



Habitat Fragmentation and Scaled Quail Decline

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Photo by Cissy Beasley

Examples of habitat unfavorable to quail are Bermudagrass pastures and extensive areas where brush has totally been cleared. In this article, we explain how island biogeography principles can be applied to the management of scaled quail.

In 2009, we initiated a study in LaSalle County to evaluate a rangeland management treatment that would increase habitat for both bobwhites and scaled quail by manipulating non-native grasslands via burning and grazing. We assumed that scaled quail would be a part of this study given the ranch was well within their geographical range and the ranch had historically supported high densities of the birds. However, after trapping for two months, we did not capture any scaled quail from 120 trap sites on more than 2,000 acres while simultaneously capturing

well over 100 bobwhites. This lack of success in trapping scaled quail in an area that we know was previously inhabited inherently led to questions. Why had scaled quail numbers declined so abruptly on this particular ranch? And, if management from this individual ranch is consistent with the management of others across South Texas, what is the current status of scaled quail populations throughout South Texas?

We surveyed owners of more than 30 ranches throughout South Texas and found that 62 percent had observed serious declines in scaled quail abundance, and 24 percent of whom reported local extinctions within the past 20 years. The common

The famous ecologists, Daniel Simberloff and Edward Wilson, published a set of landmark scientific papers 45 years ago that had a far reaching impact in the field of ecology; and, as it turns out, many animals including quail. In their studies, Simberloff and Wilson fumigated six uniformly vegetated mangrove islands of various sizes and distances from the mainland in the Florida Keys. They set out to test the rate and patterns of insect recolonization to these islands. A pattern emerging from their studies and the work of others indicated that islands that were larger and closer to mainlands (large habitat patches) tend to be colonized by animals at

higher rates than islands that were smaller and further from mainland source populations. Applying this concept to quail, patches of quail habitat in a fragmented landscape could be viewed analogous to islands. Thus, based on principles advanced by Simberloff and Wilson, quail populations in habitat patches that are larger and closer together could recover more rapidly than smaller, more isolated patches.

We typically think of an island as a piece of land surrounded by water. However, in the field of island biogeography and wildlife management, an island is any area of habitat for an animal, surrounded by an expanse of land or water that is unfavorable for that animal.





Photo courtesy of CKWRI

Scaled quail habitat in South Texas is characterized as diverse native shrublands with abundant pricklypear cacti and sparse herbaceous communities.

declined about 5 percent per year in South Texas and their range is retracting to the south and west.

Since 2009 we have radio-collared more than 150 scaled quail in the area surrounding the ranch in LaSalle, County. We found that scaled quail can range over a large area of contiguous habitat with individuals sometimes moving more than 4.5 miles. Scaled quail prefer landscapes sparsely

covered with grass in South Texas. One of our most significant findings is that they avoid areas with a dense cover of non-native grasses. Scaled quail did not cross patches of non-native grasses that were more than 200 yards wide.

Scaled quail appear to be able to inhabit patches of sparse habitat within a matrix of more productive areas (in terms of grass cover); however, we have only detected them in patches that are connected to large parcels of contiguous habitat (more than 10,000 acres). Patches of seemingly suitable scaled quail habitat, even as large as 300 acres, can remain unoccupied if these patches are disconnected by a barrier of non-native grassland (an island of habitat in a sea of non-native grass). What this implies is, for example, if you plant buffelgrass in a 200-yard-wide pipeline right-of-way, you have created a barrier that prevents scaled quail from moving from one area of habitat to another. If too many such barriers are created in the landscape surrounding an area of habitat, the area of habitat may cease to support scaled quail. This type of fragmentation has been a common scenario across South Texas for the past few decades and coincides with a decline in scaled quail populations. Preliminary spatial analyses suggest that the occurrence of scaled quail in South Texas may be correlated with habitat patch size and the

proximity of these patches to other occupied patches. Furthermore, through the use of targeted grazing by cattle, scaled quail have recolonized patches of previously inaccessible habitat on our study site in LaSalle, County.

Maintaining scaled quail populations within their geographical range should be a goal of every quail manager as this species can be important in maintaining overall quail densities in a semi-arid environment. Our spatial data on habitat use by scaled quail emphasizes the importance in using native plants in rangeland replanting and pipeline right-of-way reclamation, maintaining cattle grazing to suppress excess grass production, and in planning brush management programs so that corridors that connect areas of mixed-brush habitat to other areas of mixed-brush habitat are left on the landscape. Although scaled quail possess the ability to fly between islands of habitat, many habitat islands go uninhabited because scaled quail prefer to walk or run rather than fly. The principles of island biogeography highlighted by great scientists such as Daniel Simberloff and Edward Wilson are frequently at play. Patches of suitable habitat can be viewed as islands in a matrix of non-habitat. In quail management, managers may best be rewarded by maximizing habitat and restoring bridges of connectivity for quail where these features are limited on the landscape, regardless of the quail species. 🌱

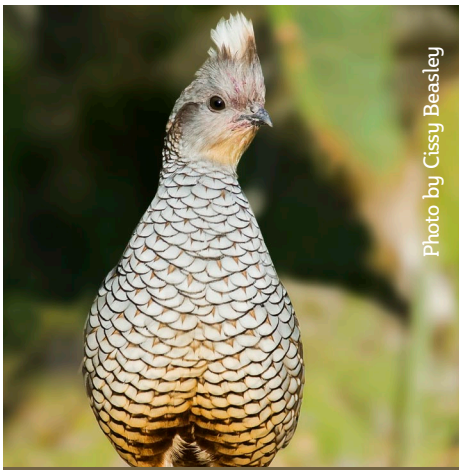


Photo by Cissy Beasley

A male chestnut-bellied scaled quail in South Texas. Scaled quail populations have declined about 5 percent per year for the last 20 years in South Texas as a result of habitat loss and fragmentation.

management denominators to all but two ranches exhibiting a decline in scaled quail populations was 1) widespread mechanical manipulation of brushlands such as rootplowing strips or checkerboard patterns, 2) planting of non-native grasses including buffelgrass and Old World bluestems, and 3) a change in management toward a more conservative grazing strategy or removal of cattle altogether. In addition to this informal survey, long-term data from the breeding bird survey suggested that scaled quail have



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Native shrub-land corridor for scaled quail in South Texas. Scaled quail frequently use corridors such as this when they are connected to large parcels of habitat. However, habitat that is not connected can go unused by scaled quail indefinitely.

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