

Cooper's Hawk (*Accipiter cooperii*)

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THE COOPER'S HAWK (*Accipiter cooperii*) is intermediate in size between the Northern Goshawk (*Accipiter gentilis*) and the Sharp-shinned Hawk (*A. striatus*), northern North America's other two accipiters. The two sexes are almost alike in plumage, but as in both of the other species, the female is noticeably larger. According to Wheeler and Clark (1995), a female Cooper's Hawk has a mean body length of 45 cm (18 in) (range: 42–47 cm [16–19 in]), a mean wingspan of 84 cm (33 in) (range: 79–87 cm [31–34 in]), and a mean body weight of 528 g (19 oz) (range: 479–678 g [17–24 oz]). This is in contrast to the male's mean length of 39 cm (15 in) (range: 37–41 cm [14–16 in]), wingspan of 73 cm (29 in) (range: 70–77 cm [28–30 in]), and body weight of 341 g (12 oz) (range: 302–402 g [10–14 oz]). The size difference is typically sufficient to tell male and female Cooper's Hawks apart. However, because the female Sharp-shinned Hawk approaches in size the male Cooper's Hawk, distinguishing between the two can be quite difficult in the field. Identification of juvenile accipiters to species is particularly daunting, and juvenile Cooper's Hawks can be confused with the juveniles of both other species.

No subspecies of the Cooper's Hawk are recognized despite some size differences between eastern and western populations (Whaley and White 1994). In

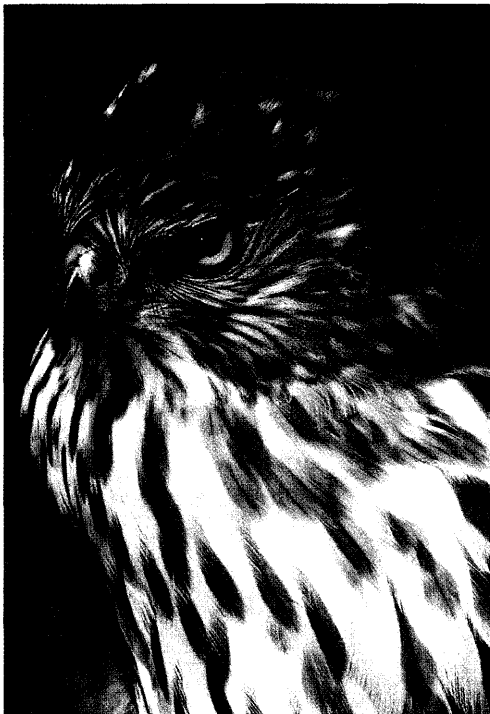
adults, the underparts are barred crosswise with rufous. Upperparts are slightly different in the male and female. In the male, the back is bluish gray. The crown is darker than the back, almost black, with a pale line of contrast at the nape. In the female, upperparts are gray with a brownish hue. In both sexes, the cheeks are rufous and the iris is orange, turning to red in older birds. Juveniles are brown above, white below with brown longitudinal streaking on the chest becoming sparser on the belly. The undertail coverts are pure white, unlike the distinctly streaked coverts shown by young goshawks. The eyes are pale gray at fledging, soon changing to yellow. Some juveniles show the white superciliary (eyebrow) that is more characteristic of the Northern Goshawk, adult or juvenile. While perched, both adult and juvenile Cooper's Hawks can give the appearance of having squarish heads, with the eyes placed farther forward than those of Sharp-shinned Hawks. The wings are short and rounded and the tail is relatively long, as is typical of accipiters. The tail shows four or more black transverse bars and a white terminal band that is often noticeably wide. The tip of the tail tends to be rounded rather than square, with shorter outer feathers. The Cooper's Hawk has slower wing beats than the Sharp-shinned Hawk. When gliding, it also projects its head in front of its wrists, unlike the Sharp-shinned Hawk.



PHOTO 10.1

Adult Sharp-shinned Hawk (*Accipiter striatus*) female (left) and adult Cooper's Hawk male (right), trapped and banded at HawkWatch International's Manzano Mountains migration monitoring site, fall 1995. Note the similarity in size between the two birds. PHOTOGRAPH:

© JOHN P. DELONG.



PHOTOS 10.2a and b

Hatch-year Cooper's Hawk netted, banded, and released at the HawkWatch Manzano migration study site, 6 October 2007. Immatures have white underparts with brown longitudinal streaking most prominent on the chest.

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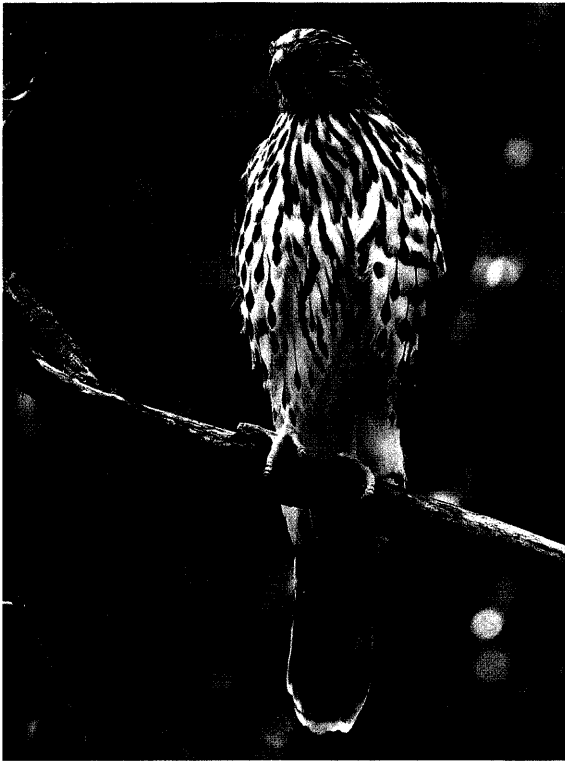


PHOTO 10.3

(left) Immature Cooper's Hawk. Photographed at the Rio Grande Nature Center, Albuquerque, Bernalillo Co. PHOTOGRAPH: © DOUG BROWN.

PHOTO 10.4

(above) Adult Cooper's Hawk (head shot). Bird netted, banded, and released at the HawkWatch Manzano migration study site, 6 October 2007. PHOTOGRAPH: © TOM KENNEDY.



PHOTO 10.5

Adult male Cooper's Hawk. Note the blue-gray back, darker cap, and pale line of contrast at the nape. Bird netted, banded, and released at the HawkWatch Manzano migration study site, 6 October 2007. PHOTOGRAPH: © TOM KENNEDY.

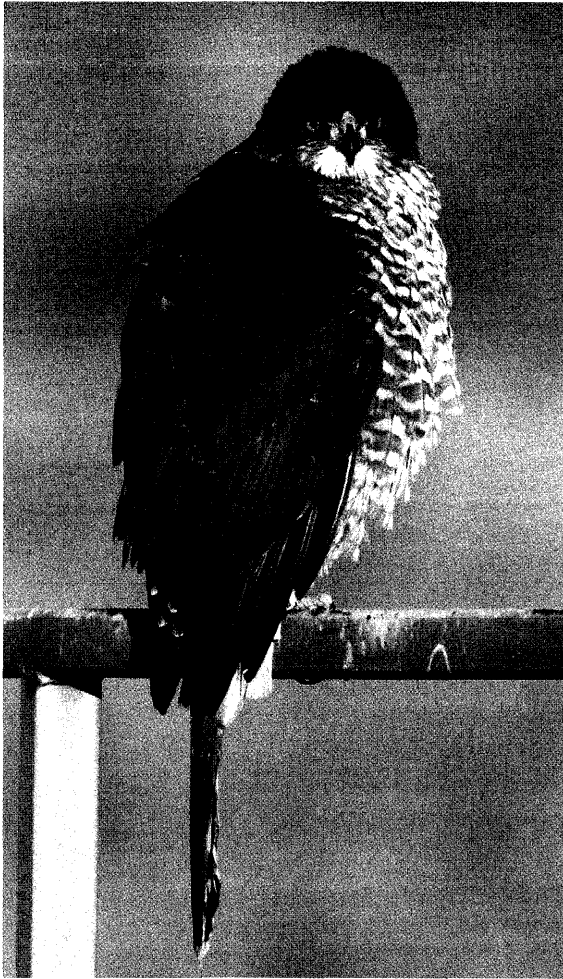


PHOTO 10.6

(above) Adult female Cooper's Hawk. Note the brown-tinged upperparts. Photographed at the Bosque del Apache National Wildlife Refuge in November 2006.

PHOTOGRAPH: © LANA HAYS.



PHOTO 10.7

(top right) Adult Cooper's Hawk photographed at White Rock, Los Alamos Co., May 2007. The underparts of adults are barred crosswise with rufous. The long tail has conspicuous brown bars in both adults and immatures.

PHOTOGRAPH: © SALLY KING.

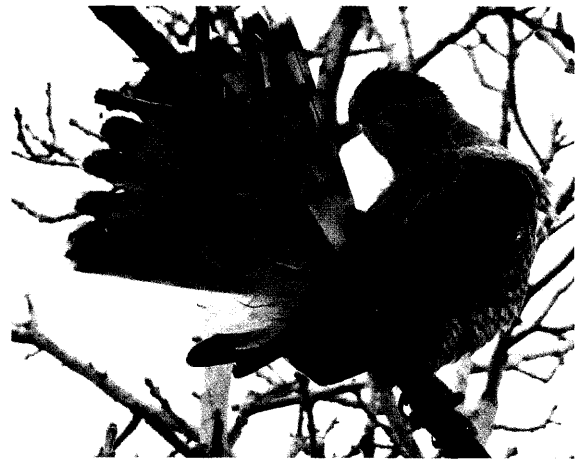


PHOTO 10.8

(bottom right) Adult Cooper's Hawk with fanned tail feathers, Santa Fe Co., 1 December 2007.

PHOTOGRAPH: © WARREN BERG.

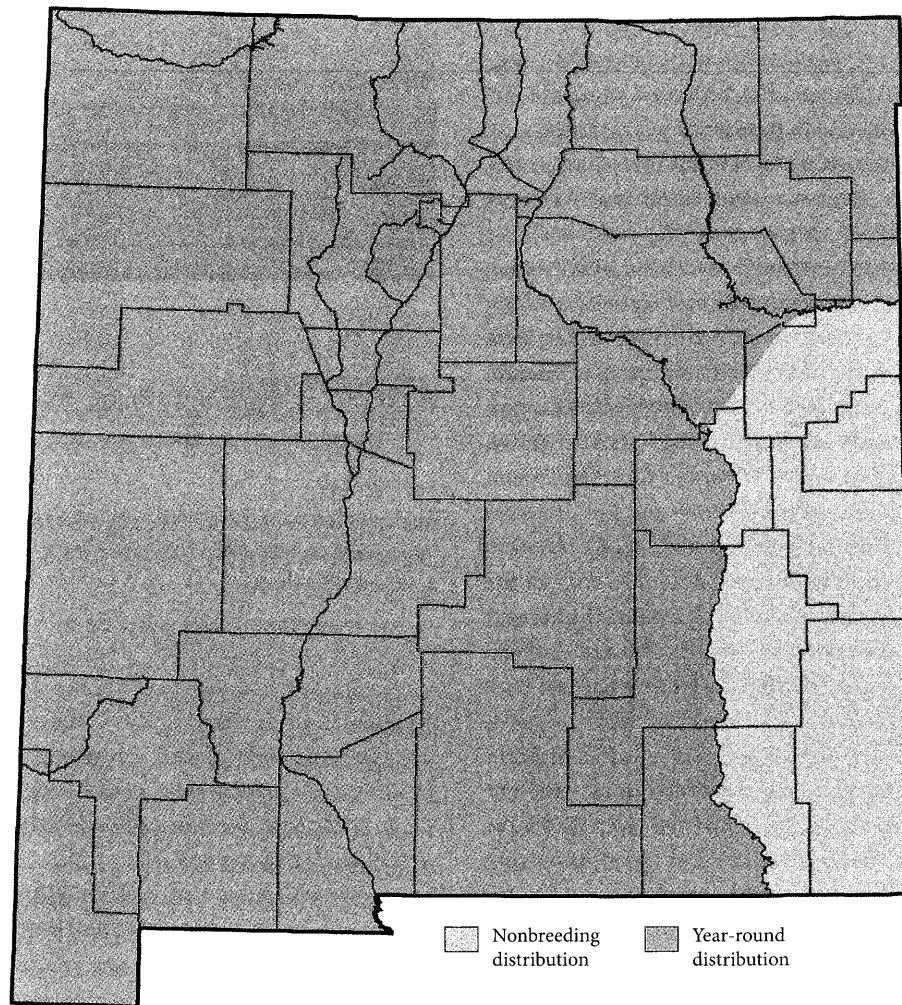
Cooper's Hawks are silent throughout most of the year, but they become vocal during the breeding season, uttering a wide variety of calls. Most often heard is the alarm call, a noisy, repetitive staccato "cak-cak-cak."

Distribution

The Cooper's Hawk has a wide distribution that extends from southern Canada south to Central America, and from the Pacific east to the Atlantic (Rosenfield and Bielefeldt 1993). It is a partially migratory species, with breeding and nonbreeding distributions that overlap

extensively. According to Palmer (1988), northernmost populations vacate their breeding range during winter (but see Rosenfield and Bielefeldt 1993). Southward, some Cooper's Hawks migrate, but others are year-round residents (Rosenfield and Bielefeldt 1993; chapter 2). Breeding is not known to occur south of northern Mexico.

The Cooper's Hawk occurs year-round throughout most of New Mexico, ranging from low to middle or even high elevations primarily in well-wooded areas (Hubbard 1972, 1978). Breeding populations are distributed east to the northeastern quadrant of the state but only to the Pecos Valley farther south (Hubbard 1978).



MAP 10.1
Cooper's Hawk distribution map

During migration and in winter, the species occurs statewide (Hubbard 1978), although likely not ranging to the higher elevations they use during breeding.

Large numbers of migrating Cooper's Hawks fly over the Sandia and Manzano Mountains each year (chapter 2). Most of those migrants appear to nest in the southern Rocky Mountains of northern New Mexico and Colorado. Their winter distribution extends to Mexico east of the Sierra Madre Occidental and along that country's southwestern Pacific coast (Hoffman et al. 2002).

Habitat Associations

In New Mexico, the Cooper's Hawk is mainly a bird of floodplain riparian woodlands, wooded mountain foothills and canyons, aspen and coniferous montane forests, and urban areas with trees (Bailey 1928; Ligon 1961; Tatschl 1967; Hubbard 1971a; Schmitt 1976; Stacey 1984; Goodman 1990; Kennedy 1991; Siders and Kennedy 1996). At the lower elevations of the state, we have found the species to be strongly associated with riparian woodlands, especially during the nesting season. Along the Middle Rio Grande (from Cochiti Dam to Elephant Butte Reservoir), the Cooper's Hawk nests in mature cottonwood (*Populus deltoides*) stands with a tall canopy. The understory can be sparse or, conversely, very dense, and is composed of native but also exotic vegetation, mainly saltcedar (*Tamarix chinensis*) and Russian olive (*Elaeagnus angustifolia*) (Cartron et al., 2008). Here it is easily the most common diurnal raptor. In 2007 in the Albuquerque area, one of us (JLEC) counted a total of 11 occupied territories along a 24-km (15-mi) stretch of the river, or an average of one territory every 2.18 km (1.38 mi). An even greater density of nesting pairs was documented in Corrales, Sandoval County. At that location in 2003, 13 nesting pairs were recorded along an 11-km (7-mi) stretch of the west bank of the river (Williams 2003), the organization Hawks Aloft (2008) reporting local densities of 2.85 occupied nests per 40 ha (99 ac) of bosque. To the south, in Bosque Farms in 2002, two occupied nests on the same side of the river were separated by only 300 m (~980 ft) (JLEC et al., unpubl. data). The Cooper's Hawk is also a common species in cottonwood (*Populus fremontii*) riparian woodland along



PHOTO 10.9

(top) Cooper's Hawk's nesting habitat along the Middle Rio Grande in central New Mexico. PHOTOGRAPH:

© JEAN-LUC CARTRON.

PHOTO 10.10

(bottom) Golf course with its Cooper's Hawk nesting pair, Albuquerque, Bernalillo Co., April 2008. PHOTOGRAPH:

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the Gila River in Grant County, where four occupied nests in 2002 were spaced approximately every 3 km (2 mi) on alternating sides of the river (SHS, unpubl. data). At three of the nests, the vegetation consisted of dense stands of fairly young (<50 cm [<20 in] dbh) cottonwoods with little understory (SHS, unpubl. data). At Rattlesnake Springs, in yet another part of the state (Eddy Co.), Cooper's Hawks nest in riparian woodlots dominated by cottonwood or netleaf hackberry (*Celtis reticulata*) and characterized by a tall canopy and dense understory (D. Roemer, pers. comm.).

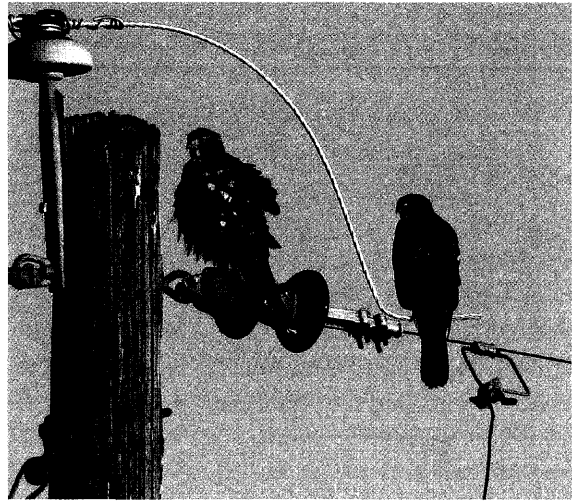


PHOTO 10.11

(top left) Cooper's Hawk in wooded habitat, Madrid, Santa Fe Co., 2008. PHOTOGRAPH: © LAWRY SAGER.

PHOTO 10.12

(bottom left) Cooper's Hawk in low-density residential area in Santa Fe Co., 23 December 2007. PHOTOGRAPH: © WARREN BERG.

PHOTO 10.13

(above) Cooper's Hawks on power line in low-density residential area in Santa Fe Co., 18 July 2008. PHOTOGRAPH: © WARREN BERG.

Besides riparian floodplain woodlands, Cooper's Hawks also nest in upland habitats ranging in elevation from pinyon-juniper woodland to mixed coniferous forest (Tatschl 1967; Kennedy 1988; Siders and Kennedy 1996). In the Jemez Mountains and on the adjacent Pajarito Plateau (hereafter Jemez Mountains), Cooper's Hawks nest chiefly at elevations of 2,300–2,380 m (~7,550–7,810 ft) in ponderosa pine (*Pinus Ponderosa*) and mixed conifer stands (Siders and Kennedy 1996). As determined by Siders and Kennedy (1996), overstory trees in nest areas are spaced 4.2–7.0 m

(13.8–23.0 ft) apart, for an overall tree density of 750–1,650 per hectare (~1,850–4,080 per acre).

In Arizona, Cooper's Hawks often nest in urban areas with trees (Boal and Mannan 1998). The same is true in New Mexico, where the Cooper's Hawk has increasingly become an urban nesting species. Harden et al. (2006) analyzed Wildlife Rescue Inc. intake data for the Albuquerque region for 15 years and found numbers of Cooper's Hawks increased more than six-fold from 1990 through 2004! Cooper's Hawks build their nests in parks, at golf courses, and on school campuses

of Albuquerque, often along arroyos and typically surrounded by open habitat with no understory (JLEC, unpubl. data).

Outside the nesting season, Cooper's Hawks generally occupy the same habitats as during breeding. However, they also more readily occur in less wooded vegetation types such as semidesert and plains grasslands, and Chihuahuan desertscrub (Eakle et al. 1996). In fact, migrating individuals, most of which follow montane forested corridors (see chapter 2), may occasionally be found in areas completely devoid of trees (e.g., Hubbard 1971b). Even during the nesting season, it is possible to observe Cooper's Hawks in nonforested habitats, such as in the Gila River Valley, perched on a pole over mesquite thickets or grasslands or cruising through these habitats (SHS, pers. obs.). Overall, however, we find that Cooper's Hawks in nonforested areas gravitate toward clusters of trees or large shrubs, whether along arroyos or in small planted groves.

Life History

Migration

The proportion of Cooper's Hawks residing year-round in New Mexico instead of migrating south for the winter is unknown. From 1985 through 2006, an annual average of 768 Cooper's Hawks were observed passing over the Sandia Mountains in spring, while the annual average count in fall over the Manzano Mountains was 1,029 individuals (see chapter 2). Some of those migrants were shown to nest in northern New Mexico; others nested farther north (Hoffman et al. 2002).

The median spring passage date for Cooper's Hawks over the Sandias is 9 April for adults and 20 April for immatures (chapter 2). However, spring migration may be as late as June even in the extreme southern part of the state (Hubbard 1978). In fall over the Manzanos, adults tend to migrate later compared to immatures. The median passage date for adults is 28 September; the median passage date for immatures is 21 September (chapter 2). These age-specific patterns of migration are typical for most raptor species at most migration stations (e.g., Ueta et al. 2000; Mueller et al. 2003).

Nesting

Cooper's Hawks typically begin breeding at the age of two years or older (Rosenfield and Bielefeldt 1993). However, up to 22% of breeding pairs consist of an adult male and a year-old immature female, with pairing of adult females and year-old immature males also reported but not nearly as common (Rosenfield and Wilde 1982). We have observed breeding pairs with immature females in New Mexico, both along the Middle Rio Grande and in the Jemez Mountains. Pairs with immature males have yet to be confirmed in the state.

Cooper's Hawks nest in a wide variety of trees in New Mexico: ponderosa pine, Douglas fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), and pinyon pine (*Pinus edulis*) in montane forests (Kennedy 1988; PLK, unpubl. data); Fremont cottonwood (*Populus fremontii*), Rio Grande cottonwood (*P. deltoides* ssp. *wislizenii*), Arizona sycamore (*Platanus wrightii*), and, more rarely, Siberian elm (*Ulmus pumila*) along riparian corridors (JLEC and PLK, unpubl. data); and cottonwood and elm trees in urban areas (JLEC, unpubl. data). At Rattlesnake Springs in southeastern New Mexico, Cooper's Hawk nests have been found in netleaf hackberry (D. Roemer, pers. comm.). Bailey (1928) also mentions oaks (*Quercus*), boxelders (*Acer negundo*), and walnuts as additional Cooper's Hawk nest trees in the state.

Nests are typically placed in the crotch of a tree, but Cooper's Hawks may use mistletoe as a supporting platform and, presumably, for additional nest concealment (Kennedy 1988). Nest trees measured by Siders and Kennedy (1996) in the Jemez Mountains were 17–25 m (~60–80 ft) tall with 58–74% canopy closure at the nest site. In that same area, nest trees were more likely to be found on east-facing slopes and nests were placed predominantly on the east and north sides of the nest trees (Kennedy 1988).

In New Mexico, Cooper's Hawks typically lay their eggs in May (Ligon 1961). Most clutches consist of four and occasionally five eggs (Ligon 1961; appendix 10-1); clutches of three eggs probably do occur but have not been recorded in the state. Broods of five young have been observed, and one pair in the South Valley of Albuquerque and one pair outside of Los Alamos are known to have produced five fledglings (Williams 2003; PLK, unpubl. data). Fledging occurs



(a)



(c)



(b)



(d)

PHOTOS 10.14a, b, c, and d

Copper's Hawk nest in riparian woodland (nest in cottonwood [*Populus* sp.], approximately 10 m [30 ft] high) in Animas Park along the Animas River in Farmington, San Juan Co. Note that the parent female is a yearling (immature plumage). (a) Parent female and 11-day-old chick (age estimates based on first date parent seen feeding hatchling; that date taken as the day of hatching), 21 June 2007. (b) Parent female feeding 19-day-old nestling, 29 June 2007. (c) Parent female (in immature plumage) and 20-day-old nestling (second nestling in left background), 30 June 2007. Parent has small piece of food. (d) Two 27-day-old nearly grown nestlings, 7 July 2007. PHOTOGRAPHS: © TIM REEVES.



PHOTO 10.15

Thirty-six-day-old fledgling about 75 m (250 ft) from nest (same nest as in photos 10.14a–d, 16 July 2007.

PHOTOGRAPH: © TIM REEVES.

from early July in southern parts of the state to mid or late July in the Jemez Mountains (Kennedy 1988).

Throughout nesting, the male provides most of the food for the pair and, after hatching, also for the young. Females may also begin hunting toward the end of the nestling period and while the fledglings are still dependent on their parents. Interestingly, more than half of all female Cooper's Hawks may desert during the fledgling dependency period (Kelly and Kennedy 1993). In such cases, the adult male assumes the role of sole food provider for the fledglings; the female does not re-nest.

Diet and Foraging

When hunting, Cooper's Hawks typically scan their surroundings from a well-concealed perch. They are not true sit-and-wait predators. Instead they fly to new perches repeatedly throughout the day (saltatory foraging; see also chapter 11). In north-central New Mexico, Kennedy (1991) found that hunting Cooper's Hawks

change perches every 8 to 13 minutes. When the right opportunity arises, Cooper's Hawks leave their perch and dash through or around vegetation in a swift and low flight, pulling their legs forward to strike and grasp their prey. Typically, prey is killed by the hawk's driving its talons into the animal with strong squeezing actions of its feet (Meng 1951).

Throughout most of their distribution, Cooper's Hawks primarily eat birds and mammals (Rosenfield and Bielefeldt 1993). Although not typical, reptiles may be numerically dominant in the species' diet in some areas, while amphibians, fish, and insects have been recorded as prey only rarely. In the Jemez Mountains, Kennedy (1991) identified 44 taxa (32 birds, 9 mammals, and 3 reptiles) in the diet of Cooper's Hawk nesting pairs (table 10.1). Northern Flickers (*Colaptes auratus*), Steller's Jays (*Cyanocitta stelleri*), American Robins (*Turdus migratorius*), Mourning Doves (*Zenaidura macroura*), chipmunks (*Tamias* sp.), and cottontails (*Sylvilagus* sp.) were the prey most often recorded. Most of the mammalian prey that could be aged were juveniles, whereas most avian prey appeared to be adults. Mammalian prey too heavy to carry were dismembered, presumably at the point of capture, before being delivered to the nest (Kennedy 1991).

Diet information tends to be cursory or anecdotal elsewhere in New Mexico. Ligon (1961) mentions quails, doves, and flickers as apparent favored prey of Cooper's Hawks in the state. Near Rodeo, in Hidalgo County, a Cooper's Hawk was observed killing a Scaled Quail (*Callipepla squamata*) in November 1966 (McKnight and Snider 1966; table 10.1). In the riparian cottonwood forest along the Middle Rio Grande, we have observed Cooper's Hawks hunting a variety of birds including Mourning Doves and House Finches (*Carpodacus mexicanus*), following them in close pursuit or snatching them from a branch. Along the Gila River, the diet of Cooper's Hawks included Black-headed Grosbeaks (*Pheucticus melanocephalus*), Mourning Doves, and



PHOTO 10.16

Cooper's Hawk with prey,
Cimarron Canyon State Park,
Colfax Co. September 2007.

PHOTOGRAPH: © ELTON M. WILLIAMS.



PHOTOS 10.17a and b

(left and bottom) Cooper's Hawks on
water dishes near Santa Fe, Santa Fe Co.,
12 June 2008 and 1 November 2008.
Cooper's Hawks are notorious for
hunting at bird feeders and water
dishes. Occasionally they learn to
drive small birds toward glass
windows. They only have to pick up
their prey once these have collided
with the window and lie inert on
the ground.

PHOTOGRAPHS: © WARREN BERG.



TABLE 11.1 Documented prey of Cooper's Hawks (*Accipiter cooperii*) in New Mexico. Data from Ligon 1961; McKnight and Snider 1966; Hubbard 1981; Kennedy 1991; and RY pers. obs.

CLASS: ORDER	SPECIES	LOCATION
Aves	Wood Duck (<i>Aix sponsa</i>)	Middle Rio Grande Bosque
	Domestic fowl (<i>Gallus</i> sp.)	Jemez Mountains/Pajarito Plateau
	Scaled Quail (<i>Callipepla squamata</i>)	Near Rodeo, Grant Co.
	American Kestrel (<i>Falco sparverius</i>)	Jemez Mountains/Pajarito Plateau; Sandia Mountains
	Mourning Dove (<i>Zenaida macroura</i>)	Jemez Mountains/Pajarito Plateau; Gila River Valley
	Band-tailed Pigeon (<i>Columba fasciata</i>)	Jemez Mountains/Pajarito Plateau
	Western Screech Owl (<i>Megascops kennicottii</i>)	San Mateo Mountains
	Burrowing Owl (<i>Athene cucularia</i>)	Johnson Mesa, Colfax Co.
	Northern Flicker (<i>Colaptes auratus</i>)	Jemez Mountains/Pajarito Plateau
	Red-naped Sapsucker (<i>Sphyrapicus nuchalis</i>)	Jemez Mountains/Pajarito Plateau
	Williamson's Sapsucker (<i>Sphyrapicus thyroideus</i>)	Jemez Mountains/Pajarito Plateau
	Hairy Woodpecker (<i>Picoides villosus</i>)	Jemez Mountains/Pajarito Plateau
	Cordilleran Flycatcher (<i>Empidonax occidentalis</i>)	Jemez Mountains/Pajarito Plateau
	Ash-throated Flycatcher (<i>Myiarchus cinerascens</i>)	Jemez Mountains/Pajarito Plateau
	Violet-green Swallow (<i>Tachycineta thalassina</i>)	Jemez Mountains/Pajarito Plateau
	Plumbeous vireo (<i>Vireo plumbeus</i>)	Gila River Valley
	Steller's Jay (<i>Cyanocitta stelleri</i>)	Jemez Mountains/Pajarito Plateau
	Scrub Jay (<i>Aphelocoma coerulescens</i>)	Jemez Mountains/Pajarito Plateau
	Clark's Nutcracker (<i>Nicifraga columbiana</i>)	Jemez Mountains/Pajarito Plateau
	Black-billed Magpie (<i>Pica pica</i>)	Jemez Mountains/Pajarito Plateau
	Pygmy Nuthatch (<i>Sitta pygmaea</i>)	Jemez Mountains/Pajarito Plateau
	Western Bluebird (<i>Sialia mexicanus</i>)	Jemez Mountains/Pajarito Plateau
	Mountain Bluebird (<i>Sialia currucoides</i>)	Jemez Mountains/Pajarito Plateau
	European Starling (<i>Sturnus vulgaris</i>)	Jemez Mountains/Pajarito Plateau
	Yellow-rumped Warbler (<i>Dendroica coronata</i>)	Jemez Mountains/Pajarito Plateau
	Spotted Towhee (<i>Pipilo maculofasciatus</i>)	Jemez Mountains/Pajarito Plateau
	Dark-eyed Junco (<i>Junco hyemalis</i>)	Jemez Mountains/Pajarito Plateau
	Chipping Sparrow (<i>Spizella passerina</i>)	Jemez Mountains/Pajarito Plateau
	Brown-headed Cowbird (<i>Molothrus ater</i>)	Jemez Mountains/Pajarito Plateau
	Western Tanager (<i>Piranga ludoviciana</i>)	Jemez Mountains/Pajarito Plateau
	Black-headed grosbeak (<i>Pheuctitus melanocephalus</i>)	Jemez Mountains/Pajarito Plateau
	Pine Siskin (<i>Carduelis pinus</i>)	Gila River Valley
	Lesser Goldfinch (<i>Carduelis psaltria</i>)	Jemez Mountains/Pajarito Plateau
	Red Crossbill (<i>Loxia curvirostra</i>)	Jemez Mountains/Pajarito Plateau
	House Finch (<i>Carpodacus mexicanus</i>)	Jemez Mountains/Pajarito Plateau; Middle Rio Grande Valley
	Evening Grosbeak (<i>Coccothraustes vespertinus</i>)	Jemez Mountains/Pajarito Plateau; Raton

TABLE 11.1 (continued)

CLASS: ORDER	SPECIES	LOCATION
Mammalia	Cottontail (<i>Sylvilagus</i> sp.)	Jemez Mountains/Pajarito Plateau
	Abert's squirrel (<i>Sciurus aberti</i>)	Jemez Mountains/Pajarito Plateau
	Red squirrel (<i>Tamiasciurus hudsonicus</i>)	Jemez Mountains/Pajarito Plateau
	Chipmunk (<i>Tamias</i> sp.)	Jemez Mountains/Pajarito Plateau
	Golden-mantled ground squirrel (<i>Spermophilus lateralis</i>)	Jemez Mountains/Pajarito Plateau
	Rock squirrel (<i>Spermophilus variegatus</i>)	Jemez Mountains/Pajarito Plateau
	Woodrat (<i>Neotoma</i> sp.)	Jemez Mountains/Pajarito Plateau
	Deer mouse (<i>Peromyscus maniculatus</i>)	Jemez Mountains/Pajarito Plateau
Reptilia	Eastern fence lizard (<i>Sceloporus undulatus</i>)	Jemez Mountains/Pajarito Plateau
	Western terrestrial garter snake (<i>Thamnophis elegans</i>)	Jemez Mountains/Pajarito Plateau
	Little striped whiptail (<i>Cnemidophorus inornatus</i>)	Jemez Mountains/Pajarito Plateau

Plumbeous Vireos (*Vireo plumbeus*). In urban and semiurban environments, Cooper's Hawks often hunt small birds near feeders. Based on prey remains, doves appeared to be an important portion of a nesting pair's diet in a residential neighborhood of Albuquerque (JLEC, unpubl. data).

Birds larger than a dove or a quail and including small raptors are by no means immune from predation by Cooper's Hawks. McKnight and Niles (1964) mention a Cooper's Hawk diving at an avocet in August 1964 in the Roswell area. Kennedy (1991) and H. Schwarz (pers. comm.) found Cooper's Hawks to consume American Kestrels (*Falco sparverius*) in the Jemez and Sandia mountains (at the latter location, based on prey remains found under one nest), respectively. Ligon (1961) mentions one case of predation on a [Western] Screech Owl (*Megascops kennicottii*) he observed in the San Mateo Mountains. Hubbard (1981) describes a Cooper's Hawk killing a Burrowing Owl (*Athene cunicularia*) on Johnson Mesa, Colfax County. At the Rio Grande Nature Center in Albuquerque, one of us (RY) once witnessed a female Cooper's Hawk dive at a Wood Duck (*Aix sponsa*) hen that had just taken flight. The two tumbled to the ground, and quite a struggle ensued. But the Cooper's Hawk might have been wary of human presence and did not continue the fight for

long. She released her grip on the Wood Duck and flew off, while the duck struggled into nearby thickets. Later that day, while walking in the same vicinity, RY flushed a female Cooper's Hawk off a dead female Wood Duck on the ground. The hawk had consumed quite a bit of breast meat, indicating that she had been feeding for a while. How soon she returned to finish off the duck after the initial attack is unknown.

Kennedy (unpubl. data) radio-tracked 24 adult Cooper's Hawks (12 females and 12 males) during the 1984, 1986, and 1988 breeding seasons in the Jemez Mountains. Home range size averaged larger for females (\bar{x} = 2,803 ha [6,926 ac]) than for males (\bar{x} = 1,206 ha [2,980 ac]). Home range size also varied enormously, more so among females (87 to 8,620 ha [215 to 2,130 ac]) than among males (169 to 3,032 ha [418 to 7,492 ac]). This variation was likely due to the very different parental care strategies selected by the females during the breeding season. In the Jemez Mountains, some females stayed home and defended the nest while the male hunted. Other females hunted to augment male prey deliveries after the young were old enough to thermoregulate without brooding. Finally, some females defended the nest and/or hunted until the fledging period and then deserted (Kelly and Kennedy 1993). These different strategies resulted in widely

different movement patterns among females and thus influenced variation in home range size. As primary food providers, males selected parental care strategies that did not vary as much as those of the females. Variation in the size of their home range was probably a result of: (1) a male's experience with its home range; (2) food requirements (which vary seasonally and as a function of brood size); and (3) the local availability of prey.

Predation and Interspecific Interactions

The Cooper's Hawk has its own natural enemies including several other raptor species (Rosenfield and Bielefeldt 1993). In New Mexico, predation by the Northern Goshawk has been documented in the Jemez Mountains. Here the local nesting and foraging habitats of the two accipiter species overlap, as do their respective diets, and remains of Cooper's Hawks have been found at goshawk nests (Kennedy 1991). Predation by Great Horned Owls (*Bubo virginianus*) and Red-tailed Hawks (*Buteo jamaicensis*) has been documented outside of New Mexico (Peyton 1945; Rosenfield 1988). Occasional predation by Great Horned Owls on Cooper's Hawks likely occurs in the riparian forest along the Middle Rio Grande, where the two species often have adjacent nesting territories (JLEC, unpubl. data). All of the mesocarnivores common in the state are also likely predators of Cooper's Hawks. Mammals known to prey on accipiters outside of New Mexico include pine martens (*Martes americana*) and raccoons (*Procyon lotor*) (Squires and Kennedy 2006).

Cooper's Hawks can be aggressive near their nests and attack other raptors (they also dive-bomb people who venture too close to their nests). Along the Gila River, we have observed brief attacks on Red-tailed Hawks, and once on an inadvertently flushed Barn Owl (*Tyto alba*). As is typical among raptors, Cooper's Hawks are often mobbed or chased by other birds (Rosenfield and Bielefeldt 1993). In New Mexico, we have observed Cooper's Hawks being harassed by birds such as Black-chinned Hummingbirds (*Archilochus alexandri*), American Crows (*Corvus brachyrhynchos*), Brewer's Blackbirds (*Euphagus cyanocephalus*), and Western Kingbirds (*Tyrannus verticalis*). Along the Gila River, Cooper's Hawks were occasionally mobbed

or chased by flocks of Mexican Jays (*Aphelocoma ultramarina*) (SHS, unpubl. data), and in the Jemez Mountains they were regularly mobbed by flocks of Pinyon Jays (*Gymnorhinus cyanocephalus*) (PLK, unpubl. data). Although Pinyon Jays are common birds in this area, their absence from the observed diet of local Cooper's Hawks (table 10.1) may be a testament to the effectiveness of their mobbing behavior as a predator detection mechanism (Marzluff and Balda 1992).

Status and Management

There have been essentially no long-term changes in observed Cooper's Hawk numbers in New Mexico (Sauer et al. 2008; Smith et al. 2008; J. Smith, pers. comm.). Through 2005, migrating Cooper's Hawks were showing a significant long-term increase in the Manzano Mountains (Smith et al. 2008). However, that trend did not continue after 2005, and in the fall of 2009 HawkWatch International even recorded the second lowest Cooper's Hawk count to date (J. Smith, pers. comm.).

Three decades ago, Hubbard (1978:14) described the species as "rare to fairly common" during both breeding and nonbreeding. As seen in this chapter, however, densities of nesting pairs can be quite high in riparian floodplain woodlands, where observed nesting productivity is within the range of what has been observed for Cooper's Hawks elsewhere in their range (Rosenfield and Bielefeldt 1993). A total of 11 pairs in Corrales along the Middle Rio Grande produced 26 young in 2003, or a mean of 2.36 fledglings per nest (Williams 2003). From 2004 through 2007, Hawks Aloft (2008) monitored 232 Cooper's Hawk nests in the Middle Rio Grande bosque, with an estimated 189 (81%) of these nests having successfully fledged young, for a total aggregate estimated productivity of 2.2 young fledged per occupied nest and 2.7 young per successful nest. Productivity estimates from the Jemez Mountains are similar to those from the Middle Rio Grande bosque. Out of 29 nesting attempts monitored from 1984 to 1988 in the Jemez Mountains, 86.2% were successful (fledged at least one young); 2.36 young were fledged per successful nest and 2.03 young per nesting attempt (PLK, unpubl. data).



PHOTO 10.18

Cooper's Hawk being treated at the Gila Wildlife Rescue Center in Silver City, Grant Co., after a collision with a window.

PHOTOGRAPH: © DENNIS MILLER.

Once negatively affected by shooting, trapping, and organochlorine contaminants, the Cooper's Hawk is no longer a species of concern in the United States (Rosenfield and Bielefeldt 1993), nor is there currently any threat to its persistence in New Mexico in particular. In urban or semiurban areas, Cooper's Hawks occasionally collide with windowpanes while chasing after birds, resulting in some mortality (S. Kendall, pers. comm.). Acquisition logs from Wildlife Rescue, Inc., also show trichomoniasis—from the ingestion of infected pigeons or doves—to be a somewhat frequent cause of mortality in the Albuquerque area (J. Harden, pers. comm.). Riparian loss and degradation represent additional threats but only at a local level. McBride et al. (2004) investigated lead blood concentrations

in Cooper's Hawks captured during migration at HawkWatch International sites in the Sandia and Manzano mountains. They did detect higher lead blood concentrations in spring than in fall migrants, indicating higher environmental exposure to lead in the winter range of the species. However, blood concentrations of lead did not reach toxicity levels.

Naturalists of the early and mid 20th century often showed a strong negative bias against the Cooper's Hawk and, to a lesser degree, the Sharp-shinned Hawk. For example, Bent (1937:112) referred to both species as "blood-thirsty villains," the Cooper's Hawk the worst of the two! At the core of the Cooper's Hawk's infamous reputation was its propensity to attack poultry as well as quail, always a favorite among game bird hunters (Bent

1937; Ligon 1961). Today, however, the Cooper's Hawk is getting recognition for its important position in the food webs of many ecosystems. Birdwatchers have also developed an appreciation for the Cooper's Hawk as a skilled and often spectacular predator. Residents in

urban areas typically do not view Cooper's Hawks as a threat or nuisance—unlike coyotes and bobcats—and are often elated to discover these hawks nesting near their homes, a piece of untamed nature brought into their neighborhoods.

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