



Serial No. 5001
(D.c.2)

ICNAF Res. Doc. 77/V1/1

ANNUAL MEETING - JUNE 1977

Comparisons of lengths of the same haddock measured at sea and
on shore, and round and gutted

by

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INTRODUCTION

In fisheries investigations some of the fish are often measured fresh and round at sea shortly after capture, and others are measured round or gutted on shore some days later when the fish are landed after storage in ice. It is important to know what differences may result from these procedures.

In investigations of haddock discards at sea by the Fisheries and Marine Service, Biological Station, St. John's, Newfoundland, in 1948-58, experiments were carried out to discover the magnitude of the possible errors, in considering that fish measured round at sea were of similar length either in the round or gutted condition when landed. The same haddock were measured from snout to mid-fork of the caudal fin, to the nearest centimeter, at sea in the round condition shortly after capture on the research vessel *Investigator II* and on commercial trawlers, placed in ice in boxes and measured again 2 to 6 days later round on shore. Whenever possible the sea and shore measurements were made by the same person. Similarly, at the Biological Station, the same haddock, landed in ice, were measured in the round and immediately afterward in the gutted condition, by the same technician or scientist, both measurements to the nearest centimeter. The same measuring boards were used for the measurements of the fish in the round and gutted condition, and the same or similar measuring boards were used for measuring fish at sea and on shore. Each measuring board had a standard stainless-steel strip with indented centimeter lines attached along the middle of the board.

LOSS OR GAIN IN LENGTH FROM SEA TO SHORE AND FROM ROUND TO GUTTED CONDITION

In measurements of round haddock (Table 1), there was a loss in length from sea to shore of 0.50 to 0.59% (average 0.57%).

Table 1. Average lengths of the same round haddock measured on shore (from ice) and at sea soon after capture, April-October 1951-58.

Length interval sea (cm)	Total fish measured both at sea and on shore	Average length of fish		Average loss in length sea to shore (cm)	Average loss in length sea to shore (%)
		Sea (cm)	Shore (cm)		
13-20	186	17.43	17.34	0.09	0.52
21-30	384	26.05	25.91	0.14	0.54
31-40	376	36.30	36.12	0.18	0.50
41-50	559	45.13	44.87	0.26	0.58
51-60	247	54.15	53.83	0.32	0.59
61-80	71	65.44	65.07	0.37	0.57
Total	1823	38.48	38.26	0.22	0.57

For measurements of round and gutted haddock, there was an average gain in length from round to gutted condition of 0.4% throughout the length range (Table 2).

Table 2. Comparison of lengths of the same haddock measured at the Biological Station, St. John's, in the round condition and immediately afterwards in the gutted condition, January-July 1948-51.

Length interval round (cm)	Total fish measured both round and gutted	Average length of fish		Average gain in length round to gutted (cm)	Average gain in length round to gutted (%)
		Round (cm)	Gutted (cm)		
21-30	101	27.80	27.90	0.10	0.36
31-50	572	42.11	42.29	0.18	0.43
51-80	248	57.28	57.49	0.21	0.37
Total	921	44.62	44.80	0.18	0.40

Templeman (1948) found a 2.2% loss in length in male capelin 16-21 cm long, which had been measured before rigor about an hour after capture, and again at 29 hours after capture, after having been kept at air temperature and post rigor. In another sample of male capelin 14-20 cm long, kept in seawater from the first measurement 2 hours after capture to the second measurement 25 hours after capture, there was a 2.1% loss in length. These periods without ice should be equivalent to a much greater period in ice.

Cutting (1951) noted an average shrinkage of 0.7% in the length of cod, haddock and plaice 42-84 cm long, from capture in the White Sea in March to landing, after 8 - 17 days in ice on British trawlers.

Harry (1956), quoted in Forrester (1967), found that three Pacific coast pleuronectids 25-60 cm long shrank 0.5 cm between capture and measurement ashore after storage in ice.

Yellowtail flounder 27-46 cm long when measured alive, and measured again after 54 hours in ice on the research vessel *Delaware*, lost on the average 1.5% in length (Lux 1960).

Some of these shrinkages are somewhat higher than the 0.6% found in our experiment with haddock, but Cutting's (1951) shrinkage of 0.7% for cod, haddock and plaice for a longer period in ice are similar. Shrinkages in length of commercial haddock from sea to shore are approximately compensated for by increases in length if they are measured in the gutted condition on landing.

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