Division 3N the larger females are distributed in the stratum from 1.000 to 1.199 m. In the case of males there does not seem to be a clear pattern in the length/depth relationship.

The absence of American plaice in the catch of the Spanish fleet targeted at deep water species in the years 1990 and 1991 may have been due, at least in part, to the fact that during these years observers were only present in the second half of the year. As can be seen in Figures 1 to 3, the phenomenon seems to occur mainly in the first half of the year, and the lack of observers during this period would prevent detection. This same problem could also have affected the results from Division 3N in 1992, since, as mentioned previously, the fleet began working in the northern area of Flemish Pass, and the working area gradually expanded towards the south. In the first half of 1992 the fleet worked very little in Division 3N and so the information available is scarce (there were only 3 hauls controlled by the observers). This division has been frequented habitually by the fleet since the second half of 1992.

REFERENCES.-

- Junquera, S., S Iglesias and E. de Cárdenas. Spanish fishery of Greenland halibut (*Reinhardtius hippoglossoides*) in 1990-1991. *NAFO SCR Doc.* 92/28. Ser. No. 2075. 14pp.
- Nielsen, J.G. 1986. Pleuronectidae. In: *Fishes of the north-eastern Atlantic and the Mediterranean*. Ed. Whitehead, P.J.P., M.L. Bauchot, J.C. Hureau, J. Nielsen and E. Tortonese. Vol III. UNESCO, 1299-1307.
- Quero, J.C. 1984. *Les poissons de mer des pêches françaises*. J. Grancher ed. Cambrai Paris, 394pp.
- Scott, W.B. and M.G. Scott. 1988. *Atlantic fishes of Canada*. Can: *Bull. Fish. Aquat. Sci.* 219, 731pp.

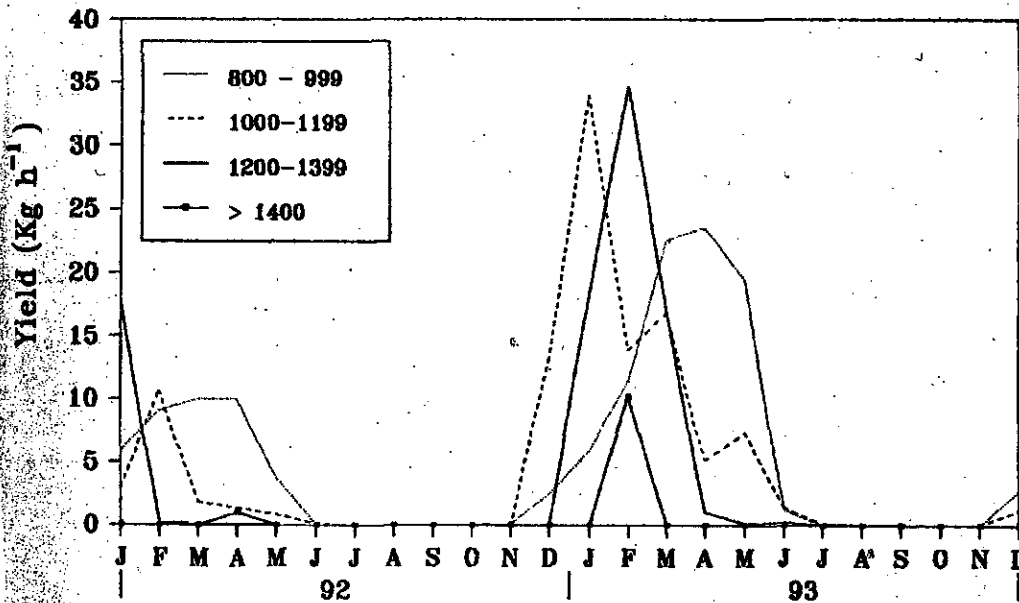


Fig. 1.- Kg/hour of American plaice by depth strata, caught by Spanish depth water trawlers in NAFO Div. 3L.

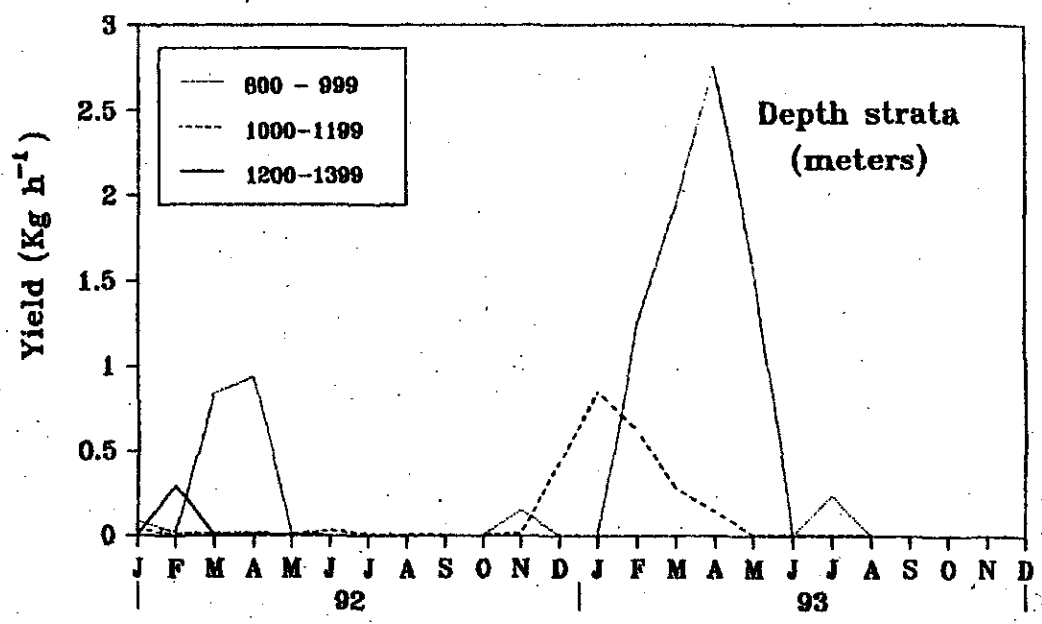


Fig. 2.- Kg/hour of American plaice by depth strata, caught by Spanish depth water trawlers in NAFO Div. 3M.

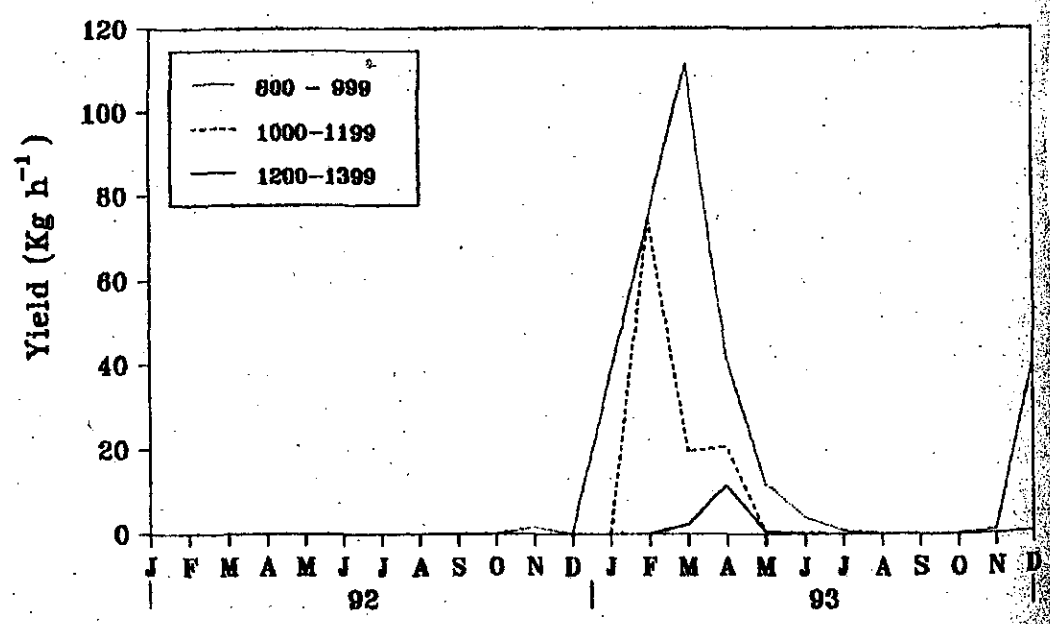


Fig. 3.- Kg/hour of American plaice by depth strata, caught by Spanish depth water trawlers in NAFO Div. 3N.

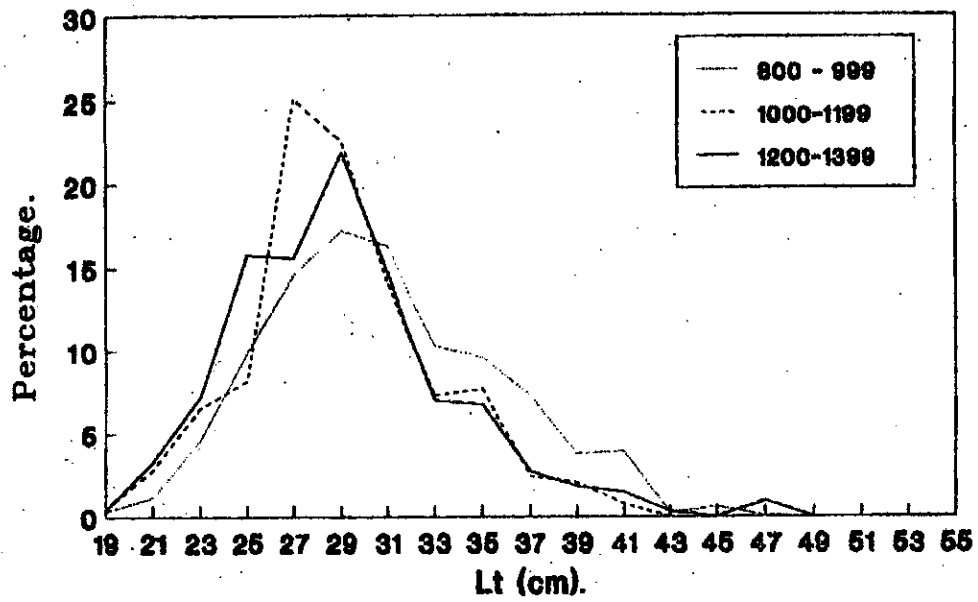


Fig. 4a.- February 1993 length distribution by depth strata of males in 3L NAFO Division.

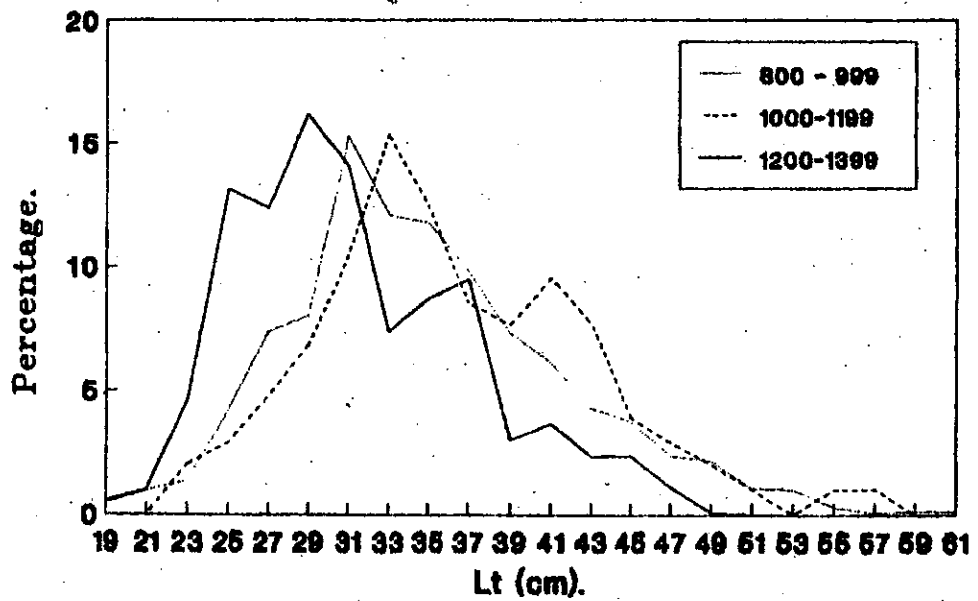


Fig. 4b.- February 1993 length distribution by depth strata of females in 3L NAFO Division.

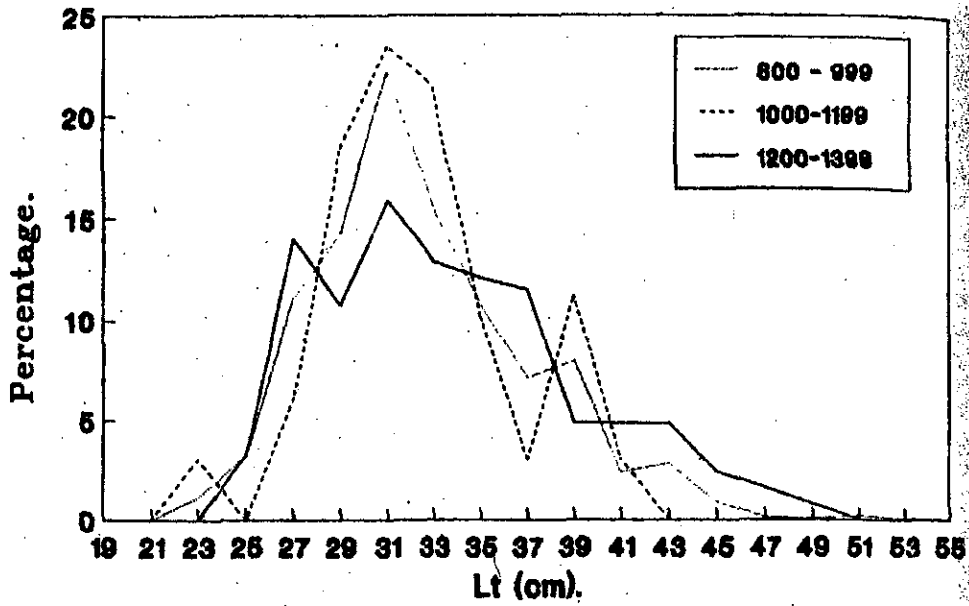


Fig. 5a.- April 1993 length distribution by depth strata of males in 3N NAFO Division.

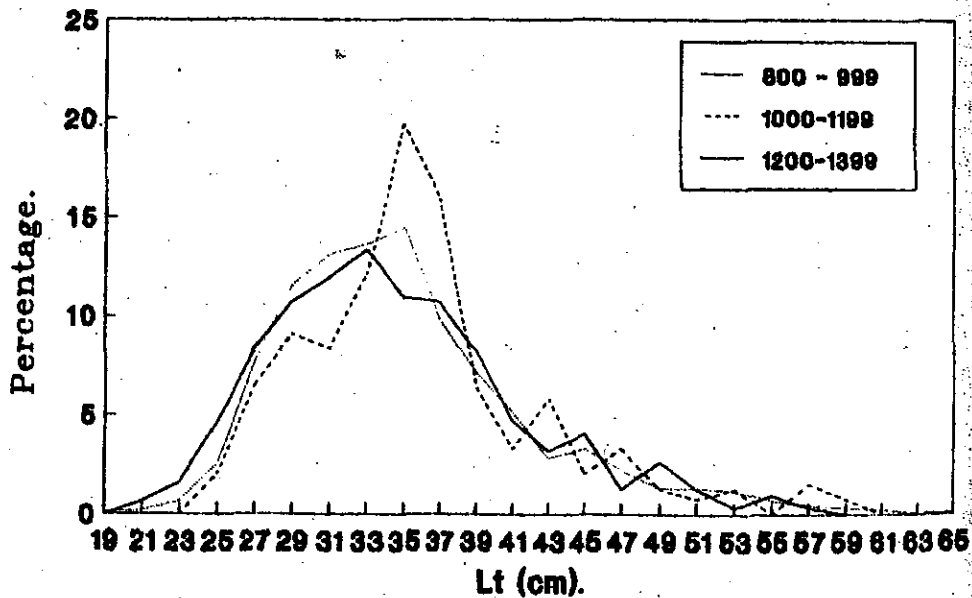


Fig. 5b.- April 1993 length distribution by depth strata of females in 3N NAFO Division.