The slow evolution towards a more porpoise-friendly fishery policy

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Collecting porpoise carcases in 1988

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- Bjørge, A. & Kaarstad, S.E. Age and body length at attainment of sexual maturity in harbour porpoise (Phocoena phocoena) in Norwegian and Swedish waters. Paper SC/47/SM7 presented to the IWC Scientific Committee, May 1995
- Aarefjord, H., Bjørge, A., Kinze, C.C. & Lindstedt, I. 1995. Diet of the harbour porpoise (Phocoena phocoena) in Scandinavian waters. Rep int. Whal. Commn(Special issue 16):211-222.
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- Kleivane, L., Skaare, J.U, Bjørge, A., de Ruiter, E. & Reijnders, P.J.H. 1995. Organochlorine pesticide residues and PCB in harbour porpoise (*Phocoena phocoena*) incidentally caught in Scandinavian waters. *Environmental Pollution,* **89**: 137-146.
- Teigen, S.W., Skaare, J.U., Bjørge, A., Degre, E. & Sand, G. 1993. Mercury and Selenium in harbor porpoise (*Phocoena phocoena*) in Norwegian waters. *Environmental Toxicology and Chemistry,* **12**: 1251-1259.
- Bjørge, A. & Øien, N. 1995. Distribution and Abundance of Harbour Porpoise *Phocoena phocoena* in Norwegian waters. *Report of the International Whaling Commission,* Special Issue Series 16: 89-98.

NAMMCO established in 2005 a WG on Marine Mammal Bycatches in Fisheries

Turning point for me:

- From: Bycatches as source of samples for biological studies
- To: Bycatches as reason for Conservation Concerns
    - Bjørge, A., Hartvedt, S. & Ynnesdal, H. 2005. Spatial structure of Norwegian fisheries and associated risk for bycatches of marine mammals. NAMMCO/15/MC7BC6
    - Bjørge, A., Borge, A. & Kleven, S. 2005. Observed an reported bycatches of marine mammals in Norwegian shelf and offshore fisheries. NAMMCO/15/MC7BC7
    - Bjørge, A., Godøy, H. & Nedreaas, K. 2005. A system for monitoring bycatches of marine mammals in Norwegian coastal and inshore waters. NAMMCO/15/MC7BC8

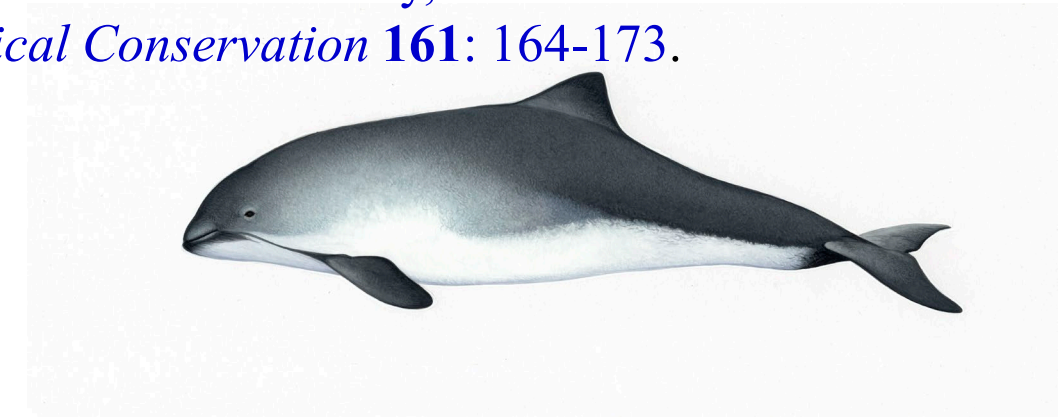
The Coastal Reference Fleet, CRF

- A group of small vessels contracted by IMR to provide fisheries data for fish stock assessment;
- Randomly selected among vessels with good record of complying to regulations;
- Two vessels in each of nine statistical areas, later increased to three;
- Frequently visited by IMR staff;
- Discrepancies between reports from days with IMR staff onboard and days without, may lead to cancelation of their lucrative contract.

Estimating the bycatch of harbour porpoise

- CRF data were used to estimate the bycatch rate (number of porpoises per kg target species fish);
- Landing statistics from the Directorate of Fisheries of the target species taken with same gear types were used to extrapolate to entire fisheries;
- Estimated annual bycatch 2006-2008 about 6 900 porpoises.

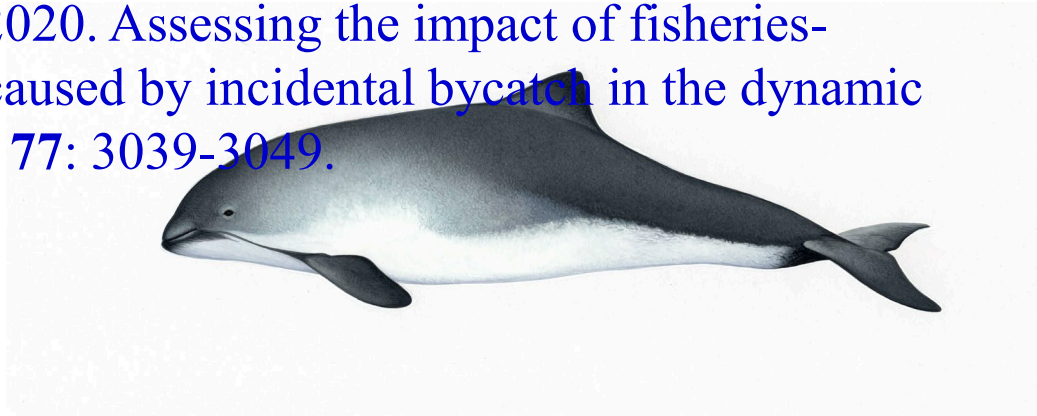
Bjørge, A., Skern-Mauritzen, M. & Rossman, M.C. 2013. Estimated bycatch of harbour porpoise (*Phocoena phocoena*) in two coastal gillnet fisheries in Norway, 2006-2008. Mitigation and implications for conservation. *Biological Conservation* **161**: 164-173.



Revisiting the estimates of Norwegian bycatches

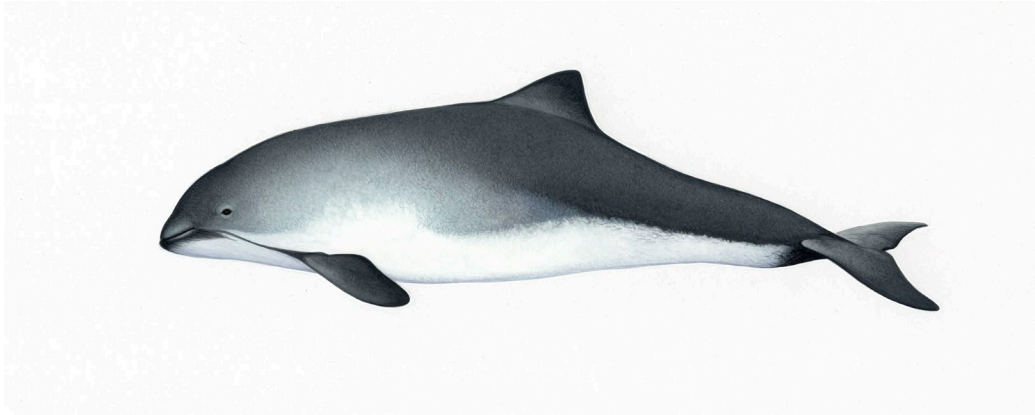
- CRF data from the entire period 2006 to 2018 were analysed;
- We could not replicate the results in Bjørge *et al*. 2013;
- The 2006-2008 landings data from the Directorate were incorrect coded;
- New annual estimates for the entire period averaged 2 674 porpoises;
- About 900 porpoises taken in the Vestfjord, a relatively small area.

Moan, A., Skern-Mauritzen, M., Vølstad, J.H. & Bjørge, A. 2020. Assessing the impact of fisheries-related mortality of harbour porpoise (*Phocoena phocoena*) caused by incidental bycatch in the dynamic Norwegian gillnet fisheries. *ICES Journal of Marine Science* **77**: 3039-3049.



Pinger trials in commercial fisheries started 2017

- Two types of pingers were tested in gillnet fisheries for cod and monkfish;
- 70-100% reduction of harbour porpoise bycatches, but increased bycatch of harbour seals with one of the pingers: ‘Dinner bell’ effect;
- Changed frequency and eliminated the increase of harbour seal bycatch while maintaining reduced bycatches of porpoise.



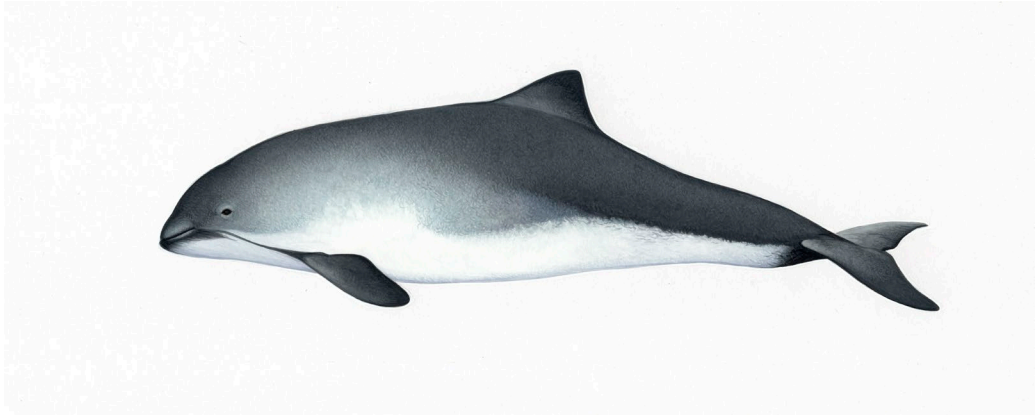
Workshop on Marine Mammal Bycatch Monitoring and Mitigation

Ålesund, Norway,
19th -20th June 2019

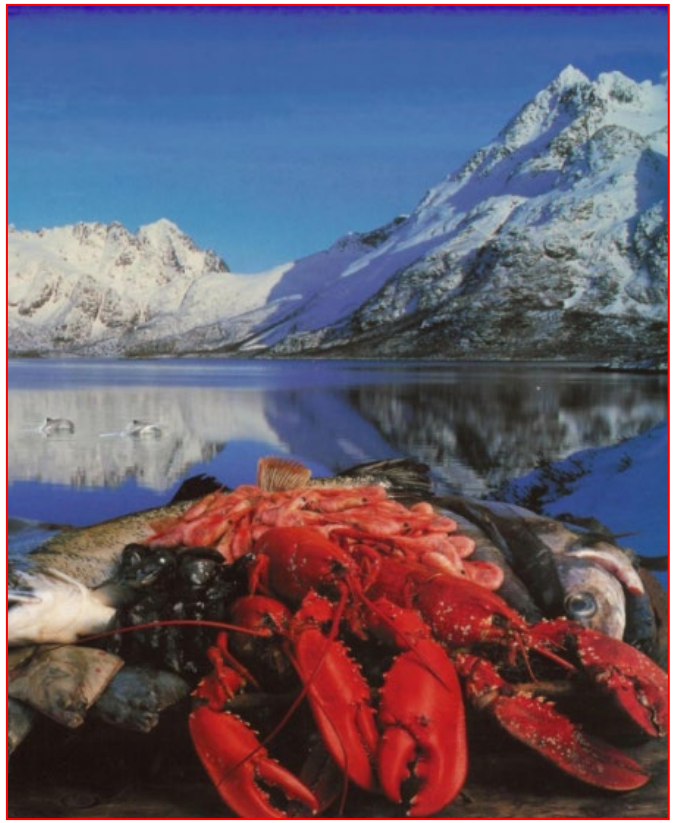
Recommended pingers be mandatory in the cod fishery in Vestfjorden

Vestfjorden fishery for cod

- Cod stock at historical high, fishery very profitable;
- Relatively short strings of nets, modest costs for pingers;
- Fishery concentrated in small area, well monitored by Directorate of Fisheries' Sea Surveillance Unit and the Coast Guard.



From science to management policy



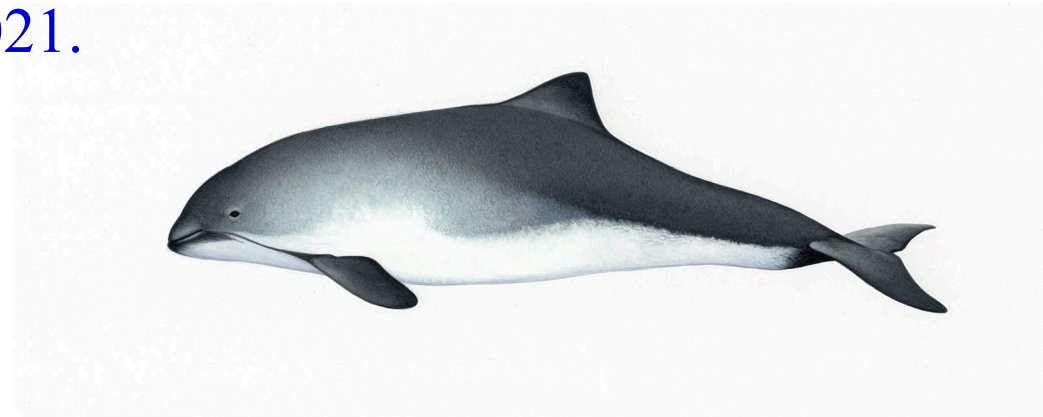
Recommendation from the Ålesund workshop was vetted through:

- Marine Mammal Scientific Advisory Board; Oct. 2019
- IMR's Advisory Committee, Nov. 2019

Forwarded to the Ministry of Fisheries, Nov. 2019

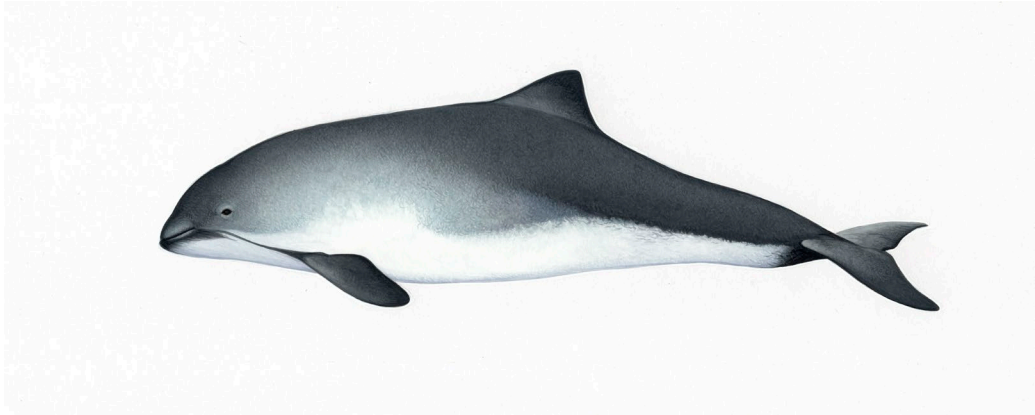
The Ministry asked the Directorate to send the proposal on public hearing. Spring 2020.

Autumn 2020: The Ministry made pingers mandatory in the Vestfjord cod fishery starting Jan. 1st 2021.



Arguments in favour of mandatory pingers

- The US MMPA Import Provisions;
- The Domestic Norwegian Animal Welfare Act;
- The fishing industry's wish to maintain the Marine Stuardship Council's Certificate.

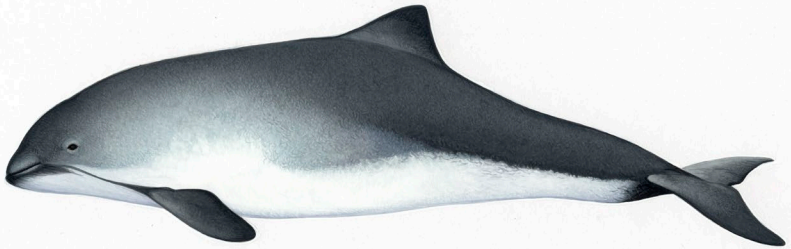


Monitoring the pinger regulation

The Directorate's Sea Surveillance Unit has developed programmes to monitor:

- the functionality of pingers;
- the compliance to the regulation.

The IMR has developed a programme to monitor the effect of the pinger regulation on the level of porpoise bycatches.



Solving the marine mammal – gillnet conflict is of global importance and urgency

- Gillnet fisheries have a low carbon footprint;
- Low cost of purchase and maintenace;
- Can be operated manually from small vessels;
- Widely used in developing countries;
- Catches mainly for human consumption;
- Bycatch in gillnets is the main threats to eleven Critically Endangered species or subspecies of small cetaceans (Brownell *et al*.2019) .


Thank you for your attention!