THE LIFE OF A PLAYA

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The word *playa* means *beach* in Spanish, but what residents of the Southern High Plains recognize as playas look nothing like beaches. Common to semi-arid and arid regions, many of these small, round depressions in the ground remain dry throughout the year and form recognizable wetlands when they fill up with water from rainfall and local runoff. The Southern High Plains of Texas and Eastern New Mexico are home to approximately 22,000 playas, the largest concentration in the world. Despite being highly common to the area, the significance of the playas as ecological systems often has gone unrecognized. David Haukos, Ph.D., adjunct assistant professor of wildlife ecology and employee of the U.S. Fish and Wildlife Service, and Loren Smith, Ph.D., Kleberg Professor of Wildlife Ecology from the Wildlife and Fisheries Management Institute at Texas Tech University, have made it their mission to educate the public about the vital ecological role of playas and key practices to manage and conserve them. "We have carried out a number of research projects, as well as conservation efforts and educational attempts to raise the appreciation of playas from both a scientific and a social point of view. Along with colleagues in the College of Education, we have developed an education model and curricula to incorporate information about playas into elementary and junior high courses that correspond with the educational requirements of the state, and we have spent a lot of time on training teachers and on outreach and extension type projects with community groups," Haukos explains.

Haukos' and Smith's efforts primarily are aimed at changing people's perceptions about the playas of the Southern Great Plains. While globally playas are gaining increased recognition as valuable ecosystems, locally, playas often are thought of as an unattractive nuisance or wastelands. What people often fail to understand is the interconnectedness of the playas around the world. "The mentality in this area is that we are isolated, and what we do in terms of playas affects only us. That is a poor assumption because the playas act as stepping stones or connections among wetland systems all over the western hemisphere," Haukos says. "Even though the playas are not connected to one another directly, it's the diversity of playas and all the playas together that creates the basis for life in this area. If it weren't for playas, plants, animals, and, probably, people would not be here." Haukos and Smith want residents of the Southern High Plains to understand that any disturbance in the natural life course of the playa can have repercussions that reach far beyond this region. "We have to look at it from a global perspective in order to realize what we will be losing when we consider moving or destroying a playa," Haukos suggests. "While we may think we are simply losing 10 acres of what we deem 'unproductive' land, in reality, we are losing water quality, water quantity, wildlife habitat, and native prairie. By pulling that playa out of that connected web of playas, we may be affecting people in Canada, Alaska, Russia, South America, Mexico, etc. If we start losing individual playas here and there, then we start losing that web or that connection."

People have been making use of playas for thousands of years, and their utility to the Southern High Plains cannot be overlooked. In a region that receives little rainfall and has no permanent rivers or streams, playas act as water storage sites for the Southern High Plains. Playas also help support surrounding agriculture by providing a good percentage of the annual irrigation water and seasonally recharging the Ogallala Aquifer. However, as an ecosystem, they remain misunderstood. Playas experience periodic flooding and drying cycles, and these fluctuations in water levels promote nutrient cycling and biological productivity, but landowners often would prefer that there be less change in the playas. "What we try to do in our management and conservation is to preserve the features that create the playa, or allow the playa to function, and that is the process of wetting and drying. If we make a playa area wet or dry all the time, we have killed it; we have to allow it to fluctuate. That is what makes playas so interesting from an ecological point of view, but that is also what makes them so frustrating from a landowner's point of view," Haukos explains. "Every time a playa habitat and its adjacent habitats change, a different set of

animals and plants come in. Change is necessary for diversity in plants and animals. If we tried to keep all the playas in the same condition, we would not have near the number of plants and animals that we have now. We have to maintain and protect the processes that allow playas to respond to change because if they cannot respond to change, then we lose those habitats, and another link in the whole habitat web is lost."

Playas support a wide array of wildlife, such as ducks, geese, cranes, frogs, toads and salamanders, so playas are very important, not only to regional, but also to continental biodiversity. Wet years increase plant cover that protects animals and seed production that provides them with nutrition, but, even when dry, a diversity of life exists in the habitat of the playas that is unmatched by that of the prairie or agricultural landscape. Failure to protect the playas will endanger many species of animals, locally and globally. "The playas in the High Plains are very important to the whole hemisphere. For instance, what we do here in the playas affects things in Alaska because ducks, geese, and cranes go there to breed. Also, there is a concern about a declining world-wide amphibian population. The species of frogs that live in playas are affected by the playas holding water for less time, and only those species that can breed in a really short period of time can survive there anymore. If we don't change our perspective on the playas, those populations of animals are going to suffer, and I think we already are seeing the effects on them," Smith warns.

Various threats to playas include the greatest negative impact from pollution in the form of fertilizers and pesticides in the runoff from adjacent croplands, contaminated water from oil fields, and waste matter from livestock operations, such as feedlots and dairies. Some playas are used to store wastewater, which makes them less likely to support wildlife and can put groundwater at risk for pollution. Other threats include sedimentation from farmland runoff and from erosion caused by overgrazed playa vegetation. Sedimentation fills in playas and does not allow water to be held for as long as possible. Water is vulnerable to evaporation through high temperatures and strong winds. The playas have been in danger for some time, as Smith laments, "In the last 20 years I have seen the playas degrade a lot. They are filling up with sediments from eroded soils from surrounding agricultural fields, and there is less room for water. There has not been much conservation so far, and if we go another 20 years doing like we do now, there is not going to be much wildlife habitat left." Haukos says, "If things continue along the same trends, and no changes are made from both a legal and an ethical point of view, we are going to have a collapse in the playa system relatively soon. If that happens, then we will have unforeseen impacts on society, both in terms of water quality and quantity, but also on wildlife and plants in this area," Haukos cautions. "I do not want to sound so pessimistic, but those of us who have worked with playas for a long time are getting really worried."

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In addition to the direct effects on wildlife and groundwater sources, loss of playas also may bring economic consequences. Estimates show that 2 million waterfowl winter in the playas of the Southern High Plains, making it the second largest wintering site in interior North America for ducks and geese, for example. This rich wildlife supported by playa habitats has led to a thriving lease-hunting industry, and a popular attraction for birdwatchers who spend money in the community. Losing playas means losing those significant sources of income. Haukos points out that conserving playas may even save people money. "Because it is costly to farm a playa, not doing so can save money, and landowners actually may make more money by letting hunters and birdwatchers use the land. Also, toads can eat all the bugs in the surrounding farm fields, so if landowners let the toads exist in the playas naturally, they do not have to spend money to spray those fields with pesticides. You end up spending a lot of money if you try to fight a playa all the time."

With no explicit local regulations in place to protect the playas of the Southern High Plains, conservation efforts have proven to be challenging, especially because success depends on changing the way people think about playas. Haukos and Smith want to help lawmakers and citizens gain an appreciation for the role of playas, with the expectation that this will lead to local and state regulations and a protection mechanism for playas. So far, their work to implement a protection program has shown promise. Haukos and Smith have proposed a wetland management district to protect the playas, the proposal is awaiting approval from the Director of the U. S. Fish and Wildlife Service. Especially important is their work with elementary and junior high students because instilling respect for playas in these future decision makers may ensure the success of protection efforts.