

THE EFFECT OF JELLYFISH ON THE SMALL SCALE FISHERY IN THE BLACK SEA

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Horse mackerel is a most of the economic fish in the Turkey small scale pelagic trawl fishery.

By-catch in fisheries has been considered a serious problem.

Jellyfish are important by-catch pelagic trawl fisheries in the Black Sea coast of Turkey such as inedible, damage to target species, decreasing catch amount and mean length of fish.

- **Ctenophores population explosion was characterized by significant changes in the structure of plankton communities in the pelagic ecosystem of the Black Sea which effected fish productivity (Bat et al., 2009).**
- **Jellyfish may be a major limiting factor for the population growth in copepods and larval fish. They may impede fishing activities and power plant cooling (Möller, 1980).**

Material and Methods

The experiments were carried out Black Sea coast (Sinop-Samsun).

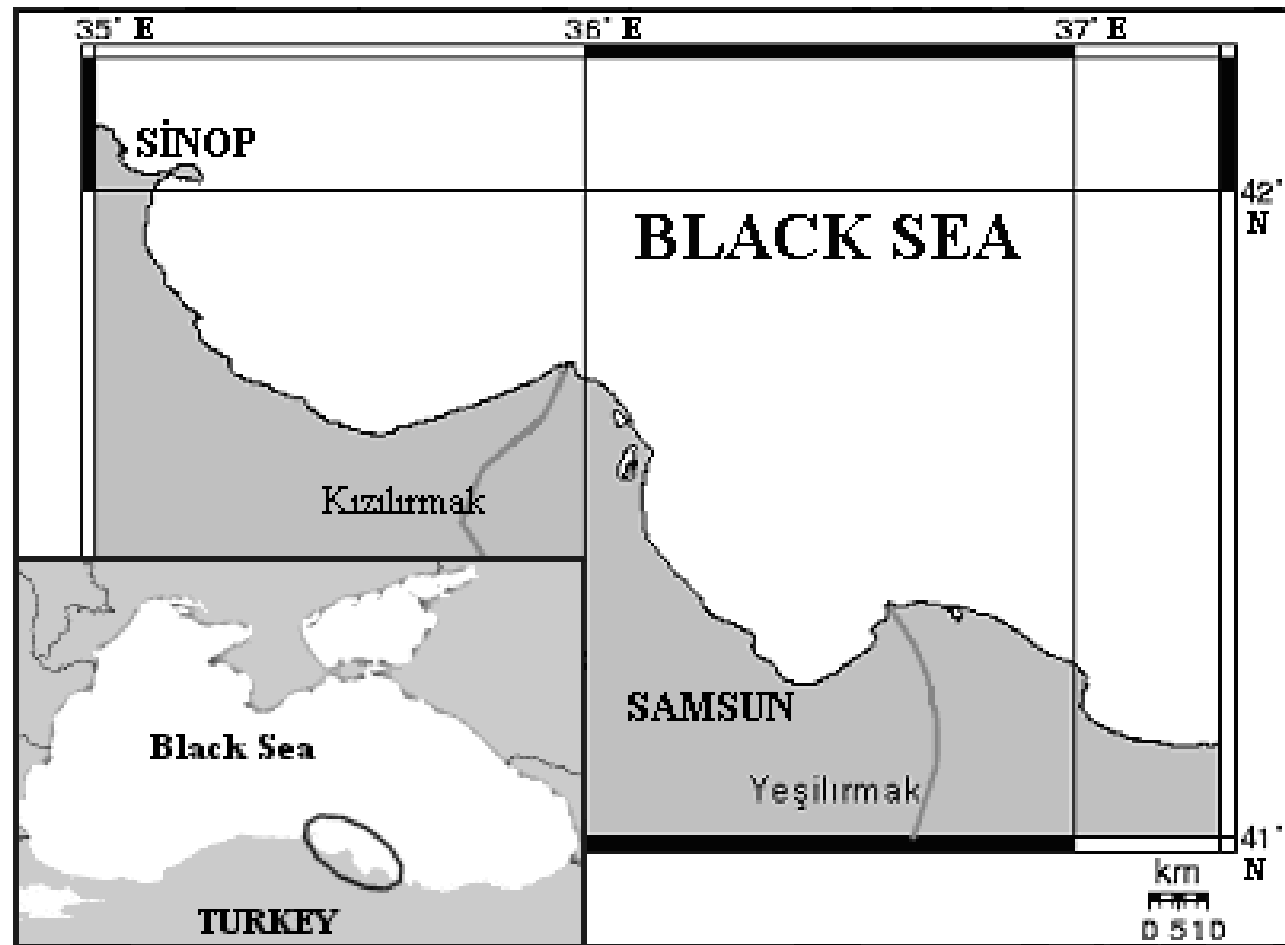


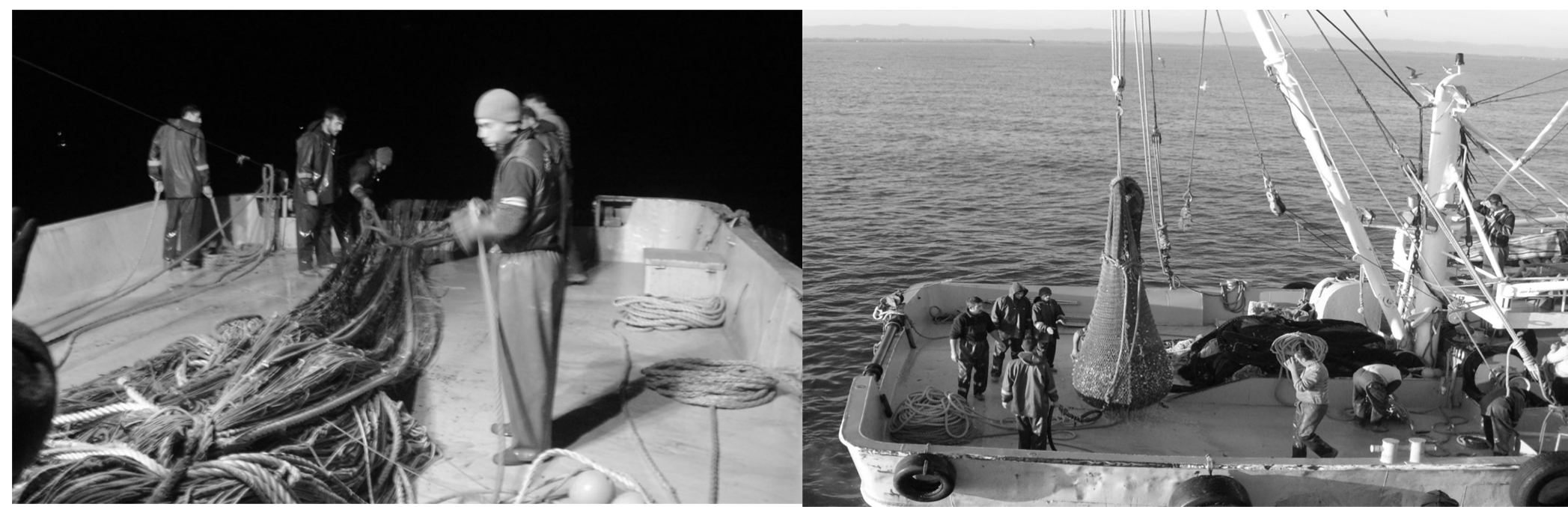
Fig 1. The map of study

The fishing field is between Kızılırmak and Yeşilirmak rivers, an important migration point of school fishes.

*The study was made; pairly midwater trawl
used on commercial fishing boat, in the
Black Sea on October 2008.*



- **Total 11 night and 11 daytime pelagic trawls were towed in the study.**



Water depth of the fishing ground was between 18-72 m. Towing speed varied between 2.0-2.5 knots and towing duration was 180 minutes in all the hauls.

After each haul, the catches in codend were sorted separately according to horse mackerel and moon jellyfish. Data were recorded total catch (kg) for *Aurelia aurita* and horse mackerel each hauls.



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Total lengths of horse mackerel were measured to the nearest 1 mm. The Kruskal-Wallace one way *analysis of variance* method was used to the mean length in the hauls.

RESULTS

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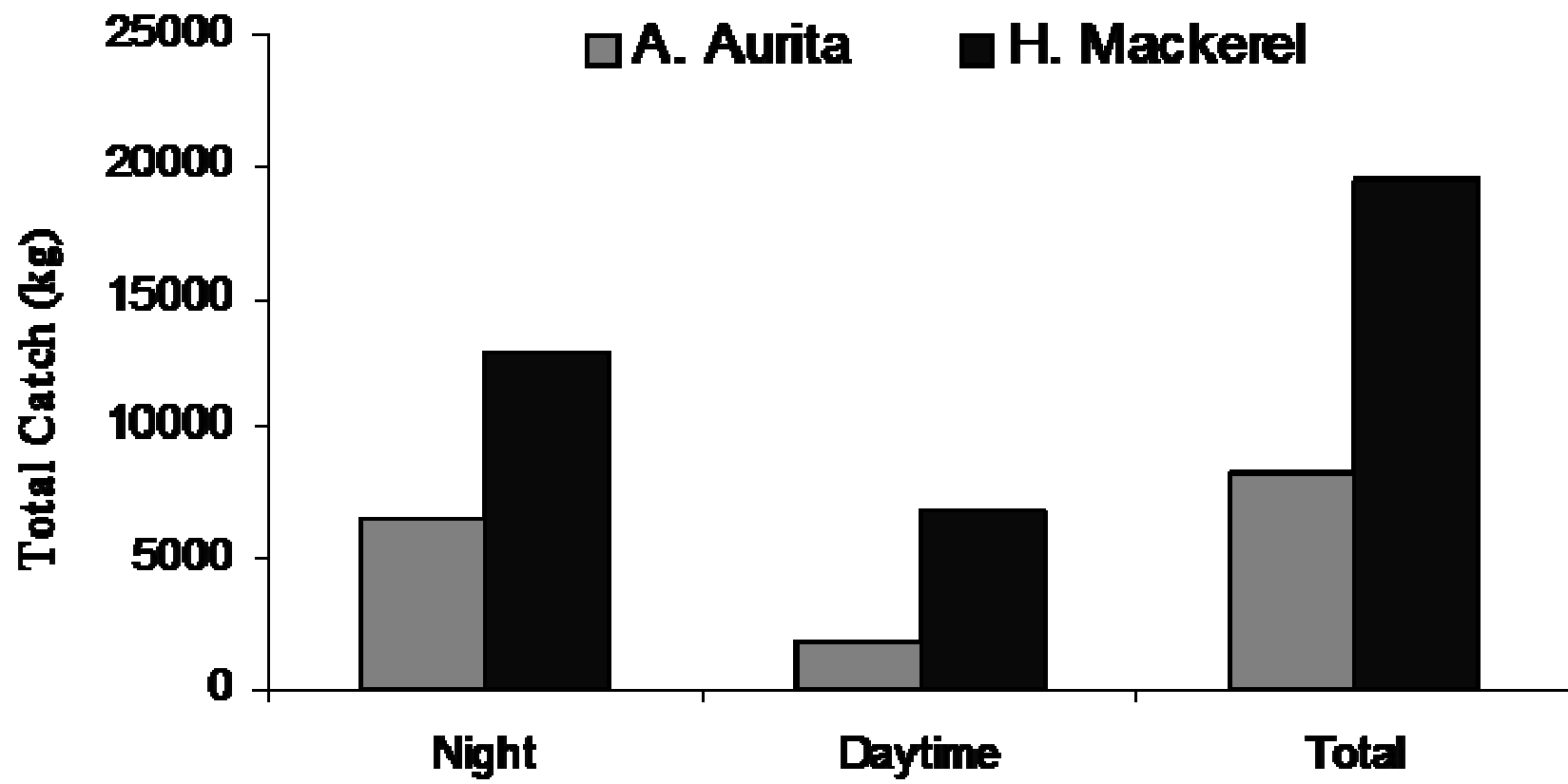


Table 1. Catch amount of moon jellyfish and horse mackerel in the night experiments (kg)

Hauls	Moon jellyfish	Horse mackerel
1	1020	1736
2	150	2324
3	340	1162
4	50	2100
5	580	616
6	1500	322
7	400	840
8	120	1260
9	1160	350
10	815	710
11	280	1348
Total	6415	12768
Mean	583.182±43.49	1160.727±61.49

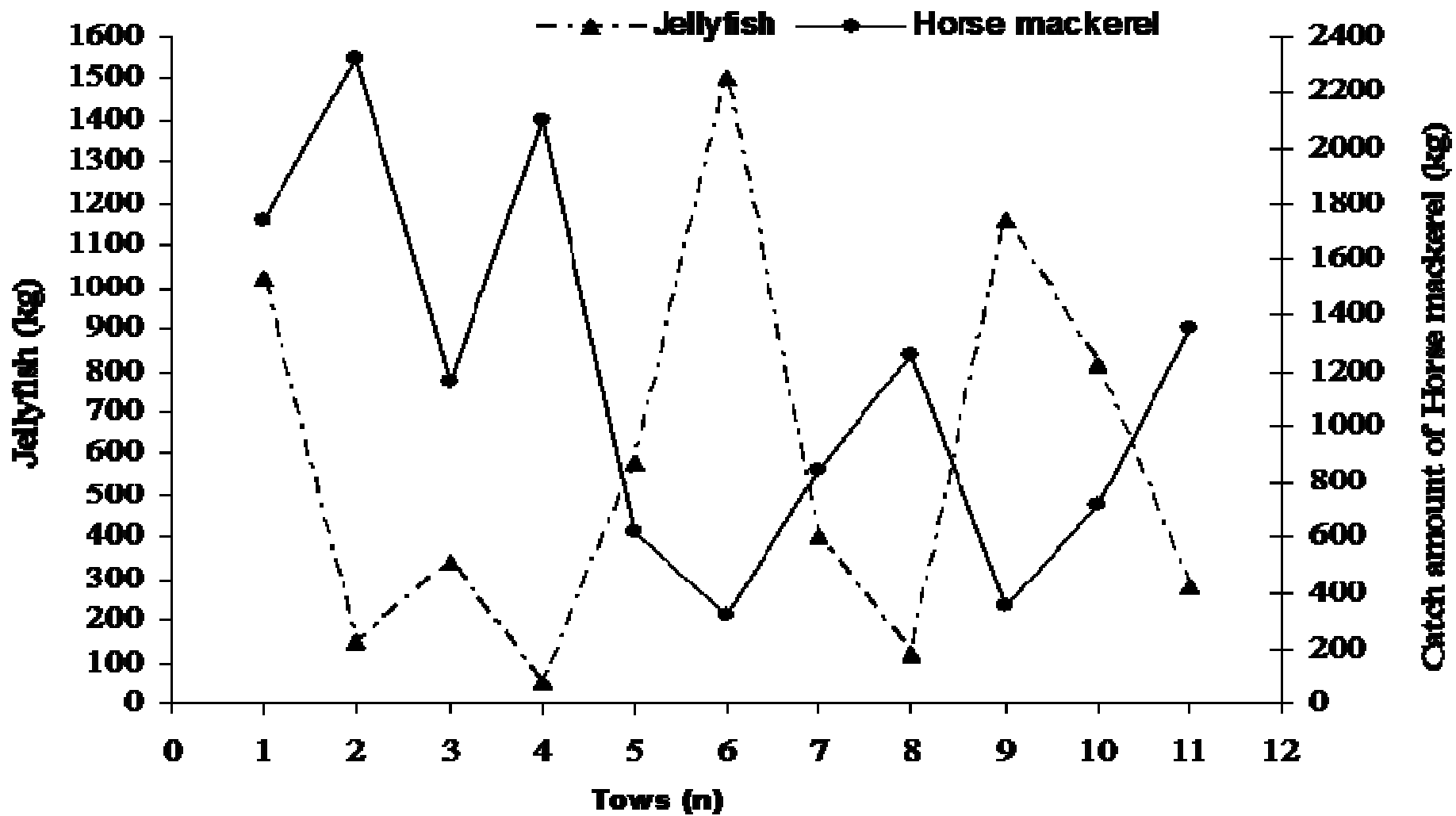


Fig 2. Catch amount changing of moon jellyfish and horse mackerel (Night tows)

Table 2. Catch of moon jellyfish and catch and mean length of horse mackerel

Hauls	Moon jellyfish	Horse mackerel
	Catch (kg)	Total length (cm)
1	1020	12.8±0.09 ^a
2	150	13.6±0.12 ^b
3	340	13.3±0.08 ^{ab}
4	50	13.7±0.11 ^b
5	580	13.2±0.17 ^{ab}
6	1500	12.6±0.06 ^a
7	400	12.9±0.13 ^a
8	120	13.3±0.18 ^{ab}
9	1160	12.8±0.10 ^a
10	815	13.2±0.12 ^{ab}
11	280	13.5±0.09 ^b
Total	6415	
Mean	583.182±43.49	13.2±0.11

Test: a,b (↓) Differences between groups show with different letter is significant.

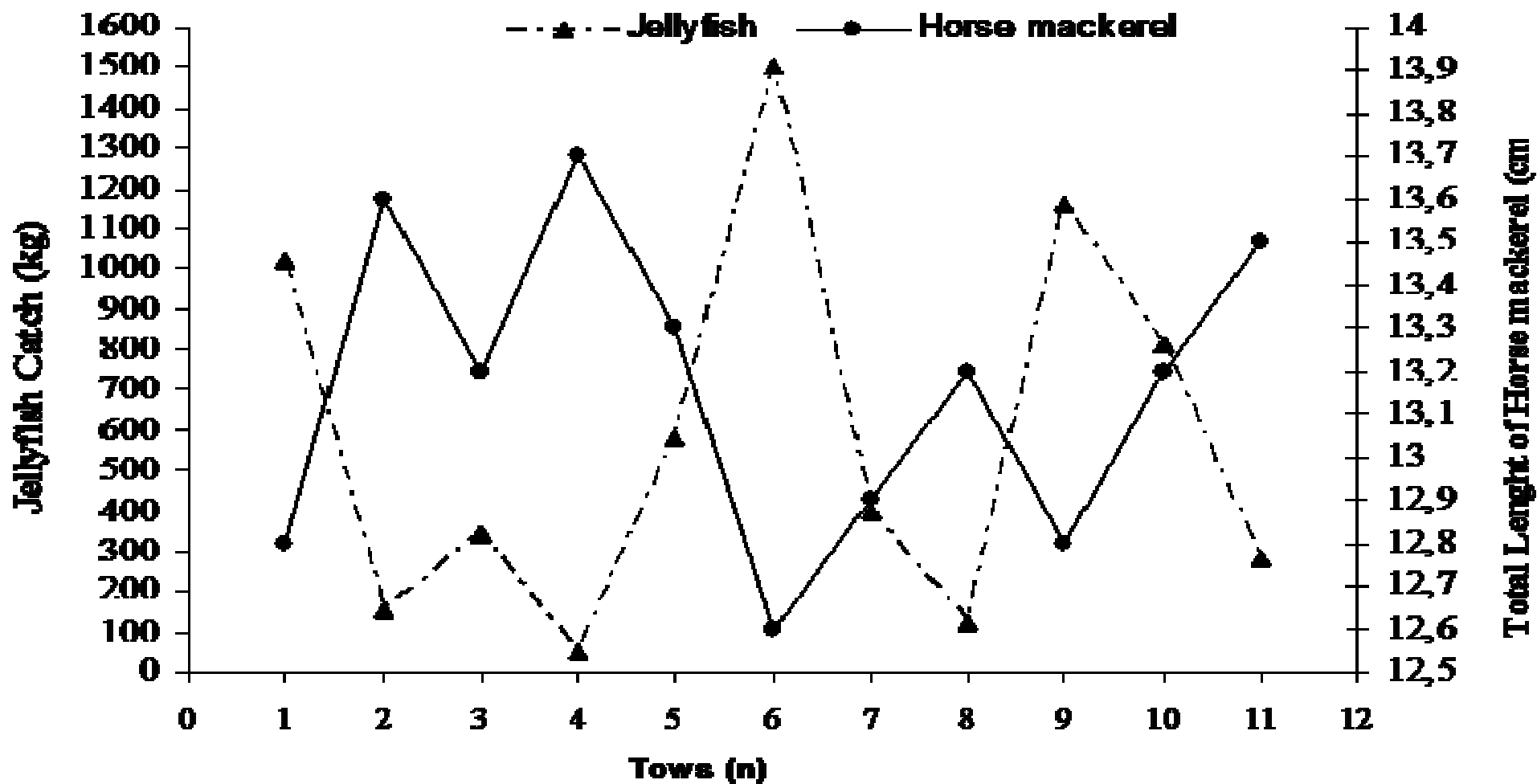


Fig 3. Catch amount of moon jellyfish and mean length of horse mackerel

Table 2. Catch amount of moon jellyfish and horse mackerel in the daytime experiments (kg)

Hauls	Moon jellyfish	Horse mackerel
1	185	205
2	144	417
3	95	1113
4	221	435
5	124	757
6	137	680
7	78	1240
8	170	500
9	125	840
10	300	235
11	226	350
Total	1805	6772
Mean	164.091±19.65	615.64±103.62

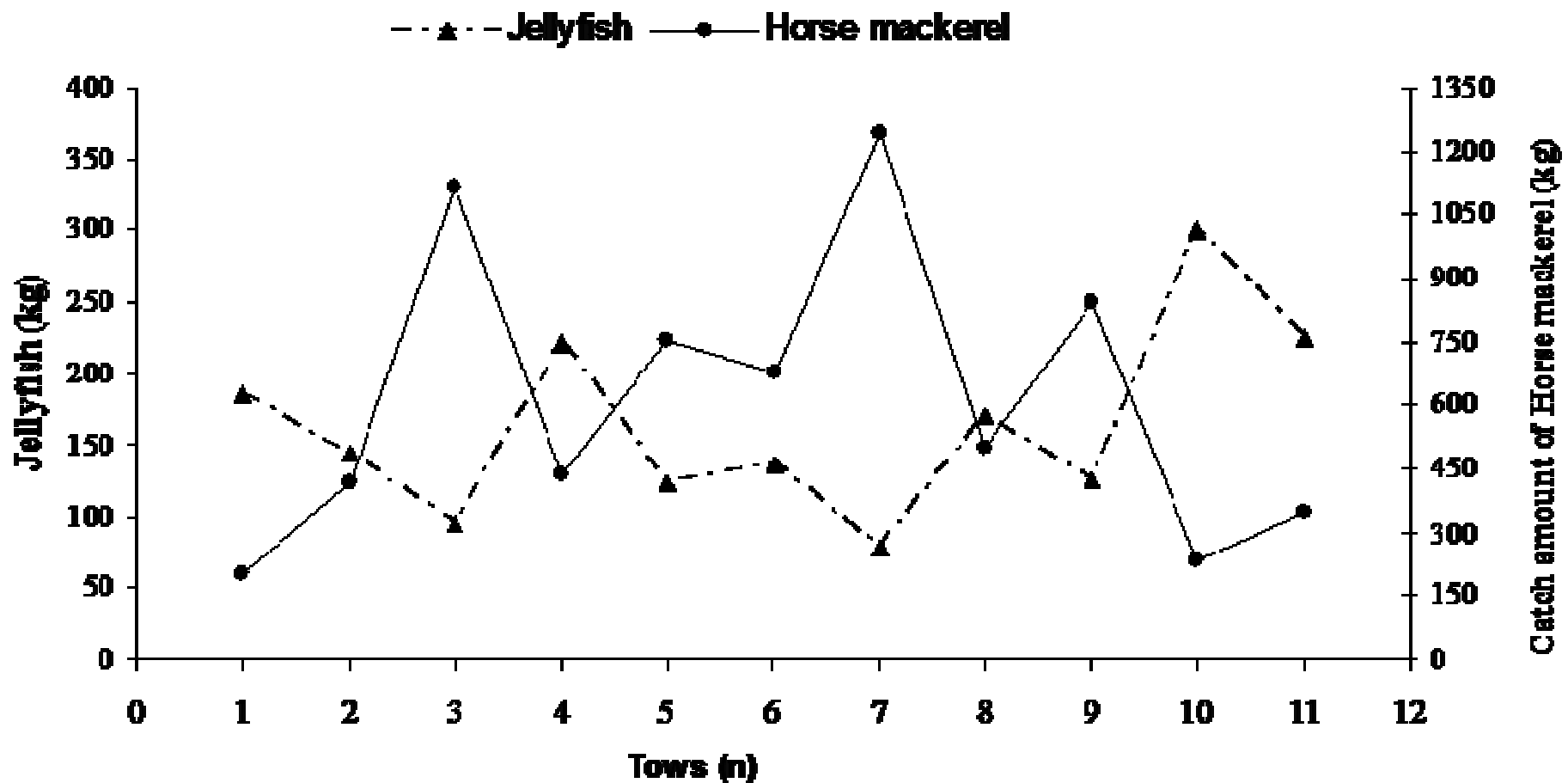


Fig 4. Catch amount changing of moon jellyfish and horse mackerel (Daytime tows)

- **In the present study the effect of moon jellyfish (*Aurelia aurita*) on the catch efficiency and length composition of horse mackerel caught by the midwater trawl.**