



# Scaled Quail Diets in the Trans-Pecos

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The Trans-Pecos region of Texas, which incorporates a portion of the Chihuahuan Desert, is blessed with an abundance and diversity of quail species that is second to none. It hosts four species of quail including scaled quail, Gambel's quail, Montezuma quail, and northern bobwhite quail. Of the quail species that inhabit the Trans-Pecos, no species is more wide-spread and more important both ecologically and economically to the Chihuahuan Desert Borderlands than the scaled quail. Unfortunately, their geographic range and population trends have declined over the past 30 years. Factors possibly contributing to the decline include disease, drought, predators and overgrazing. Although the overall population of scaled quail in the Trans-Pecos has declined in the past few decades, there are areas that scaled quail are flourishing. In order to help bolster current populations, we need to understand why scaled quail select certain locations within available habitats and what resources are contributing to their survival at those locations. One way to assess these preferred habitats is to determine which plants comprise the scaled quail's diet.

Although many studies have looked at the contents of bobwhite quail crops, scaled



Photo courtesy P. J. Fouchie

Scaled Quail inhabit much of the Trans-Pecos. This species of quail is generally found west of the 100th meridian (roughly U.S. Hwy 83).

quail diets have received much less attention. As a result, studies are needed to help fill in the missing gaps pertaining to the diets of scaled quail. There are a few reports on scaled quail crop contents for Texas, Oklahoma, Arizona and New Mexico, however much of the Trans-Pecos has not been sampled. In order to evaluate what quail are consuming across the Trans-Pecos, 279 quail crops were collected from hunter harvested birds during 2013 and 2014.

Some of the crop samples came from ranches that provide supplemental feed, so we were able to assess differences in forage selection between ranches providing

supplemental feed and those that do not. The use of supplemental feed in the form of milo or quail blocks has been increasing on many ranches in the Trans-Pecos. Analysis of crops obtained from ranches providing supplemental feed indicated approximately 40-70 percent of the crop contents were from the supplemental feed source. The remainder of the crop was comprised of seeds from various forbs, grasses or shrubs. Additionally, many crops contained arthropods and fruits from succulents.

Vegetation can vary greatly across the Trans-Pecos, and we did note different plants in the crops of quail from different

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regions of the Trans-Pecos. When assessing forages consumed on ranches providing supplemental feed, there were notable differences between ranches in the southern portion of the Trans-Pecos (ranches close to Big Bend National Park) and those north of Interstate 10. Crop samples obtained from ranches north of I-10 contained wheat, milo, sunflower seeds, golden crownbeard, green vegetation, oats, rosette grass, careless weed, tasajillo, corn, Texas bindweed, redberry juniper, cactus, javelina bush and sumac berries. The most common natural forage item in scaled quail crops was golden crownbeard. It also appeared that harvested birds were visiting the supplemental feed quite often, and it accounted for 40-55 percent of the diet on the ranches sampled. Scaled quail also consumed a variety of insects such as grasshoppers, ladybugs, seed bugs, beetles, stink bugs and true bugs. Although a wide variety of insects were found in the quail crops, there appeared to be no specific preference for a particular insect species.

In comparison, ranches in the southern portion of the Trans-Pecos that provide supplemental feed had crop samples that consisted of milo, vervane, tobosa grass, green vegetation, cactus fruit, careless weed, spreading fan petals, Johnson grass, prairie tea, golden crownbeard, western tansy mustard, wild tantan, ants and termites. The ranches sampled in this location primarily use milo for their supplemental feed. Once again quail seem to be taking advantage of the available milo as it accounted for 50-70 percent of the total crop contents. Golden crownbeard was also the preferred native

plant of the ranches sampled in the southern portion of the Trans-Pecos. This species was found in approximately 50 percent of all the crops that were sampled. Another interesting finding was that insects, such as ants, did not appear very often in the crop samples; however, when they were present, the insects typically accounted for more than 80 percent of the sample. This may be in part due to opportunistic feeding when insects are abundant. Green vegetation did appear in each crop sampled, however green leaf matter was not as abundant in crops obtained from ranches using supplemental feed compared to ranches that only had native forage.

Scaled quail crops obtained from ranches that did not provide supplemental feed seemed to consume forages in fairly uniform amounts. The seeds selected were fairly diverse on these ranches and included: tasajillo fruits, blackbrush acacia, fall witchgrass, careless weed, Arizona cottontop, golden crownbeard, vervane, tobosa grass, prickly pear fruit, spreading fan petals, Johnson grass, prairie tea, western tansy mustard, wild tantan, ants and termites. One factor that stood out on ranches that did not provide supplemental feed was the preference for green/fleshy vegetation. This green vegetation accounted for 50-60 percent of the crop contents. The affinity for consuming this vegetation was likely due to the high water content within these plants. Since these crop samples were obtained from ranches that had limited standing water, quail appear to be selecting forage that had high water content.

All quail can obtain necessary water

through three sources. The first of the three sources is water produced as a byproduct of metabolism and is referred to as oxidative or metabolic water. Each food differs in the amount of metabolic water that they provide. Metabolic water alone is inadequate to provide all water needs, but can produce 25 percent of the water needed by the body. The second source of water is referred to as preformed water. This is the water that is obtained from the food source. Depending on the amount of humidity in the area, up to 3 percent of a seed's weight can be water. Some of the quail's forage can contain large amounts of water by weight such as arthropods (60 percent), fleshy fruits (70 percent) and leafy greens (90 percent). Therefore, quail can obtain a large proportion of the water they need on a daily basis from various food items. The third source for water is from surface water sources such as earthen tanks, drinkers, springs, stock tanks, etc. Quail will utilize standing water sources, but they are not reliant on them. Typically, quail obtain all necessary water for survival from metabolic and preformed water. Daily water requirements for quail are relatively small, and even during hot summer months, the average quail only needs about 0.5 ounces of water a day. During dry years, when the vegetation is not providing enough preformed water, quail will seek surface water to meet their daily water needs for survival.

With the amounts of rain that we have received in the Trans-Pecos this year, quail are likely obtaining most of their needed water through metabolism and preformed water in their forage.

Therefore, quail will not be reliant on standing water throughout the day. As such, individuals wanting to find that illusive covey should focus on areas with preferred scaled quail forage. Look for preferred quail forage such as: golden crownbeard, croton, common broomweed, plains bristlegrass, johnson grass, rosette grass, catclaw acacia, elbowbush, mesquite seeds, sumac, prickly pear cactus and some variation of small invertebrates which include spiders, ants, grasshoppers, termites, true bugs, ladybugs, seed bugs and caterpillars. If you can find a landscape that has a mixture of these preferred quail forage items, you might find a nice covey of Trans-Pecos scaled quail. 🐣



The contents of a scaled quail crop are typically comprised of seeds from forbs, insects and leafy greens.

