



The Arctic wetland resource: a review of research and management application status

Samaneh Seifollahi-Aghmiuni (1), Zahra Kalantari (1), Magnus Land (2), and Georgia Destouni (1)

(1) Department of Physical Geography and Bolin Centre for Climate Research, Stockholm University, Stockholm, Sweden (samaneh.seifollahi@natgeo.su.se), (2) Stockholm Environment Institute (SEI), Stockholm, Sweden

Wetlands constitute an essential integral part of Arctic landscapes and play an important role in sustainable regional development, as they are directly linked to climate change and adaptation, ecosystem services, and the livelihood of local people. The effects of natural and anthropogenic pressures on Arctic wetlands and their biodiversity and functioning can be critical for ecosystem resilience, with development trajectories suggesting pressure increases over the coming decades. Understanding the impacts of regional and global changes on these wetlands and their landscapes, ecosystems and services, and devising suitable solutions for impact mitigation is a major challenge for scientists, decision makers, and stakeholders. This study reviews the status of Arctic wetland research considering some fundamental questions for their management: (1) What is known about the main drivers affecting the functionality of Arctic wetlands and their landscapes? (2) How have these drivers and their impacts been assessed in the scientific literature on Arctic wetlands? (3) What key findings and research gaps emerge from the literature on wetland services and their landscape characteristics? (4) What management aspects have been studied with regard to restoration of Arctic wetlands and preservation of their services? Our review identifies extensive research on various natural and human-induced drivers and their impacts on characteristics of Arctic wetland landscapes, whereas some aspects of wetland functionality and ecosystems still remain to be investigated, such as efficiency aspects of wetland management strategies and plans. It is further unclear if, and to what extent, research findings on the characteristics, interactions, and ongoing changes of Arctic wetlands are applied in management strategies and plans. This study also highlights a need for research on implementations and impacts of such strategies and plans, in order to contribute to their developments, applications and improvements. In addition, decision makers and managers need to increasingly develop and base such strategies and plans on available scientific knowledge of the functioning of Arctic wetlands, their landscapes and ecosystems.