

## CALIFORNIA BREEDING OF THE BLACK-THROATED MAGPIE-JAY, INCLUDING EVIDENCE OF HELPING

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In San Diego County, California, anecdotal records of free-ranging Black-throated Magpie-Jays (*Calocitta colliei*) date back to the 1970s in the vicinity of the Solana Beach neighborhood of Eden Gardens (M. U. Evans pers. comm.). Of several locales within the county where the species has persisted, the oldest is the Tijuana River valley, where it has been documented continuously since ~1992 (G. McCaskie pers. comm.). These long-tailed corvids are endemic to the Pacific slope of mainland Mexico and reside in deciduous open woodlands and arid scrub forests between sea level and 1200 meters elevation. Their occurrence in San Diego County can almost certainly be attributed to the pet trade in adjacent northwestern Baja California (see Hamilton 2001) and escapees from aviaries north of the U.S.–Mexico border. Primary areas of their local occurrence and where I documented breeding include the Tijuana River valley as well as the Sweetwater River in the vicinity of the Plaza Bonita mall in the community of Bonita (Haas 2004). Magpie-jays seen in Jamul (e.g., 15 June 2000, M. U. Evans) were probably escapees from a local aviary. The origin of their occurrence on Point Loma (e.g., 17 May 1999, P. A. Ginsburg; 1 May 2000, S. E. Smith; 12 September 2004, K. Goldman) and within Mission Trails Regional Park and nearby residential communities (e.g., 20 April 2013, M. Beeve; 21 April 2013, B. Mulrooney) is less clear. They may have been escapees from local aviaries or individuals dispersing from Bonita or the Tijuana River valley.

Between April and July of 2000, during unrelated field studies in Goat Canyon just north of the international border at the eastern edge of Border Field State Park, I regularly observed two to three adult magpie-jays. These garrulous birds were easily found during virtually every visit to my study site of >12 hectares. On 20 April, when I was in a stand of tall, sparsely leaved arroyo willows (*Salix lasiolepis*), a pair of adult magpie-jays scolded me. Their close approach and persistent scolding suggested the presence of a nearby nest or young. As I worked my way through the willow thicket, the two jays followed me and continued to scold. I subsequently entered an area with a partially open canopy and found a third adult sitting atop a bulky nest of loosely assembled sticks (Figure 1). The nest had been built in the upper crotch of one of the taller willows approximately 5 meters above the ground. As I neared the nest tree, the sitting adult departed. Hoping to determine the status of the nest (presence of eggs, nestlings, etc.), I found a nearby area from which to observe. Within 15 minutes two adults returned to the vicinity of the nest. Although my position was fairly well concealed, both magpie-jays approached me, did not visit the nest, but instead re-initiated scolding, at which time I departed.

I returned to my study site eight days later (28 April) to once again find an adult atop the nest. I did not approach the nest closely, but once again took refuge, this time under a dense arch of giant reed (*Arundo donax*). A second adult approached the nest, fed the sitting adult, and was quickly forced aside by a third adult that likewise fed the sitting bird. I saw no other feeding behaviors during one hour of observation, the sitting bird did not depart the nest, and I consequently assumed that the sitting bird was brooding.

I continued to monitor the nest through May, returning on 22 May to find the nest occupied by two nestlings. One nestling was considerably larger than the other. I estimated that it must have hatched two or more days prior to its sibling. The larger bird's tail was already becoming elongate, and its posture and plumage (e.g., pin

## NOTES

feathers not obvious, crown fully feathered with few down feathers) suggested to me that fledging was imminent. I observed no feeding behaviors at this time. Because the adults remained away from the nest for more than 30 minutes, I departed.

On 2 June I returned to my study site but first checked the magpie-jay nest and found no evidence of occupancy. After resuming my field work I spotted two juvenile magpie-jays at the top of a large gum tree (*Eucalyptus* sp.); they were easily distinguished from three nearby adults by their extensively white underparts. I subsequently observed each of the three adults feeding the fledglings. These events represent the first documentation of not only successful breeding of the Black-throated Magpie-Jay in San Diego County but also of cooperative breeding.

In an intensive study of four breeding groups of Black-throated Magpie-Jays in Sonora, Mexico, from 1980 to 1982, Winterstein (1985) reported numerous examples of helping including courtship feeding as well as helping behavior at the nest. Helpers, ranging from one to seven per group, “participated in all aspects of the reproductive effort except copulation and incubation” (p. ix). Although the breeding females were responsible for the majority of nest construction, helpers were also involved. Helpers also were the primary feeders of females on nests. Helping behavior has also been documented in the closely related White-throated Magpie-Jay (*C. formosa*; e.g., Langen and Vehrencamp 1999), with helpers similarly providing disproportional feedings to female breeders and occasionally acting as the primary care-providers of fledglings.

My San Diego County observations document courtship feeding, helping at the nest, and fledgling support within the species’ introduced range. These behaviors are not unexpected in view of the pervasive level of helping reported by Winterstein as well as the species’ close relationship with the cooperatively breeding White-throated Magpie-Jay. The benefits of cooperative breeding in corvids as well as theories on its evolution are widely addressed in the ornithological literature (e.g., Brown 1974, Emlen 1978, Ekman and Ericson 2006).

I initially documented the Black-throated Magpie-Jay’s nesting season in San Diego County as extending from March to July (Haas 2004). Within its natural range the species may breed from as early as November to July of the following year (Howell and Webb 1995), this extended period incorporating two periods of seasonal rains. My San Diego County records corresponded with the region’s single, often limited, rainy season. However, while continuing to study the small population in the Tijuana River valley over several succeeding years, I discovered on 12 November 2005 a trio of magpie-jays building a nest. This event, which followed a season of above-average rainfall in 2004–2005, marked the return of a family group to Goat Canyon in the vicinity of previously documented late winter–early spring nests that were constructed in 2000, 2001, and 2002. The November nest, however, was abandoned prior to egg deposition.

Since 2005, I have found successful nesting of the Black-throated Magpie-Jay only in 2009 (both of two nests found in the Tijuana River valley were successful), 2011 (two of three nests found in the Tijuana River valley were successful, as was one nest along the Sweetwater River in Bonita), and 2012, which was the year of the magpie-jay’s most successful breeding since I began monitoring the species in 2000 (three of three nests found in the Tijuana River valley and one of two nests found in Bonita were successful). All of these nestings took place during the locally more traditional late winter–early spring avian breeding season. Given that “family group” is the appropriate descriptor of the magpie-jay’s breeding system, and despite reports of their occurrence at an increasing number of localities within San Diego County, the number of family groups (of annually variable size) has remained fairly constant over the past 15 years. Typically two but as many as three family groups have occupied the Tijuana River valley during this period, and one family group (although I found two family groups in 2012) has occupied the Sweetwater River–Bonita area. Recent observations along the San Diego River in Mission Trails Regional Park may portend

## NOTES



Figure 1. Black-throated Magpie-Jay on nest, Tijuana River Valley, San Diego County, California, 28 April 2000.

Photo by William E. Haas

the species' colonization of a new locale. Although the habitat there is ideal for breeding, the species' persistence will be dictated more likely by the availability of forage (especially fruits, nuts, and large invertebrates) in adjacent residential neighborhoods.

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