California Scrub-Jay Predation and Caching of a Southern Alligator Lizard in the Sierra Nevada Foothills, California

Franklin D. Yancey, II, Oakhurst Center of Reedley College, P.O. Box 1910, 40241 Highway 41, Oakhurst, California 93644. frank.yancey@scccd.edu

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The California Scrub-Jay (*Aphelocoma californica*) is a common, year-round resident of the foothills of the Sierra Nevada (Beedy and Pandolfino 2013). The species favors oak woodlands but is also common in residential areas (Beedy and Pandolfino 2013, Curry et al. 2017). It is an opportunistic omnivore, favoring acorns, pine seeds, fruits, and arthropods (Beedy and Pandolfino 2013, Curry et al. 2017). Rarely, California Scrub-Jays may capture and consume small terrestrial vertebrates, including mice and small salamanders, snakes, and lizards (Curry et al. 2017). Information on the particular vertebrate species that they prey upon, particularly reptiles, is limited (Curry et al. 2017). Published reports of lizard prey are limited to the western fence lizard (*Sceloporus occidentalis*) and the tiger whiptail (*Aspidoscelis tigris*; Curry et al. 2017). In addition, few descriptions of observed encounters between California Scrub-Jays and their reptilian prey have been reported (Curry et al. 2017). Here, I report on California Scrub-Jay predation on a southern alligator lizard (*Elgaria multicarinata*) and describe the encounter and its aftermath.

I observed a California Scrub-Jay killing, partially consuming, and caching the remains of a southern alligator lizard on 16 December 2018 in El Portal, Mariposa County, California. This small community is situated in the Sierra Nevada foothills approximately 5 km (3 mi) west of the Arch Rock entrance to Yosemite National Park (Lat. 37.674 Long. -119.785) at an elevation of 587 m (1,926 ft). The observation was made in a residential area within a woodland dominated by blue oak (*Quercus douglasii*).

At 1150, when the weather was clear and sunny with a temperature of 20° C (68° F), I heard a rustling among leaf litter about 10 m (33 ft) from where I was standing. I observed a California Scrub-Jay flying from the leaf litter with a large lizard flailing about in its bill. The bird landed 3 m (10 ft) from me on the top of a wooden block (likely an old railroad tie), the lizard still in its beak. I then viewed the lizard clearly through binoculars and identified it as a full-sized (snout-to-tail-tip length of 25 cm [10 in]), adult southern alligator lizard.

The scrub-jay proceeded to violently hammer the lizard into the wooden block with about seven powerful strikes. The lizard became motionless and the scrub-jay began to pierce its abdomen with strong, rapid bill jabs. Once the abdomen was penetrated, the bird ingested, in small bites, a considerable portion of the contents of the abdominal and thoracic cavities. After feeding for about two minutes, the scrub-jay took the carcass of the lizard in its bill, hopped to the ground and forcefully wedged the remainder of the carcass into a small space under the block until it was almost entirely concealed. Then the jay, with a sideways swooping motion of its bill, pushed some loose leaf-litter over the part of the lizard that remained visible. Once the carcass was completely concealed, the scrub-jay flew from the area and did not return within the next several minutes. I was unable to make any follow-up visits to the site to determine if the carcass was subsequently removed.

The diet of the California Scrub-Jay typically varies seasonally, with heavy consumption of fleshy fruits, arthropods, and bird eggs during the spring and summer, and higher use of acorns and pine seeds in autumn and winter (Carmen 2004, Curry et al. 2017, Airola and Greco in press). Seasonal information on small mammal and herptile consumption is lacking, but presumably there is little predation on reptiles or amphibians during the colder months. As with most temperate zone lizards, southern alligator lizards enter dormancy during colder months (Smith 1946). However, they may become temporarily active during a broad range of temperatures (Porter 1972), employing a form of incomplete hibernation whereby individuals become active on atypically warm days in winter (Smith 1946). At the time of my observation, the temperature was 20^{o} C, which is unusually warm for mid-December in El Portal. Apparently, the lizard emerged in response to the warm temperature. It was likely somewhat lethargic under these circumstances, which may have led to its capture.

There are no previous reports describing lizard predation behavior by the California Scrub-Jay. The bashing action similar to what I observed, however, has been described for snake predation (Curry et al. 2017). The California Scrub-Jay's hammering behavior (and its associated bill morphology) are likely adaptations that evolved to facilitate acorn manipulation and consumption (Bardwell et al. 2001). The buttressed base of the lower mandible makes it an effective pounding tool (Zusi 1987), and the deep, stout, decurved, hooked upper mandible provides for efficient penetration of the thick hard acorn pericarp (Bardwell et al. 2001). Repeated pounding against an anvil-like structure to enhance hammering action on hard food items has been documented (Michener and Michener 1945). These formidable adaptations for the consumption of hard food items collectively seem to allow a swift and efficient dispatching of a large lizard.

There also are no previous reports of California Scrub-Jays caching lizard remains, although there are vague reports of them storing "animal parts" (Curry et al. 2017). Caching food for later use is a behavior of California Scrub-Jays that is associated primarily with acorns (Grinnell 1936). Individuals are known to store large numbers of acorns (up to 5,000) during a single autumn for subsistence over the winter months when other food is scarce (Carmen 2004, Curry et al. 2017, Airola and Greco, in press.). A stored vertebrate carcass, such as that of an alligator lizard, may be available for consumption over a relatively short period of time. Owing to the rapid rate of decomposition of the small carcass, it would probably provide little or no nutrition for very long.

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