

4 MINUTE READ

Fort Sheridan



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by US Army Engineer Research and Development Center



Lake Forest, Highland Park, and Fort Sheridan, Illinois, United States

Using historical native plant ecotypes and natural processes to restore a coastal ecosystem.

Although northeastern Illinois lies largely within the Chicago metropolitan area, the Fort Sheridan Restoration Project rests within the suburb of the Town of Fort Sheridan, surrounded by neighborhoods, parks, and forests along four kilometers of Lake Michigan shoreline. Completed in fall 2020, the project aimed to bring ecological benefits to the coastal environment, from the ravines down into the nearshore underwater habitats, and social and economic benefits to the community. The effort restored 84 hectares of ravines, riparian woodlands, coastal bluff, beach, dunes, and lacustrine habitat to connect coastal natural habitats, restore historical native plant communities, and increase resilience along the coast. The U.S. Army Corps of Engineers (USACE)–Chicago District was joined by the Lake County Forest Preserve District, Openlands, the City of Lake Forest, and the Lake Forest Open Lands Association in the project, which benefited rare and endangered ravine and coastal plants and animals while taking care not to disrupt patches of high-

quality habitat. The project provided habitat structure; used natural processes to ensure sustainability; and, where natural processes were no longer functional, mimicked natural habitat using native materials.

Article cover: Aerial view of restored woodland, ravine, and ravine stream.
(Photo by FadeOut Media)

Producing Efficiencies

The project was able to meet societal needs while preserving and enhancing environmental quality by using natural materials. Reefs were constructed with native limestone and trees, which are discharged from ravines, to provide foraging opportunities for fish. The limestone retaining walls provide structural stability in the ravine and maximize habitat heterogeneity for terrestrial animals in this comprehensive coastal system. The reefs and ravine's natural retaining walls will interact with natural processes as the structures move toward dynamic equilibrium within the ecosystem. This holistic approach reduced the need for artificial structures, enhanced the habitat, and will minimize long-term maintenance costs.



Broken ceramic storm sewer pipe in the ravine stream prior to restoration.

(Photo by USACE Chicago District)

Using Natural Processes

Removing the dam and reestablishing the ravine stream's riffles and pools promoted the natural sediment transport and substrate sorting a healthy ecosystem requires. A wide streambed with a base of large natural cobblestone was installed to prevent stream incision in the active ravine and to provide structural stability while natural sediment transport and dynamic equilibrium occurred. Underwater reefs mimicked Lake Michigan's rocky reefs, providing structural and hydrodynamic habitats for fish, and engaged the natural littoral drift process to induce sandbar and lake-bed nonconformities that diversify littoral-zone habitats and enable sand to accumulate between the reefs and the shore.



Restored ravine stream with rounded cobble for erosion protection.
(Photo by USACE Chicago District)

Broadening Benefits

Restoration not only enhanced the natural habitats and plant communities in the ravine, woodlands, bluff, dunes, and lacustrine nearshore but also increased ecological benefits such as biodiversity, connectivity throughout the coastal area, native species richness and abundance, and habitat opportunities. The natural materials used along with the natural processes were cost-effective, sustainable, and reduced long-term maintenance costs. The high-quality and diverse habitats also created recreational and educational opportunities for the local community. Using natural materials and processes in the actively eroding ravine also provides economic benefits to nearby properties in the form of aesthetics and slope stabilization.



Longnose Dace (*Rhinichthys cataractae*) collected in the restored ravine stream.
(Photo by FadeOut Media)

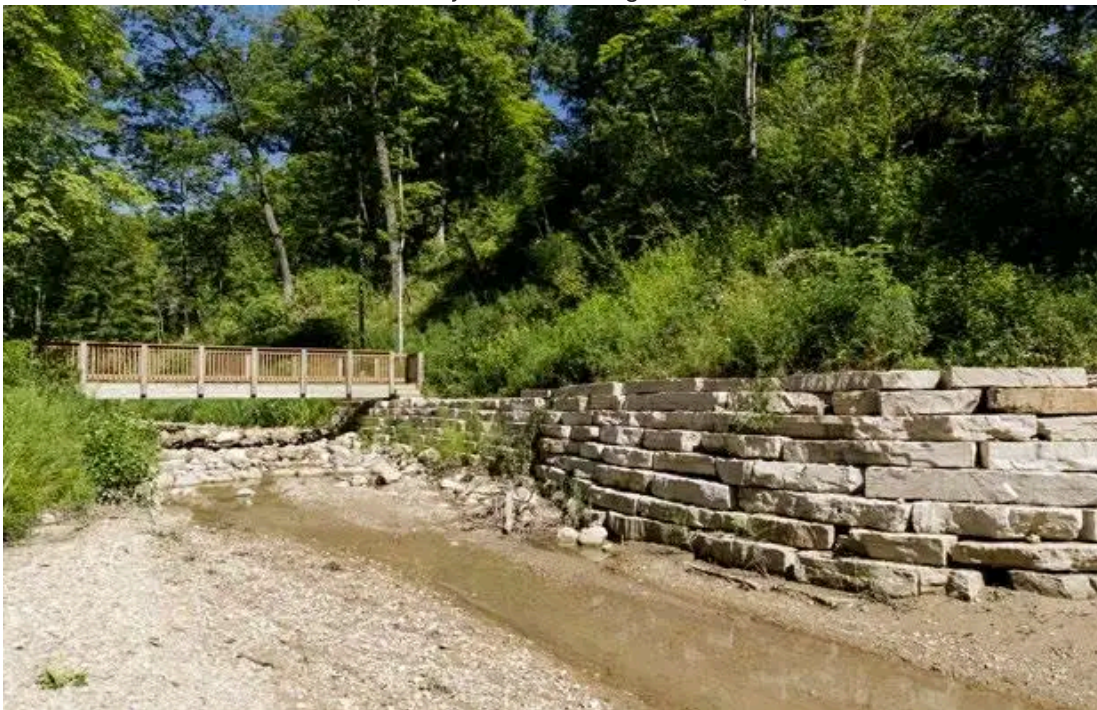
Promoting Collaboration

The Chicago District collaborated with local partners, interested parties, and experts throughout the project's duration. The team preserved the genetic diversity of the ravine's unique ecosystem and native plant ecotypes by gathering seeds and propagating plants; local partners continue the plant management effort to ensure the local ecosystem thrives. The Chicago District erected a bridge over the ravine stream as part of the restoration, and the Lake Forest Open Lands Association installed educational signage, connected trails along the ravine, and provided stairs down to the ravine stream bridge and out to the stream mouth at Lake Michigan.



Completed habitat reefs in the Lake Michigan nearshore highlight the limestone blocks.

(Photo by USACE Chicago District)



Step pool cascade with restored sediment transport under the bridge connecting foot trails to the natural stone retaining wall within the ravine.

(Photo by FadeOut Media)



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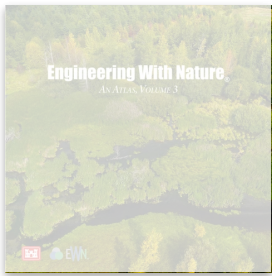


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