

**Progress Report, Action #3**  
**2015-2017 Bilateral and Multilateral Actions,**  
**Circumpolar Action Plan:**  
**Conservation Strategy for the Polar Bear**



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|---|--|
| <b>Action</b>   | Define and Identify Essential Polar Bear Habitat and Document Change over Time   |
| <b>Timeline</b>   | 2015-2025  |
| <b>Description of Activity from 2017 Implementation Table</b> | <p>Range States will determine the status of the identification of essential habitat for polar bear in the 19 subpopulations. Additionally, the International Union for the Conservation of Nature/Species Survival Commission (IUCN/SSC) Polar Bear Specialist Group (PBSG) will:</p> <ol style="list-style-type: none"> <li>1. Develop a suite of broad sea-ice metrics that characterize essential polar bear habitat, examine changes over time based on past observations, and project changes into the future.</li> <li>2. A peer-reviewed paper describing results.</li> <li>3. An outline for future work and a suggested work plan that would include identification of essential terrestrial habitat.</li> </ol> |
| <b>Baseline status</b>  | <p>PBSG regularly updates sea ice metric for subpopulations, but assessment does not consider other essential polar bear habitat features.</p> <p>Work has been conducted at national levels, but has not been coordinated internationally (between Range States jurisdictions).</p>   |
| <b>Planned Outputs</b>  | Status report that would lay the groundwork for the Range States to take climate change effects into account in polar bear management.   |
| <b>Modifications</b>  | None.  |
| <b>Progress Report Date</b>                                   | November 24, 2017  |

**Progress Report on Activity**

A peer-reviewed paper on sea-ice metrics has been published:

Stern, H.L., and K. L. Laidre. 2016. Sea-ice indicators of polar bear habitat. *The Cryosphere* 10, 2027-2041, doi:10.5194/tc-10-2027-2016

This metric has been used in the IUCN global conservation assessment under the Red List (Wiig et al. 2015 Red List document, Regehr et al. 2016) and as part of the PBSG Status Table. The metric has also been used in analyses related to individual subpopulations, specifically Kane Basin, Baffin Bay, and East Greenland (see SWG 2016 and Laidre et al. 2015).

Other relevant materials published to support the ongoing accomplishment of this action item are following:

Laidre, K. L., E. W. Born, P. Heagerty, Ø. Wiig, R. Dietz, H. Stern, J. Aars, M. Andersen. 2015. Shifts in habitat use by female polar bears (*Ursus maritimus*) in East Greenland. *Polar Biology* 38: 879-893. doi: 10.1007/s00300-015-1648-5

Regehr, E.V., K. L. Laidre, H. R. Akçakaya, S. Amstrup, T. Atwood, N. Lunn, M. Obbard, H. Stern, G. Thiemann, & Ø. Wiig. 2016. Conservation status of polar bears (*Ursus maritimus*) in relation to projected sea-ice declines. *Biology Letters*. 12: 20160556. <http://dx.doi.org/10.1098/rsbl.2016.0556>

SWG [Scientific Working Group to the Canada-Greenland Joint Commission on Polar Bear]. 2016. Re-Assessment of the Baffin Bay and Kane Basin Polar Bear Subpopulations: Final Report to the Canada-Greenland Joint Commission on Polar Bear. 31 July 2016: x + 636 pp.

### **Next Steps**

Possible with funding:

- The current status table metric can be refined to a higher resolution analysis across the Arctic on a grid-cell by grid-cell basis. This would be an improvement over the current broad scale subpopulation-based analysis. This would provide a finer scale assessment of polar bear habitat change over the satellite record and can be used to address multiple other action items (e.g., #2). It can also be used to look at breakpoints.
- In addition, there could be an updated circumpolar resource selection model (RSF) (following on work similar to Durner et al. 2009, Laidre et al. 2015 and others) but using updated satellite telemetry data from multiple subpopulations.
  - (This would take about one year of a research scientist's time and requires telemetry data from several nations for collaboration).
- Detailed maps could be generated showing how critical habitat will be distributed through Arctic areas at different time steps and under different sea ice conditions.
- Essential terrestrial habitat could also be determined by looking at denning sites or use of land habitat from telemetry as part of the circumpolar RSF (e.g., identify areas of frequent land use, similar to Rode et al. 2015).

Funding needed to progress on these issues: \$120,000 USD for sea ice portion only, \$200,000 USD to do RSF.