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# A note on changes in fin whale catch distribution of Iceland in 2014

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## A note on changes in fin whale catch distribution of Iceland in 2014.

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Since the resumption of whaling in Icelandic waters in 1948, whaling for large whales has been confined to the activities of a single land station in Hvalfjörður, West Iceland. This has limited the extent of the whaling grounds to the waters off the western half of Iceland (Sigurjonsson, 1988, 1995; Rörvik *et al.*, 1976). Fin whale catches have traditionally been concentrated close to the edge of the continental shelf off W and SW Iceland. The North Atlantic sightings surveys 1987-2001 showed increased abundance of fin whales in the Irminger Sea, particularly in the deep waters between W-Iceland and E-Greenland (Vikingsson *et al.*, 2009, 2015). Here we report on indications of change in distribution from the catch distribution in 2014.

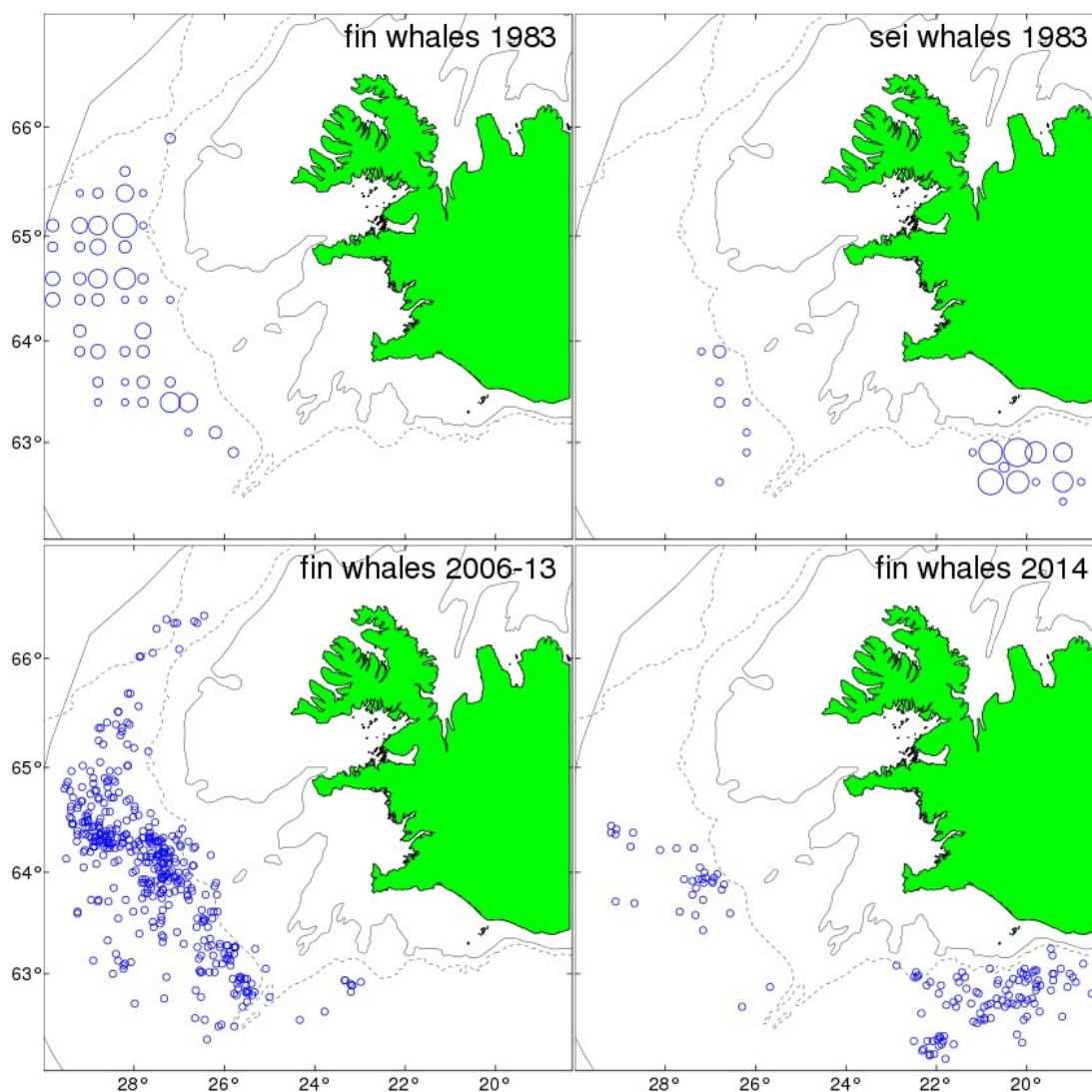


Figure 1. Catch positions of fin whales 1983, 2006-13 and 2014, and sei whales 1983. Circles for individual whales 2006-14, but in 1983 whales were reported by squares and the circle area is in proportion to number in square.

As seen in Fig. 1 the distribution of the fin whale catches off Iceland in 2014 was unlike that in any previous season for which catch positions exist. The 2014 distribution was more in line with the distribution of the sei whale catches of earlier seasons, although sei whales were generally taken quite late in the season. This season started with good catches to the West, but by the start of July very few fin whales were seen on the traditional whaling grounds west of Iceland and by mid July, after intensive searching, the whalers turned to hunting in the South area. As the sailing time is shorter to these grounds the whalers had little reason to investigate the western grounds again, but due to poor weather outlook to the South the whalers went again west two trips at the end of July, searched a wide area and found a few fin whales, blue and sperm whales rather far west and subsequently shifted south again.

Based on records collected onboard the whaling vessels the large whale sightings per active hour (searching, chasing, handling) was tabulated by periods (Table 1). There was almost no effort in the area south of Iceland before mid July except in the years of special permit whaling 1986-1989, so the starting point was set mid July.

**Table 1.** Large whale sightings by whalers per active hour, grouped by years 1979-1985, 1986-1989 and 2014 south of Iceland (23-18°W) after 15 July to end of season.

<b>Years</b>	<b>79-85</b>	<b>86-89</b>	<b>2014</b>
Active hours	1175	380	709
Fin whales	0.050	0.066	0.533
Sei whales	0.252	0.089	0.150
Blue whales	0.074	0.034	0.124
Humpback whales	0.000	0.013	0.020
Sperm whales	0.014	0.045	0.020

Mean group size for these sightings is consistent by species (Table 2) and shows no unexpected variation over time.

**Table 2.** Mean group size of large whale sightings by whalers grouped by years 1979-1985, 1986-1989 and 2014 south of Iceland (23-18°W) after 15 July to end of season.

<b>Years</b>	<b>Mean groups size</b>		
	<b>79-85</b>	<b>86-89</b>	<b>2014</b>
Fin whales	1.73	1.76	1.52
Sei whales	2.22	2.80	2.73
Blue whales	1.60	1.62	1.83
Humpback whales	-	1.40	1.50
Sperm whales	1.24	1.24	1.93

Included in the effort for the years 1979-1985 is effort for a few days while attempts were made to mark whales, though very little is in this area. The years 1986-1989 also include some sighting effort by the whalers (while not hunting), some extending to deeper waters farther south, which explains to some extent the rather high number (17) of sperm whales seen then, while there are fewer sightings of other species. The 1986-89 seasons were also generally short due to low quotas.

Sei whales have generally only been sighted late in the season. As there was no sei whale quota in 1989 and only a 10 whale quota in 1988 more of the effort in this area is then at its west border. The whalers will go repeatedly to a location where a target species has been spotted and the target species may therefore be over represented. This and the short seasons 1986-89 and lack of sei whale quota, may partly explain that sei whale numbers are highest in the years 1979-85, but sei whale occurrence has through the years been highly variable in this hunt.

Fin whales were a target species throughout this operation. Although fin whale quotas may have been limiting in the latter part of some seasons, while sei whales were being hunted in this area, the fin whales in 2014 are caught in the very same area as the sei whales in the years 1979-85. The whalers would have gone to this area the next year had they seen significant

number of fin whales (having finished the fin whale quota) while hunting sei whales there, so there is no reason to suspect lack of reporting during the sei whale catch. The table shows a ten fold increase in fin whale sightings in this area between 1979-85 and 2014. A shift in distribution of fin whales in 2014 is therefore apparent. In 2013 there was never a severe shortage of fin whales to the West so there is only marginal effort in the South area and no comparison can be made then. Fin whales may therefore have been in the South area also in earlier seasons after the resumption of whaling in 2006, but not noticed, so the fin whales on the western grounds need not have moved into this area, but may have moved into other unknown areas. The whales in the south area may have come from different areas farther south in line with a general northward shift in recent years (Víkingsson *et al.*, 2014).

The increase in blue whale sightings in 2014 in this area is in line with earlier reported increase in this species based on records by whalers mostly on the traditional whaling grounds to the west (Sigurjónsson and Gunnlaugsson 1990), and results from sighting surveys over a wider area (Pike *et al.*, 2009). However, there are indications of a recent northward shift in distribution of blue whales. Thus, whale watching company specializing on blue whales was operated from the Snæfellsness peninsula, West Iceland during 1996-2004. From around 2000, the number of encounters with blue whales decreased appreciably leading the company to give up their blue whale tours in 2004 due to scarcity of blue whales (Pétur Ágústsson pers. comm). During this period of decline in West Iceland, blue whale sightings increased in the whale watching area Skjálfandi Bay in Northeast Iceland. Photo-identification matches have shown that at least some of the whales previously frequenting West Icelandic waters now occur in Northeastern Icelandic waters during midsummer (Víkingsson *et al.*, 2015).

While these data are also in line with the observed increase in humpback whales, this species is most abundant at the start of the season and then farther north, resulting in very low numbers (14 in 2014) for any comparison here.

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