

Menu of Adaptation Strategies and Approaches

Developed for Great Lakes Coastal Ecosystem Management

Strategy 1: Maintain and enhance fundamental hydrologic processes and sediment dynamics.

- 1.1. Maintain and restore natural sediment transport processes.
- 1.2. Maintain and restore hydrological connectivity between hydrological features.
- 1.3. Maintain and enhance infiltration and water storage capacity of soils.

Strategy 2: Maintain and enhance water quality.

- 2.1. Moderate water temperature increases.
- 2.2. Reduce sediment deposition.
- 2.3. Reduce loading and export of nutrients and other pollutants.

Strategy 3: Maintain, restore, and manage coastal vegetation.

- 3.1. Approach 3.1: Maintain the integrity of unique plant communities, coastal wetlands and estuaries, and their integral landforms.
- 3.2. Minimize non-climate physical damage to coastal ecosystems and habitats.
- 3.3. Establish living shorelines by maintaining and restoring coastal vegetation.
- 3.4. Maintain and enhance species and structural diversity in coastal ecosystems.
- 3.5. Prevent invasive plant and animal species establishment and minimize their impacts where they occur.
- 3.6. Maintain and establish refugia for plants and animals.
- 3.7. Maintain and increase connectivity of coastal habitats.

Strategy 4: Enhance forest recovery following disturbance.

- 4.1. Manage coastal ecosystems to accommodate increased frequency and duration of low water levels.
- 4.2. Manage coastal ecosystems to accommodate increased frequency and duration of high water levels.
- 4.3. Promote features that reduce the impacts of wind and wave energy or damage from coastal erosion.
- 4.4. Manage sediment to respond to fluctuating water levels.
- 4.5. Reduce or manage surface water runoff.
- 4.6. Maintain and create conditions for inland and waterward movement of plants and animals.
- 4.7. Manage impounded wetlands to accommodate changes in hydrologic variability.

Strategy 5: Facilitate transformation of coastal ecosystems by adjusting plant species composition.

- 5.1. Favor or restore native species and genotypes with wide moisture and temperature tolerances.
- 5.2. Increase genetic diversity of seed and plant mixes.
- 5.3. Disfavor species that are distinctly maladapted.
- 5.4. Introduce species that are expected to be adapted to future conditions.
- 5.5. Move at-risk species to locations that are expected to provide more suitable habitat.

Strategy 6: Design and modify infrastructure to accommodate future conditions.

- 6.1. Reinforce infrastructure to meet expected conditions.
- 6.2. Design infrastructure with low-impact or ecologically friendly features.
- 6.3. Adjust the placement, design, and planned lifespan of infrastructure.
- 6.4. Remove infrastructure and readjust systems.

MORE INFORMATION: This menu of adaptation strategies and approaches can be used within the Adaptation Workbook decision-support framework found in Swanston, C.W.; Janowiak, M.K.; Brandt, L. A.; Butler, P.R.; Handler, S. D.; Shannon, P.D.; Derby Lewis, A.; Hall, K.; Fahey, R.T.; Scott, L.; Kerber, A.; Miesbauer, J.W.; Darling, L.; Parker, L.; St. Pierre, M. 2016. **Forest adaptation resources: climate change tools and approaches for land managers, 2nd ed.** Gen. Tech. Rep. NRS-GTR-87-2. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 161 p. doi.org/10.2737/NRS-GTR-87-2.

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