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Stock Assessment of *Illex illecebrosus* in Division 4W Based on the Area-Density Method

by

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Fishing Operations of the Romanian Fleet in Div. 4W

The Romanian fishing area in 1979 along the southern part of Sable Island Bank was smaller in 1979 than in 1978. Trawling was carried out in depths of 135-190 m in 1979 compared with a range of 170-200 m in 1978. The directed fishery for *Illex* commenced on 1 July and continued intermittently until 12 September 1979 with 2 trawlers, *Iezer* and *Oltet*. The area of the fishery is shown in Fig. 1 and was calculated to be 9,988 km<sup>2</sup>, the fishery and sampling over the area being effectively uniform.

The total Romanian catch in Div. 4W was 832 tons (Table 1). The trawler *Iezer* carried out 90 hauls in about 207.5 hours at a mean trawling speed of 3.9 knots (7.23 km/hr). The mean width between the net wings was 39 m, and the total trawling surface covered was 58.66 km<sup>2</sup>. The trawler *Oltet* carried out 24 hauls in 65 hours at a mean trawling speed of 4.7 knots (8.71 km/hr). The mean width between the net wings was 44 m, and the total trawling surface was 24.93 km<sup>2</sup>.

The male:female sex ratio of the samples was 59.2:40.8. The mean weight of *Illex* in the catches was 152 g, with males and females averaging 149 g and 158 g respectively.

The mean catch per day, considered constant over the period taking in account that most of the hauls were made in July, was 24.4 tons, consisting of 14.44 tons of male *Illex* and 9.96 tons of females, and representing a total of  $16.05 \times 10^4$  specimens per day. The mean density of squid per km<sup>2</sup> was calculated to be  $6.54 \times 10^4$  specimens, and the total number of squid in area of fishing operations (9,988 km<sup>2</sup>) was estimated to be  $6.53 \times 10^8$  specimens.

Squid Biomass in the Fishing Area

The total Romanian catch (832 tons) consisted roughly of  $5.5 \times 10^6$  specimens. The ratio of catch to estimated number of squid in the area discussed was

$$R = \frac{5.50 \times 10^6}{6.35 \times 10^8} = 0.0084$$

and the total biomass in the area was estimated to be

$$B = \frac{832}{0.0084} = 98,781 \text{ tons.}$$

Conclusion

The method used for *Illex* biomass assessment in Div. 4W can be considered as a practical method for general orientation on stock size. The estimated biomass of 98,781 tons, based on Romanian catches in 1979, indicates a continuing decline in the *Illex* stock in Div. 4W in the summer period, when compared with estimates of 205,500 tons in 1977 and 138,400 tons in 1978 (Lipinski, MS 1978, MS 1979).

References

LIPINSKI, M. MS 1978. Stock assessment of *Illex illecebrosus* (LeSueur, 1821) in ICNAF Div. 4W, determined by the area-density method. ICNAF Res. Doc. 78/II/10, Serial No. 5162.

LIPINSKI, M. MS 1979. Assessment of *Illex illecebrosus* (LeSueur, 1821) stocks in ICNAF Div. 4W, determined by the area-density method. ICNAF Res. Doc. 79/II/37, Serial No. 5363.

Table 1. Romanian catch and effort data for the directed squid fishery in Div. 4W, July-September 1979.

	Jul	Aug	Sep
No. of vessels	1	1	1
Days on ground	23	7	5
Fishing days	22	7	5
No. of hauls	69	21	24
Fishing hours	152.4	55.2	65.0
<i>Illex</i> catch (kg)	573,570	148,520	109,700
Catch/day (kg)	26,071	21,217	21,940
Catch/haul (kg)	8,312	7,072	4,571
Catch/hour (kg)	3,765	2,691	1,688

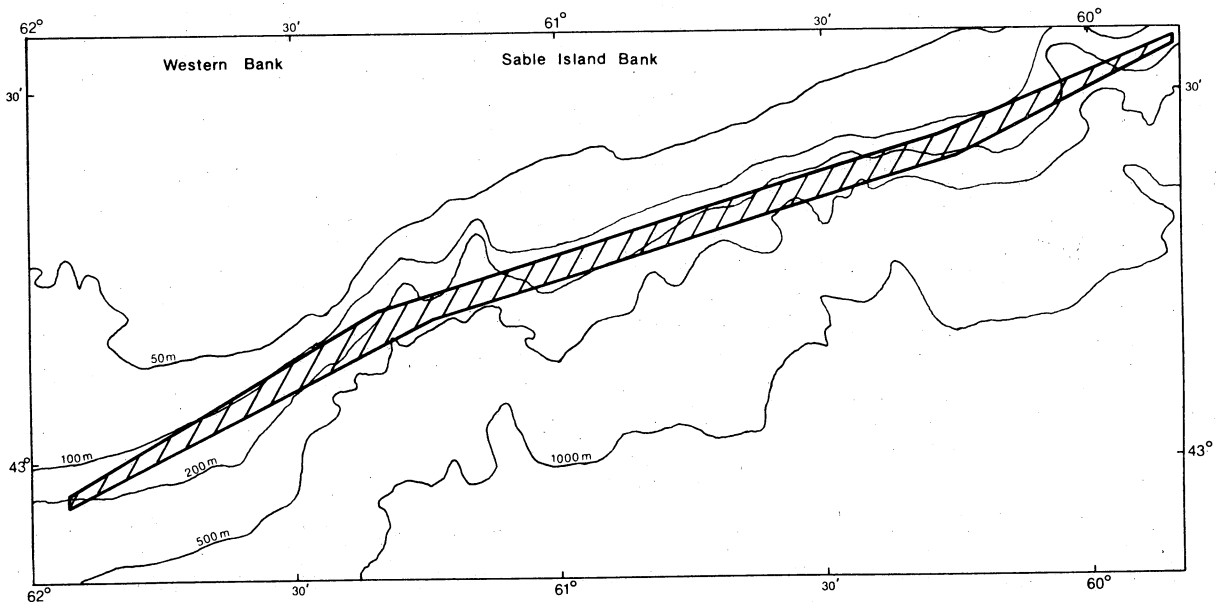


Fig. 1. Main fishing areas in directed squid fishery in Div. 4W, July-September 1979.