

Ecological Impact of Bridge Design Is Not Trivial, UB Professors Say

The latest delay in the construction of a new Peace Bridge between Buffalo and Ft. Erie, Ontario, may be trying the patience of Western New Yorkers, but the region has more to lose than time if it erects a bridge that destroys local habitat, according to two University at Buffalo professors who study environmental impacts of structures.

Federal and state environmental agencies last month rejected a dramatic, signature cable-stayed bridge design to replace the current Peace Bridge crossing over the Niagara River, because it would negatively affect populations of the common tern, a threatened bird species, and the emerald shiner, the tern's primary food source.

"The Great Lakes ecosystem is a national treasure that is home to a wide variety of species that have used this ecosystem for millions of years," said Lynda H. Schneekloth, professor of architecture in the UB School of Architecture and Planning. "The idea that these natural habitats are somehow not worth preserving flies in the face of everything we now know about the interdependency of natural organisms on their surroundings."

Currently, the common tern is listed as a threatened species under New York State regulations, but not under the federal regulations, according to Barry B. Boyer, professor and former dean in the UB Law School.

"Under either state or federal Endangered Species laws, once a species is listed, the 'taking' (hunting, capturing, destroying or disrupting habitat) of animals or plants that make up these species, is a violation of law," he explained.

Additional federal and state environmental review statutes require systematic assessment of environmental impacts when governments are taking actions that would affect the environment, without regard to whether affected species are endangered, he said.

"The fact that an affected species is rare, threatened or endangered creates an obligation for the lead agency to look very carefully at impacts, alternatives and mitigation," he said.

Since 1998, Boyer noted, there has been an 82 percent decline in the numbers of nesting pairs of terns in the Niagara River corridor. That situation was partly responsible for a settlement agreement for the relicensing of the Niagara Power Project, in which the New York Power Authority agreed to invest more than \$1 million to restore and improve the common tern nesting habitat.

"Even by New York standards, it seems more than a little crazy to invest public funds in trying to build up populations of a threatened bird, and then to spend other public funds to build a structure that may well drive those populations down," said Boyer.

And the Niagara River corridor is used by tens of thousands of birds every year, Schneekloth pointed out, any of which could potentially be threatened by a cable-stayed bridge.

"Cables are a major source of bird mortality, second only to buildings," said Schneekloth. "We really need to better understand the dynamics of this particular situation. When clouds are low, which often happens in Western New York, especially in winter, birds fly up and down the Niagara River for food and they could easily collide with the wires on a cable-stayed bridge," she said.

Schneekloth noted that critics of the recent rejection of the cable-stayed bridge design, who say that other such bridges have not had detrimental environmental effects on birds, may not be aware of the uniqueness of the Niagara River ecology.

"Not every region with a bridge like this is a flyway and not every one has a special climate like we do that often brings in low clouds," said Schneekloth.

She added that whereas most other cable-stayed bridges are relatively long spans, providing ample corridors for birds, the Niagara River span is quite narrow.

"What seems to be getting lost in this discussion is that we're not just talking about a border crossing here, we're talking about a river crossing, and it's one of the most famous rivers in the world," said Schneekloth.

The Niagara River, which empties two-fifths of the continent's freshwater, also is one of the few North American rivers to flow northward. It is a critical piece in the unique Niagara Gorge ecosystem and many birding enthusiasts consider the Niagara River if not the best place, then one of the best places in North America, to watch gulls.

"If we want to maintain this ecology, because of its value to tourism and to the local environment, then we can't keep killing the birds," Schneekloth said. "If this particular bridge is erected, we could endanger that migration route."

And if a bridge negatively impacts the emerald shiner, a major source of food for the common tern and many other birds, that also will alter the birds' migration patterns.

"The natural systems of the Great Lakes region are currently under enormous stress from a series of injuries -- including pollution, invasive species, poorly managed land development and climate change," said Boyer.

Those factors led a panel of eminent scientists in 2005 to conclude that irreversible collapse of important ecosystems in and around the lakes is possible in the near future, he said.

"The pieces of these webs of life all work together and if some pieces are taken out, we have no idea when the whole web might collapse," Schneekloth added.

"On the other hand, we can design bridges in so many ways, we just have to give the bridge designers the right parameters," she added.

Boyer teaches environmental law and his research focuses on regional performance indicators for environment, economy and government services, and on the environmental legal history of Western New York.

Schneekloth conducts research on placemaking, that is, how people transform the world, including natural processes and built form. She has led numerous planning projects such as the master plan for Monteverde Institute in Costa Rica's cloud forest and she participated in the Greenway Planning for the Buffalo River.

Source: University at Buffalo

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