Gaps in the Literature Example Abstracts

Examples from four article abstracts in CSE format.

Vona I, Gray MW, Nardin W. 2020. The impact of submerged breakwaters on sediment distribution along marsh boundaries. Water. [accessed 2020 July 17];12(4):1016.

Human encroachment and development on coastlines have led to greater amounts of armoring of shorelines. Breakwaters are a common feature along coastlines, which are used to dampen wave energy and protect shorelines from flash floods or overwash events. Although common, their effects on sediment transport and marsh geomorphology are poorly understood. To address this gap, our study quantifies the effects of breakwaters on sediment transport and marsh evolution under different wave regimes using Delft3D-SWAN, a dynamic geomorphodynamic numerical model. Model configurations used the same numerical domain, but scenarios had different sediments, waves, tides, basin slopes and breakwater distances from the shoreline to explore how waves and tidal currents shape coastal margins. Model results suggested breakwaters were responsible for an average wave damping between 10-50%, proportional to the significant wave height across all modeled scenarios. Shear stress at the beginning of the marsh and the volume of sediment deposited at the end of the simulation (into the marsh behind the breakwater) increased on average between 20-40%, proportional to the slope and distance of the breakwater from the shoreline. Sediment trapping, defined as the ratio between the volume of sediment housed into the salt marsh behind and away from the breakwater, was found to be less than 1 from

most model runs. Study results indicated that breakwaters are advantageous for wave breaking to protect shorelines from the wave's energy, however, they might also be an obstacle for sediment transport, negatively affecting nourishment processes, and, consequently, impeded long-term salt marsh survival. Identifying a balance between waves dampening and shoreline nourishment should be considered in the design and implementation of these structures.

Seifollahi-Aghmiuni S, Kalantari Z, Land M, Destouni G. 2019. Change drivers and impacts in arctic wetland landscapes-literature review and gap analysis. Water. [accessed 2020 July 17];11(4):722.

Wetlands are essential parts of Arctic landscapes, playing important roles for the sustainable development of the region, and linking to climate change and adaptation, ecosystem services, and the livelihood of local people. The effects of human and natural change drivers on key landscape characteristics of Arctic wetlands may be critical for ecosystem resilience, with some functional aspects still poorly understood. This paper reviews the scientific literature on change drivers for Arctic wetland landscapes, seeking to identify the main studied interactions among different drivers and landscape characteristics and their changes, as well as emerging research gaps in this context. In a total of 2232 studies of various aspects of Arctic wetland landscapes found in the literature, natural drivers and climate change have been the most studied change drivers so far, particularly regarding their impacts on carbon cycling, plant communities and biodiversity. In contrast, management plans, land use changes, and

nutrient-pollutant loading, have not been investigated as much as human drivers of Arctic wetland change. This lack of study highlights essential gaps in wetland related research, and between such research and management of Arctic wetlands.

Mengist W, Soromessa T, Legese G. Ecosystem services research in mountainous regions: A systematic literature review on current knowledge and research gaps. 2020. Sci Total Environ. [accessed 2020 July 17];702:134581.

Mountain ecosystem services (MES) can provide a wide range of benefits for human well-being, including provisioning, regulating, supporting and cultural services. This systematic review work analyzed existed knowledge and research gaps on MES at the global level. The study used databases of science direct, Scopus and google scholar using searching, appraisal, synthesis, and analysis (SALSA) framework. Using specific keywords for the searching engine, the number of publications linked with MES were about 1252 which published between 1992 and June 2019. But, only 74 publications fulfilled the inclusion criteria. The analysis highlighted the existence of gaps in the literature including case studies from a limited geographical areas, focus on regulating and provisioning services, and lack of studies that explore the kinds of interlink between ecosystem services, and occurrence of limitation linked with data and methodology. From the 74 publications used for analysis, only seven of them were addressed mainly trade-offs and synergies, but most of them focus on quantification, qualification and economic valuation of the services. From the total case studies, the services addressed were summed up to 317 services, and the services such as climate regulation, food and fodder, fresh water, recreation and ecotourism, and erosion

regulation studied more. On the contrary, photosynthesis, ornamental resources, net primary production, disease regulation, genetic resources, water purification and waste treatments were the least studied. Therefore, future research works should focus on mountainous areas of no and least studied of its ecosystem services. Critical studies are also required that indicate the link between a human being with MES, the trade-offs and synergies between MES and the influence of human beings on the quality and accessibility of ecosystem services. Besides, priority should be given by researches for methodological development and proposing management option for the mountain ecosystem and resource.

Montemayor DI, Sparks EL, Cebrian J. 2020. Herbivory patterns along the intertidal gradient of juncus roemerianus salt marshes. Mar Environ Res. [accessed 2020 July 17];153:104814.

Grasshopper herbivory can vary substantially among locations within a salt marsh or among marshes, but its variability along the marsh intertidal gradient (extending from the shoreline to the upland fringing forest) is not well reported. Previous papers have shown that grasshopper herbivory may affect nutrient processes in salt marsh ecosystems, but how such effects are tied up to the intensity of herbivory and how they vary spatially is poorly known. To help address these gaps, we evaluated whether grasshopper herbivory intensity and herbivore abundance together with other plant characteristics (such as total leaf length, plant live and dead biomass, plant nutrient content and plant nutrient standing stocks) varied along the intertidal gradient of two black needlerush marshes in the Northern Gulf of Mexico. Our results show that in

one marsh grazing intensity decreased from the shoreline to the forest tree line, but in the other there was similar grazing intensity across the entire intertidal gradient. None of the measured plant characteristics followed the differences in herbivory found along the intertidal gradient and between salt marshes. We also found that, in the salt marsh with decreasing herbivory towards the upland edge, the combination of herbivory, plant nutrient content and plant nutrient standing stocks suggest two different functional zones along the intertidal gradient, one of nutrient availability and recycling near the shoreline and another one of nutrient inmobilization near the upland fringing forest. In concert, the results suggest that grasshopper herbivory intensity may vary along the intertidal gradient in some marshes, but not in others. In turn, spatial differences in herbivory along the intertidal gradient, if they occur, may influence nutrient processes, such as recycling and storage, leading to associated spatial differences in nutrient dynamics in the salt marsh.