

## **Montezuma Quail (*Cyrtonyx montezumae*)**

NMPIF level: Species Conservation Concern, Level 2 (SC2)

NMPIF assessment score: 16

National PIF status: Watch List

NM stewardship responsibility: Low/Unknown

New Mexico BCRs: 34, 35, (16)

Primary breeding habitat(s): Madrean Pine-Oak Woodland, Pinyon-Juniper Woodland

Other habitats used: Ponderosa Pine Forest, Montane Shrub (foraging), Chihuahuan Desert Grassland (foraging). Madrean Pine-Oak

### **Summary of Concern**

Montezuma Quail is a Mexican species of grassy pine-oak and pinyon-juniper woodland. It has been greatly reduced in numbers over the past century due to grazing impacts on habitat, loss of favorable habitat due to fire suppression, and hunting.

### **Associated Species**

Acorn Woodpecker, Ash-throated Flycatcher, Cassin's Kingbird (SC2), Hutton's Vireo, Bridled Titmouse (BC2), Black-throated Gray Warbler (SC2), Canyon Towhee, Black-chinned Sparrow (SC1).

### **Distribution**

Montezuma Quail occurs in upland areas from southern Mexico (Oaxaca) north to southern and central Arizona and New Mexico. Although listed as present in BCR 16, most birds are found farther south in BCRs 34 and 35. Montezuma Quail is resident locally in the Mogollon and Sacramento highlands and southward. Its northern limits are the San Francisco, Gallo, Datil, Magdalena, Ladron, Capitan, and Guadalupe ranges (Hubbard 1978). It occurs across the Mogollon Rim, in the Mogollon, Mimbres, and Burro Mountains, and perhaps in greater numbers farther south in the Animas and Peloncillos. Its New Mexico range extends east to the Capitan, Sacramento and Guadalupe Mountains.

## Ecology and Habitat Requirements

Potential habitat for Montezuma Quail extends across a broad altitudinal range, from 5,000 feet in the foothills of the southern mountains to the highest areas (10,000 feet and above) of the Sacramento, San Mateo, Black, and Mogollon ranges. Birds are found at high elevations in the summer only, moving down into foothill and canyon areas during the winter (Ligon 1961). The species is sometimes found along wooded drainages extending out into grassland areas (Hagelin 1998). On the Gray Ranch in Hidalgo County, Montezuma Quail occur in the lower montane areas (foothills and canyons below 7000ft), but also in riparian and wooded lowland areas (including cienegas), desert scrub (dominated by mesquite, yucca and cactus) and in the upper montane areas (higher Animas Mountains, pine-fir belt) (Black 1997)

Montezuma Quail requires open oak, pine-oak, or pinyon-juniper woodland with a well-developed grassy understory. In New Mexico, it is most abundant in oak grassland with tall native perennial grasses and minimal cover of low-stature woody vegetation (Stromberg 2000). Typical bunchgrass understory includes sideoats grama, cane beardgrass, wolftail, and Texas bluestem (Brown 1989). The species prefers habitat containing 70% or more tall grass cover, with average grass height exceeding 1 foot (Brown 1982). It cannot survive in areas with less than 50% tall grass cover (Stromberg 1990). Grassy vegetation and seeds from the previous summer monsoon growing season are crucial for supplying the birds' escape and night roost cover, nesting cover, and food supply throughout the year (Stromberg 2000). A mean of 10 inches or more of summer monsoon precipitation is needed to produce adequate nesting cover and food supply (Brown 1989).

Pairing activity begins as early as late February, but male territories may not be established until May or even June (Hagelin 1998). Nesting occurs from late June through the season of summer rains; hatching peaks in mid-August but may continue well into September. Nests are concealed in dense grassy areas with overhanging cover of tall grasses (Ligon 1961). Quail forage exclusively on the ground; their diet includes bulbs, tubers, a variety of annual forb and grass seeds, pinyon nuts and Gambel oak acorns (Ligon 1961, Brown 1989).

## Conservation Status

### Species Assessment

DISTRIBUTION	4
THREATS	4
GLOBAL POPULATION SIZE	3
LOCAL POPULATION TREND	3

IMPORTANCE OF NEW MEXICO TO BREEDING	2
<b>COMBINED SCORE</b>	<b>16</b>

Montezuma Quail is a Species Conservation Concern, Level 2 species for New Mexico, with a total assessment score of 16. It receives a high vulnerability score of 4 from PIF for its restricted breeding and non-breeding distribution, and a score of 4 from NMPIF for threats to breeding in New Mexico. Montezuma Quail is a national PIF Watch List Species.

### **Population Size**

Total population for the state is unknown. PIF estimates a United States population of 6,000. This population occurs entirely in Arizona, New Mexico, and the trans-Pecos region of Texas, and is estimated as 10% of the global species population.

### **Population Trend**

BBS coverage is insufficient to determine a long-term trend for Montezuma Quail in New Mexico or the southwest. The local population trend score of 3 indicates uncertainty.

### **Threats**

The principal threat to Montezuma Quail in New Mexico is overgrazing of understory grasses required for food and nesting cover. Livestock have adversely affected the distribution and density of Montezuma Quail in New Mexico and Arizona, and the species has disappeared from heavily grazed areas (Wallmo 1954, Ligon 1961, Stromberg 2000). Habitats grazed at a level sufficient to eliminate 50% of the net annual grass production cannot sustain Montezuma Quail populations (Brown 1982). Impacts of grazing on grass production may be compounded by drought. Anecdotal information suggests the species may be decreasing since the onset of prolonged drought in the late 1990s (William Dunn, pers. comm.).

In some areas, fire suppression has reduced or eliminated the open grassy woodlands favored by Montezuma Quail, and led to the establishment of denser, brushier forest lacking a tallgrass understory. Suitable habitat may also be lost to development in some areas.

Montezuma Quail is a legally hunted small game species in New Mexico. The hunting season extends from mid November to February; daily bag limit for this species is 5 birds. Current knowledge of the effects of hunting on Montezuma Quail is minimal, largely because the species is so difficult to census (Stromberg 2000). In the winter months, quail may remain for weeks in areas as small as 6 ha; hunters returning to such areas have the potential to eliminate individual coveys (Stromberg 2000).

## **Management Issues and Recommendations**

Management for Montezuma Quail should focus on retention of suitable tall grass cover in Madrean Pine-Oak and other woodland habitats. This can be achieved by reducing grazing levels in important habitat areas in years of low rainfall, or through implementation of deferred or rotational grazing systems.

Prescribed fire can be used to maintain grassy understory and prevent shrub or tree encroachment. Fire can also stimulate sprouting of Gambel oak, a species that may be important in Montezuma Quail diets. Prescribed fire can be used to maintain ponderosa pine-Gambel oak or ponderosa pine-grasslands in an open condition, which would improve habitat for Montezuma Quail.

## **NMPIF Recommendations**

- Adjust grazing management where necessary to protect existing Montezuma Quail habitat and populations.
- Encourage landowners and grazing lessees to adopt a system of grazing that ensures that quail habitat is not eliminated during periods of low rainfall.
- Look for opportunities to employ low intensity controlled burning to maintain and/or restore a health tall grass component in Montezuma Quail habitat and control shrub or tree encroachment.
- Carefully manage the hunting of this species, and reduce if needed during years of low rainfall.

## **Species Conservation Objectives**

### **PIF Objectives**

The PIF North American Landbird Conservation Plan designates Montezuma Quail as a Management Action species, and sets an objective of increasing the species population by 50% over the next 30 years.

### **NMPIF Objectives**

- Develop an appropriate monitoring/inventory method to assess population size and status.
- Monitor for continued presence and establish monitoring programs in the Sacramento and Guadalupe Mountains, in the mountain ranges of the Mogollon Rim, and in the isolated ranges of the southwest portion of the state.

- Maintain suitable habitat in all known areas of Montezuma Quail occurrence.
- Develop additional habitat to increase current estimated population by 15% in ten years.
- Determine the capacity of New Mexico to contribute to the PIF conservation objective for Montezuma Quail, and seek to meet this objective to the greatest extent possible.

### Sources of Information

Black, C. 1997. Animas Foundation Gray Ranch Bird List. Compiled by C. Black for the Animas Foundation in December, 1991 (updated several times up to 1997). Animas, NM.

Brown, D. E. 1989. Arizona game birds. University of Arizona Press, Tucson, AZ.

Brown, R. 1982. Effects of livestock grazing on Mearns' Quail in southeastern Arizona. *Journal of Range Management* 35:727-32.

Hagelin, J. C. 1998. A closer look: Montezuma Quail. *Birding*, Vol. 30(5):406-414.

Hubbard, J. P. 1978. Revised checklist of the birds of New Mexico. New Mexico Ornithological Society Publication No. 6.

Ligon, J. S. 1961. New Mexico birds and where to find them. The University of New Mexico Press, Albuquerque, NM, 360 pp.

Stromberg, M. R. 1990. Habitat, movements, and roost characteristics of Montezuma Quail in southeastern Arizona. *Condor* 92:229-236.

Stromberg, M. R. 2000. Montezuma Quail (*Cyrtonyx montezumae*). *In* The Birds of North America, No. 524 (A Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Wallmo, O. C. 1954. Nesting of Mearns' Quail in southeastern Arizona. *Condor* 56:125-28.