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On the regulation of the Icelandic shrimp fisheries

by

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The shrimp (Pandalus borealis) was first fished in Icelandic waters in 1934 by a Norwegian fisherman who had immigrated to Iceland. Commercial shrimp fisheries began in 1936 in Ísafjardardjúp and 1938 in Arnarfjörður. New shrimp grounds were located in the northern part of Húnaflói in 1961, although a commercial shrimp fishery did not begin there until 1964. In 1969 shrimp fisheries began in Breidafjörður and in deep waters off the north coast, i.e. the Grímsey and Kolbeinsey areas. In 1970 shrimp fisheries began at Eldey and in Berufjörður in 1971, but lasted only until 1974 in the former area. In 1975 promising shrimp fishing grounds were found in Axarfjörður. The localities mentioned here are shown in Fig. 1, and Table 1 shows the shrimp catch in the various localities from 1964-1976.

The shrimp fisheries have always been subject to licences issued by the Ministry of Fisheries. Biological sampling of shrimp stocks was initiated in Ísafjardardjúp in the autumn of 1959 and from 1960 onwards all areas fished have been sampled regularly. Continuous information on catch per trawling hour exists from January 1960. All the information collected soon made it possible to assess the shrimp stocks and put forward an intelligent effort and utilization programme. Before that time there had been overfishing trends in some localities, as there were too many boats in relation to possibilities in effort and processing.

The biology of Pandalus at Iceland as well as search for new shrimp grounds has been dealt with previously and will not be outlined

here. This also applies to the juvenile fish bycatch and development of the various types of trawls used in the shrimp fishery. However, it should be mentioned that up to 1970 the trawls had no bobbins, the headline was about 27 m (90 feet) and the minimum mesh size 32 mm. Since 1970 a footrope with bobbins has generally been in use, the headline now being about 23 m. The minimum mesh size at present is 36 mm according to a resolution from 1974. The use of these new bobbin shrimp trawls has enabled the fishermen to trawl on grounds which could not be worked by the old trawl types.

The shrimp fishery season starts usually in October and lasts until April-May. The boats taking part in the fishery are rather small, varying from ca 10 to 45 BRT, with the exception of a few bigger boats fishing deep off the north coast.

Table 2 indicates the mean catch per trawling hour in each shrimp fishing area from 1970 to 1976, as well as the number of fishing licences issued by the Ministry of Fisheries each year. The number of licences is in some cases a little higher than the number of boats participating in the fishery as all licencees do not always use their licence.

Before the shrimp season starts in the autumn, the Marine Research Institute estimates the total allowable catch (TAC) for the various fishing areas. With the consent of the Ministry of Fisheries, the fishermen and factory owners are informed and asked to send in applications for fishing licences. In January, when considerable data on the present season have been gathered, the estimate is reassessed and the quotas changed accordingly. The revised quotas are then valid for the remainder of the season.

The licences issued by the Ministry of Fisheries define the fishing areas for which the licences are valid and include also the following general stipulations:

- 1) Inspectors from the Ministry or the State Fish Inspection and Quality Control Service will inspect the catch. If the bycatch exceeds 20% (by weight) the licence is immediately forfeit.
- 2) If the Ministry considers further fishing inadvisable, due to the condition of the stock or other reasons, the licence is void immediately on receipt of a declaration to that effect from the Ministry.

- 3) The maximum number of shrimp per kilogram is 300 (310).
- 4) The licence is given on condition that the catch be processed by a licenced shrimp factory.
- 5) Catch reports shall be sent to the Fisheries Association every fortnight. These are to be made out daily for every haul on sheets supplied by the association.
- 6) While shrimp fishing under this licence no other fishing gear shall be carried on board. Vessels in other fisheries are forbidden to have shrimp trawls on board.
- 7) The licensee shall allow employees of the Marine Research institute or the Ministry of Fisheries to take part in fishing trips on demand, unless this causes appreciable inconvenience.
- 8) The minimum mesh size is 36 mm when wet.
- 9) Contraventions of the provisions of the licence or any misuse as construed by the Ministry may result in the licence being suspended temporarily or revoked, at the Ministry's discretion.
- 10) This licence shall be kept on board the licenced vessel.

The provisions of the licences vary in some respect according to special stipulations valid only for certain areas. These special stipulations are mostly based on agreement between the fishermen and the shrimp factory owners established before the onset of the season, and initiated by the Ministry of Fisheries or the Marine Research Institute. These stipulations include e.g. provisions on quotas, limitations on daily fishing hours and maximum number of shrimps per kilogram.

As to the quotas, the maximum allowable weekly shrimp catch in Ísafjardardjúp is 6000 kg per each licenced boat. Thereof only 1500 kg are to be caught daily the first three days of the week. When the total weekly catch in this area has reached 160 tons the fishing has to stop.

In other areas the quota regulations may be different as e.g. in the Húnaflói area. Here shrimp is processed in four villages, each village having one factory only. Therefore it is common that the factory decides a daily maximum quota communal for all the boats landing at the factory. All these quota regulations - although they vary a little - are intended to secure even shrimp landings in relation to

the processing capacity in each locality.

The daily fishing is generally limited to the period from 9-18 o'clock.

Up to 1964 there were no limitations as to the size of landed shrimp. However, when the shrimp fishery began in Húnaflói in 1961, the fishermen and the local factories agreed upon a minimum landing size of 300 shrimps per kg, but in Ísafjardardjúp and Arnarfjörður this minimum was 350 per kg. On other shrimp fishing grounds no minimum size regulations have been necessary up to now due to large size of shrimps. In 1974, the fishermen and factory owners in Ísafjardardjúp and Arnarfjörður, the Ministry of Fisheries and the Marine Research Institute agreed upon stepwise alterations of the existing minimum (350 shrimps/kg) to 300 shrimps per kg, as in Húnaflói, by decreasing the minimum shrimp number by 10 shrimps per kg per season. Thus, the minimum number of shrimps per kg decreased to 340 shrimps/kg during the season 1974-1975, and has now, during the 1977-1978 season, reached 310 shrimps/kg.

An offence against this agreement results in the licence being void for some days according to the Ministry's discretion. Although this agreement raised differing opinions it has contributed considerably to improving the quality of the landed shrimp in the relevant localities.

As a result of the increasing shrimp fishery and the discovery of new shrimp fishing grounds, a tendency to establish new shrimp processing plants arose. The Ministry of Fisheries was of the opinion that an overinvestment in shrimp processing plants was imminent and therefore decided that the initiation of any new processing plant should be under governmental control. Thus, a new act was passed in 1975 which entitles the Ministry to coordinate the shrimp fishery and the factory capacity or to share the catches between the existing factories in relation to their individual capacity. This act also entitles the Ministry to divide the local shrimp catch quotas between the boats taking part in the fishery. The establishment of new factories, as well as an increase in capacity of the existing ones, is also subject to the Ministry's consent.

Table 1.

Shrimp catch in Icelandic waters (in tons) 1964 - 1976.

Years	Eldey	Breida- fjörður	Arnar- fjörður	Ísafjardar- djúp	Húnaflói	Grímsey - Kolbeinsey	Axar- fjörður	Beru- fjörður	Other areas	Total
1964			184	447	44					675
65			211	683	32					926
66			255	1259	262					1776
67			187	899	342					1428
68			499	1579	391					2469
69		59	602	1758	841	+			21	3281
1970	315	204	692	2460	714	4		+	42	4431
71	1725	143	588	2915	796			76	5	6248
72	1368	338	504	2110	978			46		5344
73	877	662	632	2501	2437			57		7166
74	237	913	579	2442	2029	74		54		6328
75		344	408	1704	1400	571	535	63		5025
76		200	406	2677	2016	315	711	70	54	6449

Table 2.

Mean shrimp catch per trawling hour in kg (c/h) and number of licenced boats (No. b) 1970-1976.

	1970		1971		1972		1973		1974		1975		1976	
	c/h	No. b	c/h	No. b	c/h	No. b	c/h	No. b	c/h	No. b	c/h	No. b	c/h	No. b
Eldey	167,7	24	141,7	38	83,4	30	77,9	25	62,1	28				
Breidafjörður	60,6	7	60,3	10	135,1	5	108,4	10	119,3	19	77,2	12	53,4	10
Arnarfjörður	88,6	14	56,0	13	57,9	15	71,7	13	64,7	15	59,4	16	69,6	11
Ísafjardardjúp	172,3	51	115,1	54	83,3	53	97,9	54	107,3	55	117,4	55	147,0	45
Húnaflói	167,7	14	280,9	11	408,0	15	461,6	22	345,5	29	299,8	30	330,6	28
Grímsey - Kolbeinsey									171,8	1	104,0	10	155,0	9
Axarfjörður											506,8	13	650,9	12
Berufjörður	21,1	6	130,5	9	51,0	6	46,3	6	112,6	4	90,0	4	97,9	5

