



## The Ecological Role and Geography of Reindeer (*Rangifer tarandus*) in Northern Eurasia

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### Abstract

The reindeer is a ruminant of the family Cervidae with a circumpolar distribution that has been a key component of Eurasian high latitude ecosystems for at least 2 million years. Interactions with humans date from the late Pleistocene onward and wild and semi-domestic animals continue to be highly valued by aboriginal and non-native peoples for a diversity of purposes. As a widespread and dominant ungulate across many tundra and taiga regions, the reindeer exerts a number of important controls on ecosystem structure and function. Animals, both free-ranging and herded, move seasonally between summer, winter and transitional spring/autumn habitats or 'pastures'. Their effects on vegetation and soils vary greatly in space and time depending on factors such as altitude/exposure, snow depth, substrate, moisture, prevailing vegetation type and, most importantly, animal density. At present, the number of Old World reindeer is somewhat less than 2.5 million. The most productive semi-domestic herds occur in Fennoscandia and the Nenets regions of northwest Russia straddling the Ural Mountains. Management systems differ within and among countries and regions. Given the diverse suite of factors involved, changes in vegetation associated with grazing and trampling can be remarkably heterogeneous spatially yet remain to a large extent predictable. Potential threats facing reindeer populations of Eurasia include rapid land use change, climate change and ongoing institutional conflicts.

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### Introduction

This article provides an overview of the ecology of Old World reindeer (*Rangifer tarandus*), in particular semi-domestic populations, which are geographically widely distributed across northern Eurasia. Special emphasis will be placed on the most productive modern herding systems in Fennoscandia and the Nenets regions of northwest Russia straddling the Ural Mountains. These regions also account for the lion's share of the applied ecological and geographical literature in both English and Russian. After introducing the geography and development of reindeer herding, the review will address, respectively, herd population dynamics in space and time, land use and plant–animal interactions, and potential future threats.