

## APPENDIX R

# Specific Management Recommendations for Gambel's Quail

The Gambel's quail (*Callipepla gambelii*), also known as the Arizona or desert quail, is an uncommon but beautiful addition to Texas' diverse array of birds. This handsome, unique game bird is found in the Mojave, Sonoran, and Chihuahuan Deserts of the southwestern United States. In Texas, the Gambel's quail is limited to the upper Rio Grande and associated drainages of the Far Western region of the State.

Immediately recognized by its teardrop-shaped topknot (crest), the Gambel's quail is easily distinguished from its Trans-Pecos cousins, the scaled or blue quail (*Callipepla squamata*) and the



Montezuma, Mearn's, or harlequin quail (*Cyrtonyx montezumae*). The

Gambel's and scaled quail are the only quail species that typically inhabit the mesquite, acacia and creosote vegetative community. Unique to Gambel's quail in Texas is a tendency for covey members to roost in trees associated with desert riparian areas.

Male Gambel's quail are generally brown to grayish brown on the upper parts and tail, with buffy underparts and an extensive black area on the abdomen. They also have a characteristic black throat and forehead that is absent in females. The distinctive topknot is black in males and dark brown in females. Females are less impressive looking than males, with some streaking possible on the breast. Both sexes have a distinctive rich reddish-brown coloration on the flanks. Adults are about 9 ½ to 11 inches long.

Gambel's quail have a unique location call that can be best described as a nasal *chi-CA-go-go*. This sound often can be heard after a covey is flushed and the birds attempt to locate each other. Individuals also make a repeated *chip-chip-chip* sound when alarmed and a loud squawk when flushed.

Male Gambel's quail also make a loud *kaa* call during April, May, and June—apparently to attract mates. Males often can be seen in a characteristic erect posture, with upright

crest, making this call from an exposed perch. Males chase each other and fight during this period in order to establish a system of social dominance. Once pair bonds form, Gambel's quail are strongly monogamous, remaining together throughout the rest of the year. In April and May, the female lays one egg per day in a shallow depression on the ground that is typically concealed by grass until the clutch of 12-14 eggs is complete. The female incubates the eggs for 21-23 days while the male typically stands guard nearby.

After the eggs hatch, young birds are up and running within hours. The first few weeks of life are most important for quail chicks. Mortality is typically high during this period because of starvation and predation. Less common but potentially devastating causes of mortality are torrential thunderstorms and hailstorms.

A high protein diet of insects is an integral part of an adult quail diet in the spring and is critical for the survival and growth of young quail. The sporadic precipitation patterns associated with desert communities do not always guarantee that insects will be available during this critical period. Thus, few chicks may survive the first four to six weeks of life. Factors that reduce the availability of insects, such as a late spring freeze, can have a detrimental effect on chick survival. A late first freeze in the fall may allow insects additional time to lay eggs, which could translate to increased insect abundance the following spring and enhanced quail chick survival.

If forage conditions are favorable, adults "wean" the chicks at about one month of age, leave them in the care of older birds in the area, and begin a second clutch. Infrequently, the male takes over care of the brood while the female begins another clutch.

As they mature, young Gambel's quail begin to eat green leaves and other succulent vegetation and will eventually consume plant matter almost exclusively. Leafy materials from forbs (broadleaf weeds) and tender grass shoots are the most important food sources for Gambel's quail, particularly the leaves, flowers, and seeds of legumes. However, during periods of drought or when surface water and green, herbaceous vegetation is lacking, Gambel's quail depend heavily on succulent desert vegetation such as shrubs, cacti, and their fruit. These plants provide an important source of moisture and minimize their need for free water.

Coveys of Gambel's quail are typically composed of the parents and their brood(s) that stay together through the winter. However, family groups sometimes combine to form a large covey. Single birds may organize into their own covey or join a family covey. Single birds or pairs are rarely observed during the fall and winter. With arrival of spring, coveys break down and pair bonds begin to form again.

### **Beneficial Habitat Management Practices**

Gambel's quail require a diverse pattern of vegetation to supply them with various foods they need throughout the year. This is especially true during droughts. In the Trans-Pecos region of Texas, a critical period for moisture and the associated food supply

typically occurs from January through April. Both shrubs and forbs are important components of this vegetation diversity. Sandy washes and/or drainage's supporting honey mesquite, skunkbush sumac, littleleaf sumac, whitethorn acacia, juniper, allthorn, catclaw and yucca provide excellent cover and feeding habitat for Gambel's quail. Based on these desirable habitat characteristics, landowners and managers can implement the following practices to increase Gambel's quail abundance, distribution, and survival:

- Implement a grazing system that provides planned periodic rest for pastures. Deferred-rotational grazing helps prevent overgrazing of forbs. Snakeweed and Russian thistle are important Gambel's quail food items and react positively to *light to moderate* livestock grazing.
- Design fencing to facilitate deferred-rotational grazing. Fencing is especially important in controlling the timing and duration of grazing in riparian areas. Total deferment of riparian areas from grazing may be appropriate in some years. A fine line exists between habitat enhancement and habitat destruction. Livestock grazing and mechanical or chemical control of native vegetation in west Texas can be favorable for quail when properly conducted. See your local Wildlife Biologist or Natural Resource Conservation Service staff for recommendations.
- Implement practices that minimize precipitation runoff. This will limit soil erosion, improve soil moisture, and increase plant growth. These practices might include dike/levee construction, installation of diversion dams and berms, and gully shaping to hold rainfall and catch runoff.
- Conduct shallow winter disking on approximately 1-3% of the quail habitat before the last freeze to stimulate forb production. Late winter disking promotes annual grasses and seed-producing forbs, which can be valuable not only to Gambel's quail but to scaled quail, doves, and other seed-eating birds. These patches of forbs also tend to harbor an abundance of insects that serve as forage for a variety of birds. The disked strips should be located in deeper soils adjacent to drainages and washes commonly used by Gambel's quail. Disking should be conducted at a depth of 4 - 6" along the contour (usually perpendicular to drainage or wash) and only in areas where the slope does not exceed 3% (preferably less than 1%).
- Livestock watering facilities often are adequate water sources for Gambel's quail, but quail prefer free water at ground level. Most standard livestock troughs require some type of ramp system that will provide easy access and escape for both young and adult birds. A wire-mesh screen or rock type ramp on the inside and outside of the trough works well. Ground level troughs are superior in that they provide the birds with easy access to water and reduce exposure to predators. However, a drip or overflow system that allows water to reach the soil has the added advantage of promoting succulent green vegetation and insects. Any watering facility developed for quail use should be located near woody cover to minimize exposure to predators. Concerning water distribution, limited research indicates that Gambel's quail will forage 1.5 miles or less from available water during prolonged drought periods.

Most coveys stay within a mile of a water source.

- Use prescribed fire to stimulate the germination of annual and perennial forbs, including a group of forbs referred to as “legumes” (pea family). Legumes are extremely important to quail and other birds in that they are some of the best seed producers. Just as important, legumes and other forbs tend to support an abundance of insects. Fire tends to favor bunchgrass over shallow-rooted, sod-forming grasses and can suppress undesirable species or densities of woody plants. The most beneficial burning programs for quail incorporate a multi-year rotation so that approximately 10% of the property is burned each year. This schedule allows for 7 to 12 years between burns for any given area and prevents the removal of cover over an extensive area.

In Texas, Gambel's quail are classified as upland gamebirds that may be hunted during quail season by those having a valid hunting license. Whether you're a hunter, landowner, bird watcher, or just someone who enjoys looking at a unique part of Texas' bird fauna, take outdoor time to enjoy this little jewel of the desert.