Engineering With Nature Project Fact Sheet

Developing and Optimizing Multidimensional NNBF and EWN Strategies that Endure Cold Region Environments

Background

The reoccurrence of ice, intense storms, high winds, rising and falling lake levels, etc. often complicates the approach to developing natural infrastructure solutions in cold region (CR) environments. In Artic regions, climate change has resulted in loss of permafrost and ice sheets. These losses, coupled with sea level rise, have also resulted in accelerated rates of erosion along the coastlines of Alaska and Canada. A better understanding of the current conditions and future anticipated changes in CRs will offer greater insight into what EWN strategies might prove beneficial as a means of reducing risk and increasing the resilience of communities located in Alaska, Canada, New England, and along the Great Lakes.

Objectives

Presently, there is limited information and examples of practice specific to use of nature-based solution in CR environments. This project will focus on identifying and developing EWN strategies that include, but are not limited to, (1) identification of nature-based techniques and practices that can be integrated to make communities more resilient in CRs; (2) develop innovative designs and applications of natural and nature-based features (NNBF) that integrate novel techniques and practices that are specific to CRs; (3) pursue collaborative, pilot-scale demonstration projects that integrate EWN and nature-based solutions in CRs; and (4) identify and evaluate nontraditional EWN strategies that promote community resilience in CR environments.

Approach

This project will collect the best available information and data that is applicable to vulnerable areas located in CR environments. Where and when additional data is needed, a collaborative team will determine methods and techniques for deploying instrumentation, acquiring samples, etc. This research effort will also include modeling of current and future environmental conditions. After characterizing the systems of interest, the project will identify and evaluate EWN strategies and potential NNBF options. A proposed CR EWN workshop will be a means of assembling practitioners to learn more about best practices, successes and failures, needs, resource identification, etc. for creating more resilience in CR environments.

Outcomes

This project will advance our understanding of these dynamic CR environments and what interventions and strategies may prove helpful when pursuing nature-based solutions to increase the resilience of vulnerable communities. By identifying appropriate natural infrastructure and nature-based strategies, communities are likely to maintain and preserve more of their natural environment and surroundings and, therefore, derive more social and environmental benefits from the techniques and practices this project reveals.

Photo: palm_ak

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