Northwest Atlantic Fisheries Organization

Serial No. N4546 **NAFO SCR Doc. 01/152**

SCIENTIFIC COUNCIL MEETING – SEPTEMBER 2001
(Deep-sea Fisheries Symposium – Poster)

Utilization of Deep-sea Sharks at Hatton Bank in the North Atlantic

by

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Abstract

During the last decade there have been an increasing commercial fishery in the Hatton bank area. On the west side of Hatton bank the catches consist of a large portion of deep-sea sharks. Utilization of several new species and by-products is essential to establish a profitable deepwater fishery. The main purposes of this work are to describe the potential for producing consumption products and utilize by-products from leafscale gulper shark (*Centrophorus squamosus*), Portuguese dogfish (*Centroscymnus coelolepis*) and black dogfish (*Centroscyllium fabricii*). It is possible to produce backs, fillet, belly flaps, tail and fins to consumption products. Leafscale gulper shark and Portuguese dogfish gives the highest production yield. Mechanical filleting and skinning were successful for producing sharks backs and fillets. Yield measurement of different organs were carried out. At present liver is the most important by-product from deep-sea sharks. The relative weight of the liver ranged from 21% to 28 % of total body weight for the three species. Value of the shark liver depends on content of the hydrocarbon squalene. It has been an increasing interest to utilize other components like squalamine and cartilage from sharks. This might indicate a potential for increased utilization of deep-sea sharks product in the future.

Key words: Leafscale gulper shark – Portuguese dogfish – black dogfish – Hatton bank – consumption product – by-product.

Introduction

During the last decade Norwegian trawlers and longliners have carried out exploratory surveys and commercial fishing in the Hatton Bank area west of the British Isles in the North-Atlantic (ICES Vib and XII).

Utilization of several new species and by-products is essential to establish a profitable deepwater fishery. On the west side of Hatton Bank catches consist of a large portion of deep-water sharks. To be able to produce frozen products from these sharks it is essential to optimise the production line.

Møre Research has focused on the possibilities to utilize several deep-sea sharks for human consumption, medical and pharmaceutical purposes.

Main Objective

Main purpose of this study is to describe the potential for producing consumption products and by-products from the deep-sea sharks:

Leafscale gulper shark	(*Centrophorus squamosus*)
Portuguese dogfish	(*Centroscymnus coelolepis*)
Black dogfish	(*Centroscyllium fabricii*).

Material

Data were collected during Norwegian exploratory longline and trawl fishery at Hatton Bank in 1998, 1999 and 2000.

Results

Catches in the Hatton Bank area consisted of a wide variety of species. Catch composition was different in trawl and longline fishery. A higher proportion of deep-sea sharks were caught in longline (up to 75 %) compared to trawl catches (17 %).

Production:

Leafscale gulper shark and Portuguese dogfish gives the highest production yield for consumption products. Mechanical filleting and skinning were successful for producing sharks backs and fillets.

By-product:

Liver is the most important by-product from sharks. The relative weight of the liver ranged from 21 % to 28 % of total body weight for the three species. Up to 77 % of the liver weight was oil. Alue of the shark liver depends on content of the hydrocarbon squalene (Table 1.) analyses indicate large individual variation in the squalene content in species caught in the same area and depth. This is also seen in other areas (Hernàndez-Pèrez et al., 1997).

Average squalene content in the liver of the three species:

Leafscale gulper shark	66 %
Portuguese dogfish	48 %
Black dogfish	17 %

Medical benefits

The broad-spectrum steroidal antibiotic, squalamine, are described from tissue of dogfish shark (Squalus acanthias) (Moore et al. 1993). Similar analyses are now conducted for the three species.

Total cartilage yield of leafscale gulper shark was found to be 1,4 % of the round weight. Scientist believe that shark's skeleton, composed mainly of cartilage, is responsible for the observed immunity to diseases (Susbasinghe, 1998).

Conclusions/Further Perspectives

The large by-catches of deep-sea sharks in the Hatton Bank area provide a useful source for additional income in trawl and longline fishery. Production line for consumption products (backs, fillet, belly flaps, tail and fins) worked out well.

The interest for shark by-products in cosmetic and pharmaceutical industry is increasing. This might indicate a potential for increased utilization of deep-sea sharks entrails in the future (Fig. 2).

References

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Table 1. Yield measurement of consumption products and by-products of leafscale gulper shark (LGS), Portuguese dogfish (PD) and black dogfish (BD) (% of round weight).

	LGS	PD	BD
Products			
Gutted head on	75,8	63,2	67,8
Skinless back	26,1	22,8	22,9
Skinless fillet	20,8	17,6	15,6
Head	25,0	19,1	26,8
Belly flaps	16,0	15,4	10,0
Tail	1,7	1,5	1,5
Fins	3,7	2,0	3,3
Organs			
Liver	21,4	28,5	22,8
Pancreas	0,2	0,2	0,3
Spleen	0,08	0,2	0,2
Rectal glend	0,03	0,02	0,04
Heart	0,1	0,1	0,1
Stomach	2,7	2,9	2,6
Intestine	0,7	2,6	1,7
Oviduct	1,1	0,6	0,7
Egg	0,7	0,8	5,5

Figure 1. Consumption products from Portugal dogfish.

Figure 2. Liver entrails, cartilage and eggs from deep-sea sharks.