

GREATER ROADRUNNER - GEOCOCYX CALIFORNIANUS

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Cuculiformes Family: Cuculidae Genus: Geococcyx
Species: G. californianus

Habitat:

Biomes: Greater Roadrunners occur throughout the Southwest and into northern California in semi-open, scrubby habitat from below sea level to nearly 10,000 feet. Habitats include areas dominated by creosote, mesquite, chaparral, and tamarisk, as well as grasslands, riparian woodlands and canyons. At higher elevations roadrunners live in pinyon-juniper woodlands and cholla grasslands. Greater Roadrunners have expanded their range into southwest Missouri, western Arkansas, eastern Oklahoma, and Louisiana, where they occupy less typical habitat that includes red juniper landscapes, scrubby woods, loblolly pine forests and upland hardwood stands. Roadrunners avoid heavily forested and densely populated areas, but can tolerate sparser suburban development and open farmland.

Distribution:

In US: The greater roadrunner is found in the southwestern United States and northern Mexico. It can be seen regularly in the US states of California, Arizona, New Mexico, Texas, Nevada, Utah, Colorado, and Oklahoma, and less frequently in Kansas, Louisiana, Arkansas, and Missouri, as well as the Mexican states of Baja California, Baja California Sur, Sonora, Sinaloa, Chihuahua, Durango, Jalisco, Coahuila, Zacatecas, Aguascalientes, Guanajuato, Michoacán, Querétaro, México, Puebla, Nuevo León, Tamaulipas, and San Luis Potosí. The species is not migratory.

In Other Countries: NONE

Holistic Description: A bird born to run, the Greater Roadrunner can outrace a human, kill a rattlesnake, and thrive in the harsh landscapes of the Desert Southwest. Roadrunners reach two feet from sturdy bill to white tail tip, with a bushy blue-black crest and mottled plumage that blends well with dusty shrubs. As they run, they hold their lean frames nearly parallel to the ground and rudder with their long tails. They have recently extended their range eastward into Missouri and Louisiana.

Species Richness: NO SUBSPECIES

Population Dynamic: CHECK THREATS

Evolution and Systematics:

Evolution: Fossils of G. californianus identified from Pleistocene to Holocene deposits of New Mexico and Mexico.

Systematics: Variation in body size is complex across the species' range. In general, wing chord and tail length decreases both from north to south and from west to east.

Number of Species: NO SUBSPECIES

Number of Genera: NO SUBSPECIES

Physical Characteristics:

Size and Length: Length: 20.5-21.3 in (52-54 cm) Weight: 7.8-19.0 oz (221-538 g)

Wingspan: 19.3 in (49 cm)

Coloration: They are tan or brown with extensive blackish streaking on the upperparts and chest. The crown is black with small, pale spots, and they have a patch of bare, blue skin behind the eye. The wings are dark with white highlights.

General Body Features: Greater Roadrunners are large cuckoos with a distinctive shape: long legs, a very long, straight tail, and a long neck. The head has a short crest and the bill is long, heavy, and slightly downcurved.

Special Features of the Body: The average roadrunner is about two feet from the tip of its tail to the end of its beak. Their size allows them to prey on other animals, like rats, mice, lizards and even snakes!

Special Features of the Head and Sensory Organs: Instead of using energy for hunting when the sun is at its hottest, for instance, these birds rest in the shade of a quiet shrub. Overnight, as temperatures drop, roadrunners' body temperatures decrease 7 degrees as the birds go into states of torpor, whereby they suppress their metabolism to reserve energy and prevent additional heat loss to their environment. As the sun comes up in the morning, the birds lift up patches of feathers on their backs, exposing their heavily pigmented skin. This skin acts as solar panels to absorb heat and increase their body temperatures.

Dentition: BEAK/LAMELLAE/GIZZARD

Special Features of the Limbs and Digits: Roadrunners have four toes on each zygodactyl foot; two face forward, and two face backward. Roadrunners have a distinctive X-shaped footprint because they have two toes at the front and two toes at the back of the foot. These feet help them to run at speed of up to about 17 miles per hour! It reduces its activity 50% during the heat of midday. Its extreme quickness allows it to snatch a humming bird or dragonfly from midair.

Any Special Internal Anatomy: Its carnivorous habits offer it a large supply of very moist food. It reabsorbs water from its feces before excretion. A nasal gland eliminates excess salt, instead of using the urinary tract like most birds.

Sexual Dimorphisms: Sexually monomorphic in plumage; female slightly smaller than male (average length, mass: males 54 cm, 320 g; females 52 cm, 290 g).

Differences Between Juvenile Stage and Adult: Juvenile plumage similar, but generally duller with less distinct markings and lacking metallic bronze gloss of adult plumage.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal

Activity: True to its name, the Greater Roadrunner races along roads, streambeds, and well-worn paths, defending its large territory and chasing lizards, rodents, and insects. While on the move they startle and flush a meal by flashing the white spots on their open wings. Roadrunners can also jump straight up to snag insects, bats, and even hummingbirds in flight. Although agile on the ground, roadrunners don't fly well. A threat may trigger a short, low burst of flight to seek a hiding place; otherwise, flying is limited to gliding from a nest or perch to the ground, or between perches. In the morning, roadrunners often "sunbathe" to warm up after a cold night in the desert: with its back to the sun, the bird raises the feathers across its back and wings to expose its heat-absorbent black skin. In winter, birds may sunbathe several times a day. Male roadrunners perch atop fence posts and rocks, calling out with a mournful coo-cooo-coooo to advertise territorial boundaries. When threatened or displaying to a rival, they erect their crest and reveal a bright orange patch of skin behind the eye. Both members of a pair patrol their territory—which can measure up to a half-mile in diameter—and drive off intruders. Roadrunner pairs form lifelong bonds that they renew each spring with a series of elaborate courtship steps and calls. Mating is equally orchestrated: the male roadrunner leaps onto his partner's back while holding a mouse or other food offering, which both partners grasp as they copulate. Afterward he circles his mate, bowing, cooing and flicking his tail in a stylized display.

Locomotion: Can maintain running speeds >30 km/h over considerable distances. When running at top speed, holds head and tail parallel to ground. Swings long tail from side to side like rudder when changing directions at high speed. Frequently uses roads, well-beaten paths, or dry stream beds rather than running through dense vegetation. Limited flying abilities; usually restricted to open, extended-wing gliding from nest or other high perch.

Several pelvic muscles originate farther cranially and laterally than in arboreal cuckoos, such as *Coccyzus* spp.; improves stability and balance in a running bird that supports its weight alternately on one leg and then the other. Bones of leg, particularly the tarsometatarsus, are elongated. Need for greater extension of tarsometatarsus during alternate leg action correlates with increase in length and bulk of associated muscles. Greater range of extensibility and flexibility of digits allows spreading of toes on flat surface

Communication and Perception: Male Greater Roadrunners make a distinct co-coo-coo-coo-coooooo in a series of 3–8 downward slurring notes to attract or contact a mate and mark a territory. Beginning before sunrise, the cooing can be heard up to a quarter-mile away, and often elicits a response from a neighboring male.

Home Range: Several pelvic muscles originate farther cranially and laterally than in arboreal cuckoos, such as *Coccyzus* spp.; improves stability and balance in a running bird that supports its weight alternately on one leg and then the other. Bones of leg, particularly the tarsometatarsus, are elongated. Need for greater extension of tarsometatarsus during alternate leg action correlates with increase in length and bulk of associated muscles. Greater range of extensibility and flexibility of digits allows spreading of toes on flat surface.

Degree of Sociality: Solitary; found singly or in breeding pairs.

Level of Aggression: NONE

Migration: NONE

Predators:

Predators: Red-tailed and Cooper's Hawks, Coyotes, Raccoons, Striped Skunks, Rat Snakes, Coachwhips, Bullsnares, Crows, and Ravens.

Anti-Predator Defenses: Adult avoids aerial predators by dodging, flashing wings and spreading tail in manner characteristic of territorial disputes between males. Uses distraction displays to draw predators away from nest. May feign wing injury by running away from nest, crouching low on breast, and fluttering wings.

Diet and Nutrition:

Adult Diet: Greater Roadrunners eat mostly animals, including almost anything they can catch: small mammals, reptiles, frogs, toads, insects, centipedes, scorpions, and birds. Roadrunners also eat carrion and prey on bird eggs and chicks. They kill rattlesnakes by pecking them repeatedly in the head. They slam large prey, such as rodents and lizards, against a rock or the ground multiple times to break down the bones and elongate the victim, making it easier to swallow. These opportunistic

predators have also been known to grab birds from backyard feeders or nest boxes. In winter, fruit, seeds, and other plant material make up 10 percent of the roadrunner's diet.

Juvenile Diet: Newly hatched young generally are fed insects. Older young most frequently are fed lizards: whiptail, horned, others, and small snakes.

Special Adaptations for Getting Prey: Forages by alternating bouts of walking or running with periods of standing. Uses pause in forward movement to scan visually for prey. Also, may flush and capture prey while moving, particularly in taller grass. Grasps prey with bill. Prey capture and handling behaviors depend on food being consumed. Bird prey are fully or partially plucked of feathers.

Reproduction:

Mode of Reproduction: Monogamous

Mating System: Apparently monogamous; maintains long-term pair bond.

Mating Season: April to November

Courtship: Preliminary courtship displays include vigorous ground chase, often lasting several hours, with both birds stopping frequently to rest. Running interspersed with low gliding flights. Pursuing bird lunges at forward bird with wings and tail raised and fanned. Clack given frequently by both birds. Male gives Coo call from elevated perch. In Stick-Offer Display, bird of either sex approaches mate carrying stick in bill; drops it in front of mate or transfers it to mate's bill. May stimulate and synchronize nest-building efforts in the pair.

Territoriality: HOME RANGE

Mating: During copulation, male mounts female from rear with a 0.5 to 1-m jump into air. Wings and tail are fully fanned at apex of jump. Rapid wing-flapping accompanies descent and may continue to aid in balancing after male lands on female's humeral areas. Male's crest fully erect and postorbital apteria maximally exposed. During copulation, male gives Whirr vocalization. Cloacal contact occurs as male's tail is swung forward and upward. Female rises from substrate and lifts bill toward food item; both hold food for short time before male releases it. Female's postorbital apteria usually obscured during copulation. Total time of copulation 2–3 min. May occur throughout daylight hours, most frequently in afternoon, and generally within 20 m of nest site.

Nesting: The pair chooses a nest site 3–10 feet or more off the ground, on a horizontal branch or in the crotch of a sturdy bush, cactus, or small tree. The shaded, well-concealed nest is often located next to a path or streambed that the Greater Roadrunners use when carrying nest-building material and food for nestlings. Male Greater Roadrunners bring twigs to the female, which she fashions into a compact platform with a nest cup about 4 inches deep. A male that pauses for too long in his stick-gathering may get reminded with a whining call from his partner, prompting him to get back to work. The finished nest can reach over 17 inches in diameter and 8 inches high, lined with leaves, grasses, feathers, smaller sticks, snakeskin, and flakes of cattle and horse manure. The parents may continue to work on the nest during incubation and build up the sides of the nest as the chicks grow. Pairs sometimes reuse a nest from a previous year.

Egg-Laying: Clutch Size: 2-6 eggs Number of Broods: 1-2 broods Egg Length: 1.4-1.8 in (3.5-4.6 cm) Egg Width: 1.1-1.3 in (2.8-3.3 cm) Incubation Period: 19-20 days Egg Description: White covered with a chalky yellow film, sometimes stained with brown or gray.

Hatching and Incubation/Gestation: Eyes closed but chick strong and active, with black skin and white down along the feather tracts.

Development: Altricial, but strong and active upon hatching; respond to touch by gaping; eyes closed. Skin dull black with oily appearance; white nessoptiles present in areas of pterylae; apteria bare; legs black; mandibles black; mouth commissure dull flesh color; tip of tongue black; rictus flesh-colored; hard palate white.

Parental Care: Adult shades young by spreading slightly and drooping wings; lowers breast and rests on nest. Positions tail toward breeze to funnel air down into nest; occasionally holds tail over back to cast shade over adult's body. Male sleeps on nest throughout the night, brooding the young, and is relieved by the female shortly after dawn. Both parents bring food to the nest. Male provides slightly more, and larger, prey items.

Lifespan: 7 to 8 years

Conservation:

Official Federal Status: Least Concern

Special Statutes in Individual States: NONE

Threats: Greater Roadrunners are numerous and their breeding populations are stable, according to the North American Breeding Bird Survey. Partners in Flight estimates the global breeding population at 1.1 million, with 62% occurring in the U.S. and the other 38% in Mexico. The species rates a 9 out of 20 on the Continental Concern Score and are not on the not on the 2014 State of the Birds Watch List. Threats to roadrunners include illegal shooting, often in the mistaken belief that they

threaten populations of popular game birds. Habitat loss is a bigger threat, as roadrunners need room to roam and are susceptible to development that fragments their territories and eliminates prey and nest sites. Household pets, feral animals, pedestrians and traffic can also displace or kill roadrunners. Southern California has seen a significant drop in roadrunner numbers over the past several decades.

Conservation Efforts: ^^^^

Extra Facts:

1. For a generation of Americans, the familiar “beep, beep” of Warner Brothers’ cartoon Roadrunner was the background sound of Saturday mornings. Despite the cartoon character’s perennial victories over Wile E. Coyote, real-life coyotes present a real danger. The mammals can reach a top speed of 43 miles an hour—more than twice as fast as roadrunners.
2. Roadrunners have evolved a range of adaptations to deal with the extremes of desert living. Like seabirds, they secrete a solution of highly concentrated salt through a gland just in front of each eye, which uses less water than excreting it via their kidneys and urinary tract. Moisture-rich prey including mammals and reptiles supply them otherwise-scarce water in their diet. Both chicks and adults flutter the unfeathered area beneath the chin (gular fluttering) to dissipate heat.
3. Greater Roadrunners eat poisonous prey, including venomous lizards and scorpions, with no ill effect, although they’re careful to swallow horned lizards head-first with the horns pointed away from vital organs. Roadrunners can also kill and eat rattlesnakes, often in tandem with another roadrunner: as one distracts the snake by jumping and flapping, the other sneaks up and pins its head, then bashes the snake against a rock. If it’s too long to swallow all at once, a roadrunner will walk around with a length of snake still protruding from its bill, swallowing it a little at a time as the snake digests.
4. Based on banding records, the oldest roadrunner was at least 7 years old.
5. Roadrunners hold a special place in Native American and Mexican legends and belief systems. The birds were revered for their courage, strength, speed, and endurance. The roadrunner’s distinctive X-shaped footprint—with two toes pointing forward and two backward—are used as sacred symbols by Pueblo tribes to ward off evil. The X shape disguises the direction the bird is heading, and is thought to prevent evil spirits from following.

Notable Species: NONE

Cultural References:

1. Some Pueblo Native American tribes, including the Hopi, believed the roadrunner provided protection against evil spirits. In Mexico, some said it brought babies, as the white stork was said to in Europe. Some Anglo frontier people believed roadrunners led lost people to trails.
2. Wile E. Coyote and the Road Runner are the two protagonists of a long-running (since 1949) Warner Bros. animated series.
3. This specific roadrunner appeared in a 1982 sheet of 20-cent United States stamps showing 50 state birds and flowers, being the state bird of New Mexico.
4. It is also the mascot of numerous high schools and colleges in the United States, including the University of Texas at San Antonio.