



LAND FRAGMENTATION IN TEXAS: MEETING THE CHALLENGE

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In 1900, the population of Texas was about 3 million, 85% of which were rural residents. In about 1945, the Texas population doubled to about 6 million, with 50% urban and 50% rural dwellers. Currently, Texas has about 18 million residents, with 82% living in urban areas. These are the people buying land today, backed by an economy based on multi-billion dollar mergers and dominated by computer whiz kids.

Land in Texas is changing hands based on its recreational value. Figures summarized in a recent presentation by Texas A&M's Department of Wildlife and Fisheries Sciences revealed that in 1998, the agriculture value of rural land was only 16% of the market value. For example, the agriculture productivity value of native range averaged \$38 per acre compared to \$398 market value. Improved pasture was valued at \$95 per acre ag value while the market value averaged \$1,006. And for wildlife management, the ag value averaged \$134 per acre, while the market value soared to \$1,315 per acre. In many cases, lease hunting has replaced income derived from livestock production (up to \$7 per acre for bobwhite quail, \$10+ per acre for white-tailed deer). Today, lands purchased for wildlife management make up a large percentage of all land sales. While this perpetuates wildlife habitat, unfortunately, the trend is for smaller and smaller tracts, making management much more difficult.

The biggest threat to wildlife and habitat today is the break-up of large land holdings into smaller tracts. This division of ownership and associated change in land use is referred to as land fragmentation. As intact ranches become smaller "ranchettes", wildlife populations are subject to many pressures including loss of open space from development, increased hunting pressure, proliferation of potential predators (dogs, cats and other carnivores), and introduction of exotic species to name a few. Most of the growth in land ownership has occurred in the 10-180 acre parcel size. In fact, at least 65% of the number of tracts in the triangle formed by Dallas, San Antonio and Houston are smaller than 180 acres on average.

The Texas Parks and Wildlife Department is charged with managing and conserving the natural resources of Texas for the use and enjoyment of present and future generations. That broad mission allows the agency the necessary flexibility to work with the real stewards of our natural resources: private

landowners. Wildlife management in a state that's 97% privately owned requires public-private partnerships. With about 144,000,000 acres of rural land to work with, the agency struggles to stay ahead of the demand for technical assistance for wildlife management on private lands. The department administers over 2000 active wildlife management plans on about 10 million acres of private land. These plans outline voluntary practices for rural landowners to meet their wildlife management goals, whether that is trophy white-tailed deer hunting, bird watching tours, or something in between. Urban wildlife biologists are also working with urban and suburban developers to create "wildscapes" in selected cities to attract and maintain wildlife populations where appropriate.

Challenges

Managing Wildlife Populations – Managing for individual animals and managing a *population* of individuals are very different approaches. As tract size diminishes, the ability of the landowner to manage resident wildlife on the property becomes more difficult. For example, mammals such as white-tailed deer require a minimum of about one square mile to carry out life functions on an annual basis. In order to re-stock Eastern turkey, about 5,000 acres of contiguous habitat is ideal. Other species that require larger tracts of land are pronghorn antelope, lesser prairie chicken, swallow-tailed kite, and to some extent, bobwhite quail. Migratory game birds such as ducks and doves can be attracted to relatively small tracts if the appropriate combination of food, water and cover is available.

Exotic Species – At least 200 exotic vertebrate species reside in Texas. This includes about 96 fish, 82 mammals, 15 birds, and 5 reptiles or amphibians. Not included in this list are the invertebrates like red imported fire ant, africanized bees, and other insects. In addition, at least 500 exotic plant species of been introduced into Texas, including 6 vines, 40 trees, 125 grasses, 322 forbs (broad-leaved weeds), and 12 families of aquatic weeds. The impacts of these exotics on our native wildlife and vegetation increases as tract size decreases, further challenging the small landowner.

High Fencing/Deer Management – Game proof fences are part of the culture of Texas. Large, high

fenced ranches are common in South Texas and in the Hill Country. Other areas of the state are now experiencing an increase in high fencing, even on properties less than 200 acres. Intensive deer management is required under high fence, sometimes to the point where feeding practices replace nutrition provided by the habitat. The business of breeding deer and moving deer to and from these operations has become an industry unto itself. The question of how high fencing relates to genetics of wild deer populations is another area of research interest.

Deer Feeding – Corn feeders are another icon upon the hunted landscape in Texas. Attracting deer through the use of feeders is a valuable tool for reducing over-populated ranges. As feeding becomes a year round trend in some places, and as the number of feeders increases with the increase in multiple land ownership, what will the impact of feeding be on populations of small mammals, feral hogs, and some birds? And predators?

Predator management – Speaking of predators, free-ranging hogs, dogs, and cats now have more potential impact on wildlife than native predators. It is estimated that feral cats now number about 40 million nationwide, and are a serious concern to wildlife managers. As land fragmentation accelerates, so do the social and biological issues that follow.

Opportunities

Texas Parks and Wildlife is actively involved in reducing the impacts of land fragmentation, mostly through the Private Lands Enhancement Program. This program provides free, technical guidance to landowners desiring to enhance wildlife habitat on their property. Wildlife management plans are developed based on the landowner's goals, and are voluntary depending upon the ability and willingness of the landowner to carry out biological recommendations. Although most requests for technical assistance are for game management, examples of new initiatives are becoming more common such as: cost share incentives for habitat restoration (Farm Bill, Landowner Incentive Program, etc), urban wildlife management, development of nature tourism operations, conservation easement planning, and the creation of wildlife co-operatives or landowner associations. In particular, these multi-owner wildlife associations have been successful in many areas of the state, with over 100 formed representing nearly 3.5 million acres total. Some associations are county based, others are formed within a watershed or on an individual basis. There is even a statewide group known as the Texas

Organization of Wildlife Management Associations comprised of about 40 separate WMAs.

Property Taxation – In 1995, Texans voted to pass Proposition 11, allowing landowners currently under agriculture appraisal to retain the same tax valuation if their land use switches to active wildlife management. This provides another option for landowners forced to continuously graze small parcels for tax purposes only. Other innovations such as conservation easements and changes in estate tax structure could provide significant tax savings while preventing further fragmentation.

Water Issues – Our population will double to 40 million residents by 2050. Water use will increase from 17 to 20 million-acre feet. Right now irrigation accounts for about 57% of that annual use, and the next largest use is municipal at about 25%. In 50 years, that gap will close to 42% for irrigation and 35% for municipal. The great river basins of our state tie us together, because our livelihoods and wildlife resources depend upon high quality and adequate quantity of water. People need water, and they will pay more for it as supply diminishes. Watershed management holds the key to perpetuating open space and wildlife into the future, in spite of land fragmentation.

The Wildlife and Fisheries Science Department of Texas A&M University has outlined 4 steps needed to address the land fragmentation issue in Texas:

1. Quantify the annual rate of land fragmentation by region/county
2. Quantify the demographics and social motivations of land purchasers/owners
3. Determine the best habitat management practices to sustain wildlife and plant populations in concert with livestock and farming operations
4. Provide incentives and education programs for conservation on fragmented lands

We live in exciting times. There have been so many changes in the last 50 years. What will the next 50 bring us? Technology has revolutionized just about every facet of our lives, from how we communicate and travel, to how we purchase basic commodities. Right now, technology is steering us into realms we couldn't imagine, even 20 years ago. This economic tidal wave will, at some point, level off. When it does, where will our commitment to natural resources rank in our priority list of "things to do". In the next 50 years, open space, wildlife, and water will be the commodities of the future.

