

Annex E

An Approximate Adjustment to the 2006 Sightings Abundance Estimate for Bowhead Whales to Allow for Time-in-View (tiv)

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This approximate procedure assumes that the Rekdal *et al.* (2015) estimates are lognormally distributed. From this:

$$\text{Upper 95\%/estimate} = 1.96 \sigma$$

with resultant values shown in Table 1.

Assuming that the tiv correction factor is independent, multiplicative and equal to 744/829 (i.e. 0.897), its σ value is:

$$\sigma_{tiv} = \sqrt{\sigma (2012 \text{ without tiv})^2 + 0.046^2} = 0.447$$

Reversing the process it follows that:

$$\sigma_{tiv} = \sqrt{\sigma (2006 \text{ with tiv})^2 - \sigma (2012 \text{ without tiv})^2} = 0.046$$

Estimates for the tiv-corrected abundance for 2006 and its estimates of precision then follow straightforwardly by reversing the process above.

Table 1

Population estimates: the first three values are from Rekdal *et al.* (2014); the final entry is explained below.

Year	tiv adjusted	Estimate (CV) [95%CI]	σ
2012	No	829 (0.35)[425-1,618]	0.341
2012	Yes	744 (0.34) [357-1,461]	0.344
2006	No	1,229 (0.47) [495-2,939]	0.445
2006	Yes	1,103 (0.47) [442-2,648]	0.447

REFERENCE

Rekdal, S.L., Hansen, R.G., Borchers, D., Bachmann, L., Laidre, K.L., Wiig, Ø., Nielsen, N.H., Fossette, S., Tervo, O. and Heide-Jørgensen, M.P. 2015. Trends in bowhead whales in West Greenland: Aerial surveys vs. genetic capture-recapture analyses. *Mar. Mammal Sci.* 31: 133-54. [Article first published online: 24 July 2014, doi: 10.1111/mms.12150].

Annex F

Historical Catches used in the Trials

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The catch series are compiled using the following assumptions, as agreed by the Workshop (see this report, Item 4).

- (1) whales killed for humanitarian reasons that would be expected to die from non-anthropomorphic causes (e.g. whales trapped in ice) are excluded;
- (2) whales which collide with skiffs are excluded as no visible injury is reported;
- (3) whales injured by hunters but not killed are included as this is the most conservative assumption; and
- (4) bycatches whose fate is unknown or which escaped towing gear are included as this is the most conservative assumption.

1. Bowhead catches since 1940

Details of catches of bowhead whales in the North Atlantic by Canada and Denmark (Greenland) since 1940 are listed in Table 1. The areas mentioned are shown in Fig 1. In addition eight bowhead whales were reported entangled in nets in eastern Canada and West Greenland prior to 2003 (Higdon, 2010) and have been incorporated into the final catch series. The catch series is believed to be complete for the period since 1940 (when the trials begin) so there is no need for an alternative catch series.

West Greenland catches of unknown sex are allocated to sex in the ratio 20M:80F, based on data from ~600 biopsy

samples taken off West Greenland over the past 13 years (Heide-Jørgensen *et al.*, 2010). A sex ratio of 50:50 is used to allocate Canadian catches of unknown sex.

The final catch series is given in Table 1a of Annex D.

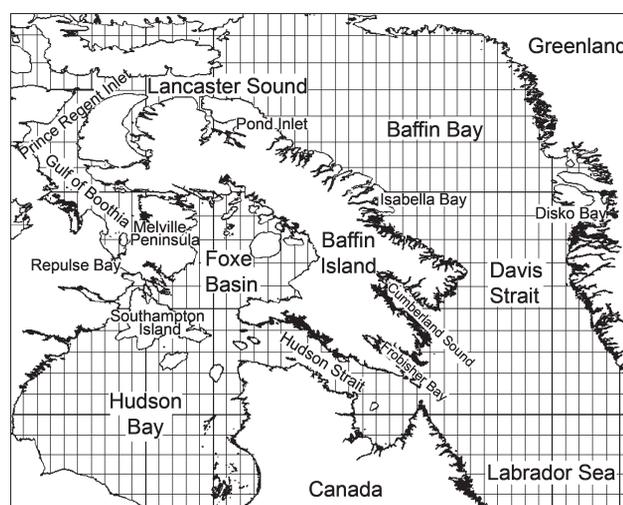


Fig. 1. Map showing the main areas in which bowhead whale catches are recorded.