

A note about a male-only pilot whale school observed in Faroe Islands

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Introduction

The long-finned pilot whale (*Globicephala melas*) occurs in temperate waters throughout the North Atlantic, and is one of the most commonly stranded cetaceans along the Atlantic coast of Europe (Bloch and Lockyer, 1992). The traditional pilot whale drive fishery of the Faroe Islands, operates throughout the years and takes entire social groups of whales without any selectivity (Sanderson, 1991). The landed schools are known to have a disproportionate number of females (Müller, 1883) and this has been verified by the scientific examinations of the last decade (Bloch, 1992; Bloch *et al.*, in press, a), with an average of 1.6 females per male (Desportes *et al.*, in press). However, a school containing only males was driven ashore on November 18, 1989, in Tórshavn on the eastern coast of the island of Streymoy. This note gives a detailed account of this unusual event in the Faroese pilot whale drive fishery.

Narrative

Around noon of November 18, 1989, the Faroese Museum of Natural History was notified that a small school of pilot whales was being driven toward Sandagerði, the authorized whaling bay of Tórshavn (Fig. 1). Early in the afternoon the harbour office informed the Museum that the school had been successfully landed and contained only eight whales. No escapers were reported.

The school consisted of males only and was examined by Andersen, Desportes and Mouritsen following the procedure established during the international programme on the ecology and status of pilot whales and described by Bloch *et al.* (in press, a). The animals were measured, a few teeth were removed from the lower jaw, both testes and the stomachs were collected. Samples of skin, blubber, muscle, liver and kidney were collected and subsequently frozen. The animals were examined for the presence of ecto- and endoparasites and the parasites found were collected and stored in 70% alcohol.

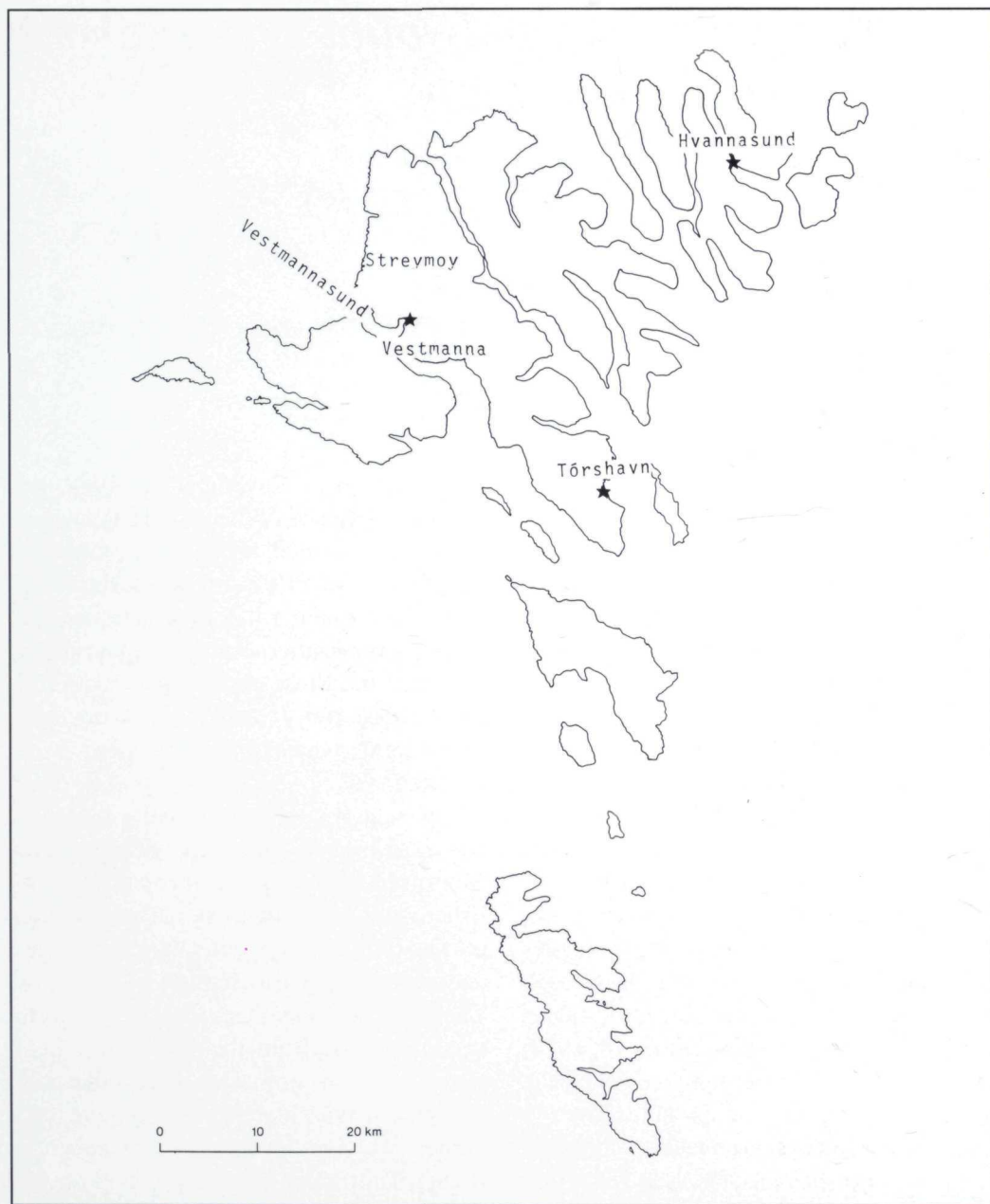


Fig. 1. Map showing the localities mentioned in the paper.
Mynd 1. Føroyakort við staðarnøvnnum í greinini.

While the Tórshavn school was landed, another school was also being driven towards Vestmanna on the southwestern side of the same island (Fig. 1). Eighty one whales from this school were landed while around 30 whales of various sizes could not be beached and were released. They were later reported leaving Vestmannasund at night, swimming in a northerly direction. It was decided that this second school should also be sampled systematically in an attempt to determine whether the male-only school could have been a part of this bigger school.

The Vestmanna school had a more usual composition, including 23 immature or mature males (length range 185-580 cm) and 57 immature, pregnant, lactating, or resting females ranging in length from 180 to 472 cm. The animals were measured and examined for reproductive condition, all the foetuses, some gonads, the stomachs from 5 mature males were collected. The same tissue samples as mentioned above were also collected from 61 males and females.

The day before, November 17, 1989, a school was landed at the southern side of Hvannasund (Fig. 1). No escapers were reported from the drive. This school contained 131 males and females of various sizes and had not been examined by scientists. The meat and blubber were shared among the participants of the drive following the normal procedure (Sanderson, 1991) and subsequently taken care of in the traditional way, i.e., salted, air-dried or frozen.

The male-only pod landed in Tórshavn could have been part of the Hvannasund school. This hypothesis was checked by collecting muscle samples from as many Hvannasund animals as possible to compare with the Tórshavn samples. The following days effort was made to contact the persons having received a share and they were asked to send a piece of meat to the Museum of Natural History. In this way, meat samples were obtained from around 40 animals.

Further details and results from the examination of the male-only school in Tórshavn

The age determination (Table 1) was performed by counting growth layer groups (yr) in both dentine and cementum on thin sections of decalcified teeth prepared as described by Bloch *et al.* (in press, b).

Sexual maturity (Table 1) was determined by histological examination of testicular tissue as described by Desportes *et al.* (in press), according to the proportion of seminiferous tubules being mature (0% mature tubules, immature; mature and immature tubules coexist, maturing; 100% mature tubules, mature).

The eight stomachs (Table 1) contained only hard remains of prey. They were mostly beaks from the cephalopode, *Todarodes sagittatus*. The stomach of two animals also contained a few remains of blue whiting, *Micromesistius poutassou*.

All eight whale stomachs were infested by the nematode *Anisakis simplex*, at different stage of maturity, and by cysts of the

trematode *Pholeter gastrophilus* (Table 2 and 3). The five mature males were also infested by whale-lice *Isocyamus delphinii* (Table 3).

Whale no.	Body length (cm)	Age (yr)	Testes weight (g)	Sexual maturity	Stomach content
5	324	3	172	immature	ceph., no milk traces
8	430	10	305	immature	ceph.
7	515	16	2014	maturing	ceph. + fish
1	491	16	3505	mature	ceph.
2	511	16	5926	mature	ceph.
3	516	18	5402	mature	ceph.
4	547	22	4976	mature	ceph.
6	564	24	6310	mature	ceph. + fish

Table 1. Details on the male-only pod landed November 18, 1989 in Tórshavn, Faroe Islands. Testes weight is the combined weight of both testes without epididymis. Sexual maturity is the histological maturity of testicular tissues. Legends for stomach contents and parasites are as follows: ceph., cephalopod beaks; fish, fish remains; *I. d.*, *Isocyamus delphinii*.

Talva 1. Lýsing av grindini, ið legði beinini í Tórshavn 18 november 1989, har allir vóru hannhvalir. Samlaða vektin á báðum eistunum uttan hjáeistuni er uppgivin. Kynsliga búningin er mett eftir vevnaðinum í eistunum. Styttingarnar fyri innihaldið í kíkunum og fyri snultararnar eru: ceph., nev av høguslokki; fish, leivdir av fiski.

	Tórshavn	Vestmanna
Prevalence	100 %	100 %
Abundance	1,064.6 (s=652.2)	484.8 (s=211.7)

Table 2. Prevalance and abundance of *Anisakis simplex* in two schools of long-finned pilot whales, in Tórshavn and in Vestmanna, landed November 18, 1989.

Talva 2. Títleiki og nøgd av sandmaðkinum, *Anisakis simplex* í tveimum grindum, ið lögdu beinini í Tórshavn og Vestmanna tann 18 november 1989.

		Tórshavn								Vestmanna				
	Whale no.	1	2	3	4	5	6	7	8	9	10	11	12	13
A. s.	♀♀	33	67	16	52	0	248	100	16	0	8	18	8	5
	♂♂	33	61	18	62	0	258	97	17	0	4	12	8	9
I. d.		+	+	+	+	-	+	-	-					

Table 3. The occurrence of whale-lice, *Isocyamus delphinii* (I. d.) and the number of mature *Anisakis simplex* (A. s.) of each sex found in the stomachs of long-finned pilot whales from two schools, one in Tórshavn (nos 1-8) and one in Vestmanna (nos 9-13), both landed November 18, 1989.

Talva 3. Tal av hvalalýs, *Isocyamus delphinii* (I. d.) og búnum sandmaðki, *Anisakis simplex* (A. s.) av hvörjum kyni, sum vórðu funnir í kíkunum frá tveimum grindum, ið lögdu beinini í Tórshavn (nr. 1-8) og Vestmanna (nr. 9-13) tann 18 november 1989.

Comparison with the Hvannasund and the Vestmanna schools

Tissue samples of the three schools were distributed to B. Amos, University of Cambridge and to Andersen, so that genetical comparison of the three schools could be performed by means of DNA analysis and electrophoretic markers respectively. Results of these analysis have not yet been communicated.

There were differences in stomach contents between the Tórshavn and the Vestmanna schools. One of the stomachs from Vestmanna was empty and the four others contained, like the stomachs from Tórshavn, only hard remains of prey. However, three stomachs contained only hard remains of fish, mostly from *Micromesistius poutassou*, while only one contained cephalopod beaks from a different species, *Gonatus sp.*

The stomachs of the five mature males from Vestmanna were also infested by the

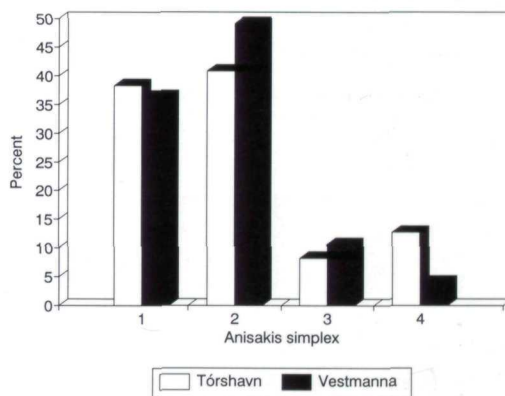


Fig. 2. The percentage distribution between the different stages of *Anisakis simplex* in two schools of long-finned pilot whales, one in Tórshavn and one in Vestmanna, both landed November 18, 1989. 1 = 3. larval stage; 2 = 4. larval stage; 3 = 5. stage, immature; 4 = 5. stage, mature.

Mynd 2. Býtið í procentum millum búnaðarstig av sandmaðkinum, *Anisakis simplex* í kíkunum úr grindini í Havn og grindini í Vestmanna, 18 november 1989. 1 = 3. larva stig; 2 = 4. larva stig; 3 = 5. stigið, óbúna; 4 = 5. stigið, kynsbúna.

nematode *Anisakis simplex* and cysts of the trematode *Pholeter gastrophilus*. However, comparison of the population structure of *Anisakis simplex* between the Tórshavn and the Vestmanna samples showed, on the basis of the differences observed, that the male-only group did not have the same infection history that the Vestmanna school and could, therefore, not have been a part of this school (Fig 1).

Discussion

The male-only pod landed in Tórshavn was mainly composed of young mature males, 6 out of 8 males of which 4 were not yet socially mature (Desportes *et al.*, in press). The existence of this pod clearly shows that young mature males of the long-finned pilot whale can segregate at least temporally to form independent bachelor schools.

The results of the genetic comparisons between the three schools mentioned are still lacking. On the basis of the parasitological examination, it can be assumed already that the male-only pod landed in Tórshavn was not part of the school landed in Vestmanna. Even if the male-only group was part of the school landed the day before or the same day, the fact that this group was spotted far from the places where the two other schools had been first observed shows in any case that long-finned pilot whales segregate at times.

Sergeant (1962) reached also the conclusion that mature males of long-finned pilot whale can segregate at least in late summer, perhaps temporarily, off Newfoundland. Among the 85 schools he examined, some

contained an excess of adult males over adult females, and one was composed of ten males, of which nine were mature, and four females probably sexually senile. He observed also two groups of mature males segregating from other individuals, one at sea and the other during a drive.

Schools consisting largely of males, if not only of males, have also been sometimes caught in the Faroese drive fishery (Bloch, 1992).

Until now the prevailing opinion has been that there was no clear evidence for segregation of pilot whales, and the sex ratio strongly biased towards females among mature animals was only attributed to the lower survival rate of adult males (Martin *et al.*, 1987). The matter may, however, have to be reexamined in the light of the evidence for the existence of at least temporally segregation of male long-finned pilot whales given by this note.

Acknowledgements

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Úrtak

Tann 18. november 1989 lögdu 8 hvalir beinini í Havn - allir vóru hannhvalir. Hvalirnir vóru millum 324 og 564 cm til longdar og 10 og 24 ára gamlir, ein 3 ára gamal hvølpur tó undantikin. Seks vóru kynsbúnir, meðan tveir vóru óbúnir. Frágreiðing um tilburðin og úrslitini av kann- ingi av hesum bólki av hannhvalum er viðgjørd við atlit til, hvat vit halda ella vita stavar frá atburðinum hjá grindahvali. Tilburðurin er serstakliga áhugaverdur av tí, at hann vísir, at hann- og honhvalir av og á ferðast í serskildum bólkum. Hetta kann samstundis geva eina ábending um, hví kynsbýtið í grindabólkum tíðum vísir yvir- vág av honhvalum.