

## Comments from reviews and assessments of pinniped stocks by NAMMCO

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**Assessment** – **review/preliminary** – **none**

Abbreviations: abund, abundance; adv, advice; ASAP, as soon as possible; ass, assessment; cal, calculated; Can, Canada; cap, capacity; car, carrying; cent, century; cont, continued; curr, current; depl, depleted *or* depletion; dev, develop; distr, distributed *or* distribution; doc, document; E/W/S/N, east/west/south/north; EGI: formerly used man. area for Fin whales; est, estimate *or* estimated; expl, exploitation *or* exploited; freq, frequent; gen, genetic; GL, Greenland; hist, historic; id, identity; incl, included; incr, increase *or* increasing; k, thousand; man, management; min, minimum; MSY, maximum sustainable yield; par, parameters; pop, population; pos, possibility; prob, probably *or* probability; prod, production; prot, protection; recom, recommendation; rel, relation; repl, replacement; repr, reproduction; sep, separate; stats, statistics; subst, substantially; sust. sustainable; tot, total; unrep, unreported; w/, with; y, years

<b>Harp seal</b>	<b>1992 (INWG)</b>	<b>1998 (INWG)</b>	<b>2005 (INWG)</b>	<b>2013 (INWG)</b>	<b>2014 (INWG)</b>	<b>2016 (INNWG)</b>
NWA	No new data	Current harvest levels may exceed repl. yield: est. should incl. updated data	~5.9 million, SY landed 325k Front & Gulf	No new data	Highly variable pup prod., but relatively stable pop.	No new information on abundance
Greenland Sea	Calc. catches are reasonable min. estimates of removal => will stabilize stock size	Caution should be used when considering given catch estimates, due to the trend in abundance (adults decline slowly)	Catch level X: curr. => incr; 2X sust. lev. => 45-55% decl. in 10y	Current catch level = 21% incr. in the 1+ pop. (over 10y). 14,600 catches (1+) = equilibrium; 21,270 = reduction, but still >N70	No new information	Fecundity data limited. Modify model to account for these uncertainties. Catch options given.
White/Barents Seas	Unable to calc. sust./repl. yield. Great status uncertainties + breeding Fem decline => conservative approach	Conservative approach in establishing harvests	Curr. catch X => incr. in pop. 2X sust. lev. => 50-67% decl. in 10y	Future catch scenarios should be explored over 15y, not 10 (for all pop. cons. by WGHARP)	The most conservative catch option should be chosen.	Equilibrium catch much lower than previously est.: needs new samples, reprod. data uncertainties need to be incl. in the model
<b>Hooded seal</b>	<b>1992 (INWG)</b>	<b>1998 (INWG)</b>	<b>2005 (INWG)</b>	<b>2013 (INWG)</b>	<b>2014 (INWG)</b>	<b>2016 (INNWG)</b>
NWA	No new info	No new info	No new info	No new data	No new information	No new info
Greenland Sea	Unable to provide management advice - lacks data	Catch estimates	No new info	Pop. <30% of largest observed size => no catches	No new information	Pop. <30% of largest observed size => no catches

<b>Harbour seal</b>	<b>2006</b>	<b>2011</b>	<b>2016</b>
Greenland	Recommended cessation on hunting	Welcomes the tot. prot. Recommends abund. & distr. investigation in the SE	None
Iceland	Needs hist. catch data to interpret declines. By-catch in lumpfish fishery? Needs data	Needs new surveys and further investigation of pop. structure	Needs complete survey ASAP, then every 2y. Better removal reports needed, dev. management plan, ++
Norway	Curr. harvest combined w/by-catch levels/unrep. struck & lost prob. not sust. => expand by-catch monitoring	Set quotas should follow the scientific advice => new ass. ASAP	Incr. reference fleet in areas w/high by-catch, more surveys; re-examine management by county, removal reports, data from by-catch
Svalbard	The short life expectancy in this pop. needs further investigation	None	None

<b>Grey seal</b>	<b>1996</b>	<b>2003</b>	<b>2011</b>	<b>2016</b>
Norway	No time series to evaluate pop. trends. Min. pup prod. 473. No info on life hist. par.	Use survey info on breeding colonies to dev. a better survey design	Current catch level=> depletion in Rogaland, reduction in Sør-Trøndelag, and increase in Nord-Trøndelag and further north. Recom: new surveys	Dev. model, update by-catch, more freq. surv., tagging, age-struct. of hunt, gen. study, incr. ref. fleet in areas w/high by-catch, better removal reports
Iceland	Pop. decl. from 12500 (1982) to 8000 (1992). No info on life hist. par.	Small & declining => better/more freq. surveys	Tot. mortality of females too high => market pop. decl. from 1982 to 2006	Dev. man. plan, complete survey, removal reports. Pup prod. survey., tagging, gen. sampl.
Faroe Islands	Lack of abundance estimate. No info on life hist. parameters	Further basic research; doc. pupping sites. Cave-breeding => non-standard survey methods	Lack of abundance and removals estimate	Lack of abundance and removals estimate

<b>Ringed seal</b>	<b>1996</b>
Baffin Bay / Davis Strait	Better systems for catch stats. + further studies of stock id, prod., abund. Catches likely sustainable
Greenland Sea (EGRL-W Svalbard)	Further studies of stock id, prod., abund. Catches likely sustainable
Barents / Kara Seas	

<b>Walrus</b>	<b>1995</b>	<b>2005</b>	<b>2009</b>	<b>2013</b>	<b>2015</b>
East Greenland	May be a separate genetic stock => separate man. unit	Recovering/ed after over-exploitation in the early 20th cent. Present size/status in rel. to pristine state uncertain	Slow incr. since 1909, est. 2010 depl. ratio of 0.96, abun. 1500. Low current repl. yield	Annual removals $\leq 20$	None
West Greenland - SE Baffin Island	Depleted and declining. GL should take appr. steps to stop decline	No reason to change its previous conclusion that this stock is depleted and declining, and that present harvests are very likely not sustainable.	Est. 2010 depletion ratio of 0.33 relative to the pre-expl. level in 1900, and a yearly repl. yield of 130	Annual removals $\leq 100$ (70% prob. of incr. from 2014-2018)	None
Baffin Bay (North Water polynya area)	Walrus centred in N Baffin Bay probably comprise a separate gen. stock => sep. man. unit	Lack of reliable data, but comment on likely unsustainability of catches	Est. 2010 depletion ratio of 0.20 relative to the pre-expl. level in 1900, and a yearly repl. yield of 84. Est. of current depl. more uncertain than the other stocks	Annual removals $\leq 93$ (70% prob. of incr. from 2014-2018)	Pop. extends into Can. High Arctic (HA). 2544 wintering => important area. $\leq 85$ annual removals in Qaanaaq (2016-2020), $\leq 92$ incl. Can. HA
Svalbard - Franz Josef Land	No genetic data available but should be treated as a sep. man. unit.	None	None	None	None