Polar bear

*Ursus maritimus*

Class: Mammalia
Order: Carnivora

Review Status: Peer-reviewed
Version Date: 03 April 2018

Conservation Status

<table>
<thead>
<tr>
<th>NatureServe:</th>
<th>Agency:</th>
</tr>
</thead>
<tbody>
<tr>
<td>G Rank: G3</td>
<td>ADF&amp;G: Species of Greatest Conservation Need</td>
</tr>
<tr>
<td>S Rank: S2</td>
<td>USFWS: Listed Threatened</td>
</tr>
</tbody>
</table>

**Final Rank**

Conservation category: **II. Red**

- High status and either high biological vulnerability or high action need

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>-20 to 20</td>
<td>18</td>
</tr>
<tr>
<td>Biological</td>
<td>-50 to 50</td>
<td>-6</td>
</tr>
<tr>
<td>Action</td>
<td>-40 to 40</td>
<td>-32</td>
</tr>
</tbody>
</table>

*Higher numerical scores denote greater concern*

**Score**

<table>
<thead>
<tr>
<th>Status</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Population Trend in Alaska (-10 to 10)</td>
<td>8</td>
</tr>
<tr>
<td>Distribution Trend in Alaska (-10 to 10)</td>
<td>10</td>
</tr>
<tr>
<td>Biological</td>
<td>Score</td>
</tr>
<tr>
<td>Population Size in Alaska (-10 to 10)</td>
<td>-2</td>
</tr>
</tbody>
</table>

**Status** - variables measure the trend in a taxon’s population status or distribution. Higher status scores denote taxa with known declining trends. Status scores range from -20 (increasing) to 20 (decreasing).

**Biological** - variables measure aspects of a taxon’s distribution, abundance and life history. Higher biological scores suggest greater vulnerability to extirpation. Biological scores range from -50 (least vulnerable) to 50 (most vulnerable).
1,212), but this estimate includes individuals that breed in northwestern Canada (Bromaghin et al. 2015). U.S. Fish and Wildlife Service published a draft stock assessment report in 2017 in which they estimated the minimum population size of the SBS stock at 782 individuals (Federal Register 2017).

**Range Size in Alaska (-10 to 10)**

Distributed across Alaska's Arctic waters (northern Bering Sea, Chukchi Sea, Beaufort Sea) and nearby terrestrial habitats (e.g. the Arctic Coastal Plain and coastal western Alaska). Two stocks are currently recognized in Alaska, though boundaries between them are fluid. The Chukchi/Bering Sea stock occurs across the Chukchi Sea, south to the northern Bering Sea and west to Russia (PBSG 2019). The Southern Beaufort Sea stock occurs from Point Lay, AK east to Tuktoyaktuk, Northwest Territories, Canada (PBSG 2019). The two populations overlap in the area between Point Barrow and Point Hope (Muto et al. 2017). Estimated range size >400,000 sq. km.

**Population Concentration in Alaska (-10 to 10)**

Although concentrations of den sites have been reported in other areas (e.g. Wrangel Island in Russia), den sites in Alaska are widely distributed (Amstrup and Gardner 1994; Federal Register 2010a). More than 390 den sites have been reported in Alaska (Durner et al. 2010).

**Reproductive Potential in Alaska**

*Age of First Reproduction (-5 to 5)*

Females reach sexual maturity between 4 to 6 years of age (USFWS 2016).

*Number of Young (-5 to 5)*

Females give birth to two (range: 1-3) cubs once every three years (USFWS 2016). Litter size from 2008 to 2011 averaged 1.59 (+/- 0.67) and 1.38 (+/- 0.58) for the CS and SBS stocks, respectively (Rode et al. 2014).

**Ecological Specialization in Alaska**

*Dietary (-5 to 5)*

Polar bears hunt on sea ice and rely heavily on ringed seals (78.5% of diet composition; Rode et al. 2014). To a far lesser extent, they also consume larger prey such as bearded seals, walrus, beluga, and bowhead whales (Thiemann et al. 2008; Rode et al. 2014; McKinney et al. 2017). Opportunistic foraging on fish, berries, bird eggs, and carrion have been reported (e.g. Derocher et al. 1993; Voorhees et al. 2014; Atwood et al. 2016a); however, given the high-energy requirements of active (i.e. non-fasting) polar bears, few food items could serve as an adequate substitute to ice-caught marine mammals (Rode et al. 2010b). Several recent studies have noted polar bears feeding on land on "bone piles" (remains of bowhead whales left behind by subsistence hunters) (Rogers et al. 2015; Atwood et al. 2016a; McKinney et al. 2017), but it remains unknown whether this resource is a long-term, sustainable alternative. Observed declines in polar bear populations have been linked to nutritional limitation as a result of changing climatic conditions (Rode et al. 2010a; Pagano et al. 2018).

*Habitat (-5 to 5)*

Sea ice habitat is essential for many aspects of polar bear ecology, including hunting, traveling, migration, resting, and denning (Amstrup and Gardner 1994; Federal Register 2010a). Den sites, which can also be built on land, are strongly tied to the presence of snow and are therefore often in areas that have some degree of topographical complexity and that tend to accumulate more snow than surrounding areas (Durner et al. 2003). Terrestrial habitats are typically used in late summer and fall when sea ice is at its minimum (Federal Register 2010a). However, recent changes in sea ice have led to concomitant changes in polar bears' habitat use (Ware et al. 2017). Bears are spending less time in their preferred sea ice habitats and more time in suboptimal habitats, with implications to population dynamics (Schliebe et al. 2008; Atwood et al. 2016b; Ware et al. 2017).
Several authors agree that increased use of terrestrial habitats is unlikely to compensate for the loss of sea ice habitat (Fischbach et al. 2007; USFWS 2017b; Ware et al. 2017).

**Biological Total:** -6

**Action** - variables measure current state of knowledge or extent of conservation efforts directed toward a given taxon. Higher action scores denote greater information needs due to lack of knowledge or conservation action. Action scores range from -40 (lower needs) to 40 (greater needs).

| Management Plans and Regulations in Alaska (-10 to 10) | -10 |
| Knowledge of Distribution and Habitat in Alaska (-10 to 10) | -10 |
| Knowledge of Population Trends in Alaska (-10 to 10) | -2 |
| Knowledge of Factors Limiting Populations in Alaska (-10 to 10) | -10 |

**Supplemental Information** - variables do not receive numerical scores. Instead, they are used to sort taxa to answer specific biological or management questions.
Alaska Species Ranking System - Polar bear

<table>
<thead>
<tr>
<th>Harvest:</th>
<th>Not substantial</th>
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<tbody>
<tr>
<td>Seasonal Occurrence:</td>
<td>Year-round</td>
</tr>
<tr>
<td>Taxonomic Significance:</td>
<td>Monotypic species</td>
</tr>
<tr>
<td>% Global Range in Alaska:</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>% Global Population in Alaska:</td>
<td>&lt;25%</td>
</tr>
<tr>
<td>Peripheral:</td>
<td>No</td>
</tr>
</tbody>
</table>

References


Alaska Species Ranking System - Polar bear


Rode, K. D., S. C. Amstrup, and E. V. Regehr. 2010a. Reduced body size and cub recruitment in polar bears associated with sea ice decline. Ecological Applications 20(3):768-782. DOI: 10.1890/08-1036.1


Voorhees, H., R. Sparks, H. P. Huntington, and K. D. Rode. 2014. Traditional knowledge about polar bears (Ursus maritimus) in northwestern Alaska. Arctic 67(4):523-536. DOI: 10.14430/arctic4425


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