Rapid Assessment of Circum-Arctic Ecosystem Resilience (RACER): a Framework and Tool to Guide Ecosystem Adaptation Measures under Major Climatic Change

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Over the last 50 years the Arctic has warmed at almost twice the rate of the global average. Arctic places and species are already affected by the change in climate which is quickly becoming the dominant threat to the viability of Arctic ecosystems. The unprecedented rates of change forecast for the Arctic have led WWF to believe that conservation approaches in the 21st century have to adapt to change and should apply stewardship approaches focusing on building resilience of the social-ecological system. This will require, among other measures, a detailed understanding of ecosystem structure and function as well as human adaptive capacity, and how they will likely respond to the direct and indirect impacts of climate change. Given the significant biophysical data gaps for much of the Arctic and the challenges associated with projecting future human use of Arctic resources, the analyses required to carry out the above will demand some time and resources to complete comprehensively. As such, there is a clear need to provide interim products that identify where to concentrate efforts to strengthen the viability of Arctic ecosystems, including the services they supply to people. WWF realizes the need to make progress fast and has carried out a Rapid Assessment of Circumpolar Ecosystem Resilience (RACER) to examine places conferring resilience of circum-Arctic marine and tundra ecosystems. The project analyses whether values underpinning system functioning –such as those driving ecosystem processes, diversity, and ecosystem services– are resilient or vulnerable to the projected climate changes. It points to places in the circumpolar Arctic where these values are likely to remain intact, and also provides a structure for similar assessments at the regional or local scale. WWF's team has designed and refined the method identifying places of future importance for Arctic conservation based on case studies for two terrestrial and two marine eco-regions in the Russian and Canadian Arctic, completed with guidance from an international advisory group of Arctic conservation and climate experts representing both Indigenous and scientific knowledge. It is anticipated that the methods and outputs from RACER will help accelerate the onset of new approaches to spatial planning,

especially land and resource use management plans, to fully incorporate the consequences of unprecedented rapid climatic change in the Arctic.