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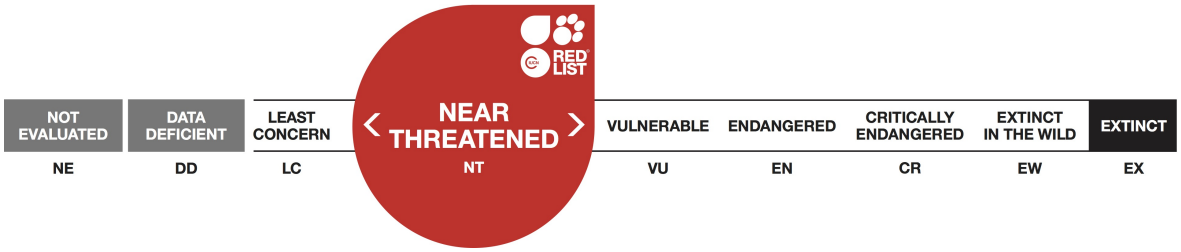
Odobenus rosmarus ssp. rosmarus, Atlantic Walrus

Assessment by: Kovacs, K.M.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Odobenidae

Taxon Name: *Odobenus rosmarus ssp. rosmarus* (Linnaeus, 1758)

Parent Species: See *Odobenus rosmarus*

Common Name(s):

- English: Atlantic Walrus

Taxonomic Notes:

The Walrus, *Odobenus rosmarus,* was in the past divided into three subspecies: the Atlantic Walrus (*O. r. rosmarus*), the Pacific Walrus (*O. r. divergens*), and the Laptev Walrus (*O. r. laptevi*) (Rice 1998). However, the status of the Laptev Walrus has always been somewhat uncertain; animals from this area are described as being intermediate in size between the Pacific and Atlantic forms, with skull morphology most similar to the Pacific subspecies (Fay 1982). Recent analyses of mitochondrial DNA and morphometric data suggest that the taxon *O. r. laptevi* should be abandoned (Lindqvist *et al*. 2009). The Walruses found in the Laptev Sea are in all probability the westernmost stock of the Pacific Walrus population.

Regional stocks of Atlantic Walrus have been identified for management purposes (Laidre *et al*. 2015) but some of these different stocks are in fact animals from within single populations. It is clear that separate populations occur in East Greenland versus Svalbard-Franz Josef Land (and probably also the Kara and Pechora Seas within the Barents Sea grouping). West Greenland and Canadian walruses are clearly separate from these other populations to the east, but exactly how many separate populations occur within the western part of the range is currently uncertain (Stewart et al. 2014a).

Assessment Information

Red List Category & Criteria: Near Threatened ver 3.1

Year Published: 2016

Date Assessed: February 2, 2016

Justification:

The Atlantic Walrus undoubtedly remains heavily depleted compared to the past, but in the last decade considerable research effort by Canada, Greenland, Norway, and Russia has improved our knowledge of abundance and has documented some positive trends in populations of this subspecies (Stewart *et al.* 2014a, Semyonova *et al.* 2015). Some uncertainties remain in stock divisions in Canadian waters and between Canada and West Greenland, but within nine recognized regional groupings, three stocks are increasing, two are stable, and the remaining four are unknown (see Laidre *et al.* 2015 for a summary and all original sources). Declining harvest levels in Canada and new management measures recently introduced in Greenland (Wiig *et al.* 2014) are likely to result in all of the stocks becoming stable or increasing in the near future.

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However, in the coming decades Atlantic Walrus are likely to be negatively impacted by climate warming and concomitant loss of sea ice (Kovacs *et al.* 2011, 2012, 2015) which will likely result in a population decline of >10% in three generations. Atlantic Walrus would meet IUCN criterion C1 for Vulnerable if the number of mature individuals were <10,000. With the number of mature individuals estimated to be 12,500 in 2015, Atlantic Walrus should be listed as Near Threatened under criterion C1.

Previously Published Red List Assessments

2008 – Not Evaluated (NE)

1996 – Lower Risk/least concern (LR/lc)

1965 – Less rare but believed to be threatened-requires watching

Geographic Range

Range Description:

Walruses have a discontinuous circumpolar Arctic and sub-Arctic distribution (Fay 1981, Rice 1998). The Atlantic Walrus occurs from the eastern Canadian Arctic to the western Kara Sea (Stewart *et al.* 2014a). Although some stock boundaries are still uncertain, seven eastern Canada/west Greenland stocks are generally recognized in addition to the east Greenland stock and the stock in the Barents Sea region. This latter group includes animals occupying Svalbard and Franz Josef Land as well as Nova Zemlya and the Pechora and Kara seas (and animals frequenting the ice in the White Sea in late winter/early spring; see Haug and Nilssen 1995). Historically, Atlantic Walruses occurred south to the Gulf of Saint Lawrence in the northwestern North Atlantic, but they were extirpated in that region by excessive harvesting (McLeod *et al.* 2014). Vagrants have been reported from New England, Iceland, and from Norway south to the Bay of Biscay in France/Spain. They are usually found in relatively shallow continental shelf areas and seldom occur in deep waters areas.

Country Occurrence:

Native: Canada; Greenland; Russian Federation; Svalbard and Jan Mayen

FAO Marine Fishing Areas:

Native: Atlantic - northwest, Atlantic - northeast

Population

The total abundance of Atlantic Walruses in not known, but it is likely that they number in excess of 25,000 animals when all of the various stock numbers are combined (Kovacs *et al.* 2015). This is not markedly different from the crude estimates that have been made for this subspecies over several decades, though the dynamics of some individual stocks have shown varied trends through this period and some areas have never been surveyed (e.g., Franz Josef Land). Accessible stocks were heavily depleted before protective measures came into place in Canada in the early 1900s, Norway and Russia in the mid 1900s, and Greenland in the early 2000s. Stewart *et al.* (2014b), Witting and Born (2014), and Gjertz *et al.* (1998) have explored Canadian, Greenlandic, and Barents Sea hunting histories within the limits of available data. All concluded that landed catches were far too high to be sustainable and that depletions certainly occurred throughout most of the range of the Atlantic Walrus, even in isolated areas with heavy ice cover such as northeast Greenland, Svalbard, and the Franz Josef Land Archipelago. A well-documented, relatively recent, example of a significant reduction is the decline that took place in the west Greenland/Baffin Bay stock in the period 1900-1960, when this stock was reduced by 80%. But, management interventions (i.e., controlling human harvesting; see Wiig *et al.* 2014) have resulted in signs of recovery in this and some other previously depleted North Atlantic stocks (Witting and Born 2014). Walrus numbers at Svalbard increased slowly during the period from 1993-2006 (Lydersen *et al.* 2008) and subsequently have been building exponentially (Kovacs *et al.* 2014), though it must be noted that this subpopulation is still very depleted compared to descriptions in historical accounts from this region. The first aerial survey in Russian territory was performed in summer 2011, when Pechora Sea Walruses were surveyed at summer haul-out sites (Lydersen *et al.* 2012). Ongoing bilateral work between Russia and Norway is being conducted to determine connectivity among the various areas within the Barents Sea. Preliminary tracking and genetics data suggest that all of the Barents Sea animals belong to one population.

The Committee on the Status of Endangered Wildlife in Canada gives the generation time for Atlantic Walrus, calculated as the average of ages of the youngest and oldest animal giving birth, as 21 years (COSEWIC 2006). However, because young animals are more common in the population and older females may exhibit reproductive senility this does not correspond to the IUCN definition. The average age of female Pacific Walrus in the Alaska Native harvest is approximately 15 years (Garlich-Miller *et al.* 2006), which likely provides a more reasonable estimate of the generation time for the Atlantic Walrus as well. Historical data are not sufficient to calculate overall trends in Atlantic Walrus numbers over the past three generations.

Current Population Trend: Unknown

Habitat and Ecology **(see Appendix for additional information)**

The Walrus's most distinctive feature is the external tusks, which are possessed by both males and females. The tusks can grow to be a meter long and can weigh 5 kg in large bulls. Walruses have extremely thick skin, which is heavily wrinkled and covered with tubercles in males, particularly on the neck. Males are proportionally more massive in the neck and shoulders than females and are much larger overall. In the Atlantic, adult males are 3-3.5 m long and weigh approximately 1,500 kg, while females are about 2.5 m long and around 900 kg. Calves are born weighing about 85 kg and are about 1.3 m long (Kovacs and Lydersen 2006).

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Walruses are extremely social animals that are normally found in tight groups ranging in size from a few individual up to thousands when on land or ice, and they usually travel at sea in groups as well (Kovacs and Lydersen 2006). Solitary individuals occur on occasion, and these are usually adult males. There is significant sexual segregation outside the breeding season, with males often being found in areas away from females and their calves. Walruses have a narrow ecological niche. They depend on: 1) the availability of large areas of shallow water with suitable bottom substrate to support a productive bivalve community, 2) the presence of reliable open water over rich feeding areas, particularly in winter when access to feeding areas is limited by ice cover, and 3) the presence of haul out areas in reasonably close proximity to feeding areas. The preferred haul out platform is sea ice, although Atlantic Walruses routinely use terrestrial haul out sites in the summer and autumn (Hamilton *et al.* 2015). Because they feed in shallow, coastal areas Walruses usually perform only relatively shallow, short dives, although they are capable of diving to over 450 meters for in excess of half an hour. The Walrus's main prey is bivalve mollusks (Clams of various types) that they search for on (or in) soft-bottom substrates using their sensitive whiskers (see Born 2005 for details). They clear away mud and sand from food using their front flippers and then suck the Clams from their shells, leaving the shells on the bottom. Thousands of Clams can be consumed in a single meal. Their diet can also include Worms, Snails, soft shell Crabs, Amphipods, Shrimp, Sea Cucumbers, Tunicates, and even slow-moving Fishes. Some Walruses prey on birds and other marine mammals, eating a variety of Seal species (e.g., Fox *et al.* 2010, Seymour *et al.* 2014)

Atlantic Walruses give birth in May (Kovacs and Lydersen 2006). Just prior to parturition, pregnant females separate from the herd and give birth to their offspring alone on pack ice. New mothers remain on the ice fasting for the first few days postpartum, relying on stored body energy accumulated prior to parturition. Subsequently, females and their young return to the herd and the female recommences foraging (Fay 1982). Walrus pups suckle for 2-3 years on relatively low-fat milk, with weaning taking place much more gradually than among most other pinnipeds (Kovacs and Lavigne 1982). The mothers take their calves with them to sea on foraging expeditions. Walrus calves are able to nurse at sea, hanging upside-down in the water, cradled by their mother's front flippers (Bowen *et al.* 2002). Members of a group always attend dependent youngsters on the surface when their mothers dive to forage. By the age of about five months, the calves are strong enough to dive and they begin to feed on benthic organisms and likely gain valuable foraging experience from their mothers over the remainder of lactation. Female Walruses mate about 9 months after the birth of their pup, with about 16 months of lactation remaining. Breeding takes place in December and January (Freitas *et al.* 2009, Lowther *et al.* 2015). When a calf is weaned, female offspring are assimilated into the mother's herd, whereas male offspring join male groups. Walruses are polygynous, with males displaying in small groups along ice edges where females are hauled out, with each male defending a small territory in the water and performing vocal and visual displays (Sjare and Stirling 1996, Sjare *et al.* 2003). Copulation takes place in the water.

Females give birth for the first time when they are about 10 years old. Males also reach sexual maturity by this time, but generally do not get the chance to mate until they are about 15. Walruses live to an age of over 40 years (Kovacs and Lydersen 2006).

Polar Bears and Killer Whales attack Walruses, mainly taking calves, though large male Polar Bears that specialize on hunting Walruses do take fully adult animals when they are hauled out (e.g., Killian and Stirling 1978).

Systems: Terrestrial, Marine

Use and Trade

Native people of the Arctic have depended on Walruses for food, hides, ivory, and bones since first contact, and subsistence harvests of Atlantic Walruses continue today in Canada and Greenland. All Walrus populations were severely depleted by episodic commercial hunting that was heaviest from the 18th through to the mid-20th centuries.

Threats (see Appendix for additional information)

Observations of incidental take of Pacific Walrus indicate that direct conflicts with fisheries are uncommon (US Fish and Wildlife Service 2010); however, trawl fisheries could disturb important benthic feeding areas (COSEWIC 2006). Human disturbance at land-based haul-out sites, low-level aircraft overflights and nearshore passage of vessels can have serious effects on hauled out Walruses, as they are highly susceptible to disturbance and easily panicked into stampedes that can result in high mortality levels, particularly among calves (Udevitz *et al.* 2013). Walruses feed low in the trophic web, so generally have relatively low levels of contaminants in their tissues, though individuals that consume marine mammal prey are likely at higher risks (Wolkers *et al.* 2006, Skoglund *et al.* 2010). Sedimentation from industrial development can cause degradation of their prey populations and oil pollution can negatively impact the filter feeding Clams that make up most of their diet.

Global warming and associated reduction in the extent, seasonal persistence, and characteristics of sea ice could negatively affect Walruses (e.g., Huntington 2009; Kovacs *et al.* 2011, 2012, 2015). The Barents Sea region in particular is warming rapidly, with a decrease in seasonal ice cover 2-4 times that of other Arctic areas in the last three decades (Laidre *et al.* 2015). Declining sea ice reduces suitable strata for pupping and breeding aggregations and limits access to offshore feeding areas (Laidre *et al.* 2008, Kovacs *et al.* 2011, but also see Born 2005). Reduction in sea ice has already led to increased shipping and development of oil and gas fields in the southern parts of the Atlantic Walrus's range, bringing increased risk of spills and discharge of pollutants and disturbance (Semyonova *et al.* 2015), and oil and gas exploration is moving north rapidly with exploration licenses having already been granted in East Greenland.

Conservation Actions (see Appendix for additional information)

Atlantic Walruses are protected from harvest in Norway and in Russia; they are on the Norwegian Red List (Henriksen and Hilmo 2015) and they are listed in the Russian Red Book (Boltunov *et al.* 2010). Harvests are quota regulated in Canada and in Greenland, and females are not supposed to be harvested in Greenland (Wiig *et al.* 2014). COSEWIC (2006) designated the Atlantic Walrus in Canada as a species of "special concern", which acknowledges that they are at risk of becoming threatened in this region; this classification is attributed to climate change impacts on sea ice.

Credits

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External Resources

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Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
9. Marine Neritic -> 9.4. Marine Neritic - Subtidal Sandy	Resident	Suitable	Yes
9. Marine Neritic -> 9.5. Marine Neritic - Subtidal Sandy-Mud	Resident	Suitable	Yes
9. Marine Neritic -> 9.6. Marine Neritic - Subtidal Muddy	Resident	Suitable	Yes
10. Marine Oceanic -> 10.1. Marine Oceanic - Epipelagic (0-200m)	Resident	Suitable	Yes
10. Marine Oceanic -> 10.2. Marine Oceanic - Mesopelagic (200-1000m)	Resident	Suitable	No
12. Marine Intertidal -> 12.2. Marine Intertidal - Sandy Shoreline and/or Beaches, Sand Bars, Spits, Etc	Resident	Suitable	Yes
13. Marine Coastal/Supratidal -> 13.1. Marine Coastal/Supratidal - Sea Cliffs and Rocky Offshore Islands	Resident	Suitable	Yes
0. Root -> 17. Other	Resident	Suitable	Yes

Threats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity	Impact Score
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
4. Transportation & service corridors -> 4.3. Shipping lanes	Ongoing	Minority (50%)	-	-
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
4. Transportation & service corridors -> 4.4. Flight paths	Ongoing	Minority (50%)	-	-
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.2. Intentional use: (large scale) [harvest]	Past, unlikely to return	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
6. Human intrusions & disturbance -> 6.3. Work & other activities	Ongoing	Minority (50%)	-	-
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		

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9. Pollution -> 9.2. Industrial & military effluents -> 9.2.1. Oil spills	Future	Minority (50%)	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		

Conservation Actions in Place

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: No
Systematic monitoring scheme: No

Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.1. Site/area management
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
3. Species management -> 3.1. Species management -> 3.1.2. Trade management
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.5. Threats
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.2. Harvest level trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km²): 2221592
Continuing decline in area of occupancy (AOO): No
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km²): 10924208
Continuing decline in extent of occurrence (EOO): No
Extreme fluctuations in extent of occurrence (EOO): No
Continuing decline in number of locations: No
Extreme fluctuations in the number of locations: No
Upper elevation limit (m): 5
Lower depth limit (m): 450
Population
Number of mature individuals: 12500
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: No
All individuals in one subpopulation: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 15
Movement patterns: Not a Migrant
Congregatory: Congregatory (and dispersive)

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The IUCN Red List Partnership

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership.

The IUCN Red List Partners are: BirdLife International; Botanic Gardens Conservation International; Conservation International; Microsoft; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; Wildscreen; and Zoological Society of London.