



Thad Box

## Immigrants and Sustainable Communities

About 1890 my grandfather, George Hasty, and some friends were hunting varmints near Packsaddle Mountain in Llano County, Texas. Their coon dog barked excitedly, but not on trail or barking treed. The boys found him pulling at something under a ledge. One of the boys lit a torch. Another yelled, “Watch out, that’s the biggest rattlesnake in Texas.”

It wasn’t a rattlesnake. None of the boys had ever seen such a creature. They took it around the community. No one knew what it was. Finally an old trail-driver cowboy said it was an armadillo. He had seen one in Mexico when he picked up a cattle herd 20 years earlier.

Vernon Bailey published the first official range of Texas armadillos in 1905. The northern limit was Llano County. With each survey since, the armadillo range increased. It now occurs from Mexico to Kansas and from New Mexico to the Carolinas and Florida. Occasional sightings, probably of released pets, occur elsewhere. The general opinion is that its range is still expanding.

For many years I walked across the Logan River valley to get from home to my office. In the summer of 1980, I saw tracks of an adult raccoon and several young. Raccoons had been in Ogden about 50 miles south for several years, but none in Cache Valley. I reported the tracks to our Wildlife Extension Specialist. He had two garden-damage calls that week due to raccoon activity. Today, raccoons are all over our valley. They are the number one wildlife road kill in northern Utah.

A few years ago I heard a strange dove call from my (Logan, Utah) backyard. I couldn’t get a look at the bird. The next year I heard the strange dove call again. I took my binoculars and stalked the sound. I found several pairs of Eurasian collared doves. My birder friends assured me the birds were nesting in the area. Now there are hundreds of collared doves in our valley. They are becoming a pest in some areas, often outnumbering mourning doves. There are dozens of Web sites from all over the United States about this new, to us, bird.

Apparently the doves were brought to the Bahamas in the 1970s as caged brood stock for the pet trade. A hurricane destroyed many of the breeding pens and scattered the birds. Nesting pairs showed up in Florida and by 1980 they were spreading through the Southeast. Today, they are most everywhere. Some people think they will become as widespread and abundant as the English sparrow and the starling.

Last fall I raked leaves from my yard. I could not see a native plant from where I stood. A quick plant inventory showed my trees were Norway maple, Colorado blue spruce, black locust, apple, cherry, flowering crabapple, birch, and Japanese maple. The only shrub or forb that could be considered native was *Potentilla fruticosa*. However, my shrub was a different variety from the native that grows in our mountains. It was a cultivar bred for showy flowers. My lawn is of “improved” turf species.

The only way a native plant can get into my yard is to be planted or blown in.

In the book *1491*, journalist Charles Mann compares observations by Hernando De Soto and Sieur de la Salle of life along the Mississippi River. De Soto landed in Florida in 1539. He wandered through what is now the southern United States, getting as far west as Louisiana and Texas. He had with him some 600 soldiers and domestic animals to support his army. Along the Mississippi River he found thickly settled areas with towns cheek by jowl. In all his writings, he never mentioned a bison. This does not mean they weren't there, but it seems likely he would have recorded such an unlikely, unknown beast had he encountered one.

About 150 years later La Salle found the area along the Mississippi traversed by De Soto almost devoid of humans. He didn't see an Indian village for 200 miles. Mann reports that La Salle found bison herds in great numbers on the prairie along the river. Neither of the expeditions were detailed biological surveys. But if visual descriptions can be trusted, the areas were biologically and culturally different in 1540s and the 1680s. The biology and the landscape had been completely reformed in less than a century and a half.

Most historians and anthropologists suggest the change was brought about by invasive species.

But what species? And how did they act? Some suggest it was bacteria, viruses, and disease that killed off the top predator, *Homo sapiens*. Others point to pigs and other domestic animals gone feral. No one really knows.

These five vignettes demonstrate the complexity in the weed/invasive species conundrum. The armadillo story is one of a long, steady range extension. Raccoons represent a rapid range extension into modified habitats, primarily urban areas. The collared dove is an example of an accidental release followed by an aggressive range extension into multiple habitats. My yard is a planned substitution of native species by exotics. The De Soto–La Salle comparisons bring a mystery filled with questions.

Understanding why immigrant species range extensions occur and determining causes and conditions of exploding populations of newly arrived organisms are especially important during this time of rapid climate change.

One of the strong suits of land care professionals is understanding and dealing with change. Yet we lack a unified theory for immigrant effects on sustainable communities. Without such theory, we cannot design experiments to test why some new species enhance sustainability and others do not.

The theme of this issue of *Rangelands* is “Rangeland Invasive Species.” I was unable to read the papers before I

wrote this. But judging from titles only, papers will be long on how and short on why. For decades range research has been criticized for a “treat ‘em and count ‘em” approach to species within complex ecological systems. The invasive species problem is far too widespread and complex to fall victim to our old ways.

Declaring immigrant species a “problem” and waging war against them is a very human reaction. So is lauding the economic benefits of an introduced species. Both approaches are highly value-laden. Neither contributes much to understanding the basic science of community change—the area of science where we claim to have expertise. Concentrating on species diverts our attention from the real question of whether new arrivals enhance or harm sustainability.

There is a good deal of agreement among land care professionals that our goal is to enhance and maintain sustainable communities. And that such communities are the product of a system, not of individual species.

In a sustainable community, the sun's energy is transformed and flows through a network of interconnections between organisms and trophic levels. This process helps give stability to the system. Nutrients and water are cycled efficiently. Soil is formed faster than it is eroded away, etc. The system can be described in detail, enlarged, corrected, and refined by scientists using actual data and experimental evidence.

We can understand how and why immigrant species, native and invasive, affect efficiency of the system. Making sustainability the primary goal shifts concern from species to the health of the community. As climates change and economies adapt to a global economy, actions can be judged on the potential for intergenerational transfer of sustainable processes.

But this approach is not likely to happen any time soon.

Opposition to shifting from value of individual species to systems efficiency may come from such unlikely allies as livestock producers and endangered species advocates. We value animals more than ideas. Basing decisions on health of systems is hard to sell. And health of future generations has seldom been a goal of modern *Homo sapiens*.

But unless we base our actions on community sustainability, we will muddle along trying to control collared doves or King Ranch bluestem because they are offensive to someone. It's awfully hard to sell policy based on health of a system when we get our rewards from eating a rare steak, watching a sunset over a wilderness lake, or saving a cute little pika from extinction.

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