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Title: Changes in Vegetation Cover of the Arctic National Wildlife Refuge Estimated from MODIS Greenness Trends, 2000 to 2018

Abstract: The Arctic National Wildlife Refuge (ANWR) was established in 1980 and covers 19 million acres (77,000 km<sup>2</sup>) in northeast Alaska. Wildlife habitats in the ANWR are vulnerable to long-lasting effects from any disturbance, in part because short growing seasons in the arctic provide limited time for species to recover. Trends and transitions in the growing season MODerate resolution Imaging Spectroradiometer (MODIS) Normalized Difference Vegetation Index (NDVI) time-series at 250-m resolution were analyzed for the period from 2000 to 2018 to understand recent patterns of vegetation change in all ecoregions of the ANWR. Statistical analysis of changes in each MODIS pixel NDVI time series was conducted using the “Breaks for Additive Seasonal and Trend” method (BFAST) to map regional change rates. Results suggested that most negative NDVI anomalies in the tundra-covered river drainages of the Brooks Range Mountains and coastal plain have been associated with early spring thawing and elevated levels of surface moisture in low elevation drainages of the northern ANWR ecoregions.

Key Words: Vegetation Cover, Arctic National Wildlife Refuge, 2000 to 2018