

- SCHLEIDT, W. M. 1973. Tonic communication: continual effects of discrete signs in animal communication systems. *J. theor. Biol.* 42:359–386.
- SIBLEY, C. G., AND J. E. AHLQUIST. 1990. Phylogeny and classification of birds. A study in molecular evolution. Yale Univ. Press, New Haven, CT.
- STEPANYAN, L. S. 1970. (Non-morphological criteria and their utilization for classification [Burhinidae (Aves) taken as an example]). *Z. obshch. biol.* 31: 291–301. (In Russian)
- STEPANYAN, L. S. 1979. (Possible relations of *Ibidorhyncha struthersii* and notes on the history of the family Haematopodidae). *Zool. Zh.* 58:1671–1679. (In Russian)
- STRAUCH, J. G. 1978. The phylogeny of the Charadriiformes (Aves): a new estimate using the method of character compatibility analysis. *Trans. Zool. Soc. Lond.* 34:263–345.
- VEPRINTSEV, B. N. 1982. Birds of the Soviet Union: a sound guide. Three long-playing discs. Melodiya, All-Union Studio for Recorded Sound, Moscow. (Narration in Russian)
- WILEY, R. H., AND D. G. RICHARDS. 1982. Adaptations for acoustic communication in birds: sound transmission and signal detection, p. 131–181. *In* D. E. Kroodsma and E. H. Miller [eds.], *Acoustic communication in birds*, Vol. 1. Academic Press, NY.

*The Condor* 98:422–423

© The Cooper Ornithological Society 1996

## FLORIDA SCRUB-JAY FORAGES ON BACK OF WHITE-TAILED DEER<sup>1</sup>

JOHN W. FITZPATRICK<sup>2</sup> AND GLEN E. WOOLFENDEN

*Archbold Biological Station, P.O. Box 2057, Lake Placid, FL 33862-2057*

**Key words:** *Foraging; mammals; cleaning station; symbioses; tameness; Florida Scrub-Jay; Aphelocoma coerulescens.*

The propensity of Florida Scrub-Jays (*Aphelocoma coerulescens*) to become extremely tame around humans, willingly to perch and even to rest on the hand, shoulder, or head, has been commented upon by naturalists for over a century. We hypothesized (Woolfenden and Fitzpatrick 1984) that the behavior stems from an ancestral willingness to perch and forage on the backs of native mammals, in a low-growing habitat that lacks large, diurnal, terrestrial predators. Records exist for Florida Scrub-Jays perching and apparently removing ticks from domestic cattle (Bent 1946) and feral hogs (Baber and Morris 1980). Dixon (1944) and Isenhardt and DeSante (1985) observed Western Scrub-Jays (*Aphelocoma californica*) doing the same on mule and black-tailed deer (*Odocoileus hemionus*), and the latter authors even speculated that a “cleaning station” relationship existed between bird and deer. Here we describe an encounter between a Florida Scrub-Jay and an adult white-tailed deer (*Odocoileus virginianus*), and summarize evidence that the behavior is not unusual. The encounter was video-taped by a deer hunter while he sat in a tree overlooking the scene. Our description

is based on careful study of his video, a copy of which is deposited in the archives at Archbold Biological Station.

On 25 September 1994, Mr. Andrew Reiner was video-recording scenery and deer movements from a deer-stand outside of, but immediately adjacent to, the western boundary of Archbold Biological Station, near Lake Placid, Highlands County, Florida. At approximately 07:00 EDT a large buck deer with full antlers slowly walked along the margin of a wide, sand firelane bordering dense oak scrub and scrubby flatwoods. The deer stopped several times to browse. During one such stop, a Florida Scrub-Jay (band combination ARZ = 3-year old resident male breeder) flew into view and perched on a pine snag several meters from the deer. As the deer moved on, the jay made an aborted flight toward it, left the video frame momentarily, then reappeared and alighted on the back of the deer near its shoulders. The deer showed no indication of surprise, but continued to browse, head down.

Upon landing the jay immediately picked at the back of the deer as if to take food, then hopped posteriorly to the haunches. There the jay first picked at, then sharply pecked at and nibbled, a spot on the deer's right rear buttock. The sharp peck prompted the deer to lower its haunches slightly, head still down. The deer remained frozen in this posture for several seconds before picking up its head and casually looking back toward the jay. The jay then hopped forward again to the shoulder region, making a few additional gentle picks. At this point the deer easily could have brushed away the jay with its muzzle or antlers, but instead remained seemingly unperturbed while watching the

<sup>1</sup> Received 28 August 1995. Accepted 10 January 1996.

<sup>2</sup> Current address: Laboratory of Ornithology, 159 Sapsucker Woods Rd., Ithaca, NY 14859.

jay. Also at this time the jay's mate appeared flying into video-view toward the deer as if intending to land on it, but veered away and presumably landed instead on oak shrubs just out of view.

As the deer resumed slowly walking along the firelane, the jay hopped and flapped several times as if trying to remain "on board," but then flew off from near the rear of the deer. The entire sequence lasted about 30 sec. The video continued following the deer for several minutes as it moved along the firelane, but the jays did not reappear.

We could not determine from the video what, if anything, the foraging jay recovered from the deer's back. The jay clearly made efforts to pick food, however, and we suspect that the sharp peck, followed by a nibble, represented dislodging and eating a tick. Bent (1946) summarizes evidence from several sources that ticks have been known as a food of Florida Scrub-Jays since late last century.

The behavior of the jays and deer did not appear as coordinated as the "cleaning station" symbioses described by Isenhardt and DeSante (1985), Kilham (1982), and Massei and Genov (1995) for other corvids. Moreover, based on extensive field observations we doubt that the behavior could be as common among Florida Scrub-Jays as that reported by Linsdale (1946) among Black-billed Magpies (*Pica pica*) and several species of ungulates (see also Linsdale and Tomich 1953 for Yellow-billed Magpies, *Pica nuttalli*, foraging on mule deer). Nevertheless, features of our video-taped encounter, plus two other previously unpublished observations, lead us to suspect that the behavior occurs regularly in some Florida Scrub-Jay territories. First, the jay appeared to have spotted something to ingest even before alighting on the deer, as it picked at the deer's hide almost immediately upon landing and before commencing to search elsewhere along the deer's back. Second, except for the brief lowering of its haunches and freezing after a hard peck from the jay, the deer did not seem surprised or alarmed at having a bird land and peck on its back. Third, the jay that landed on the deer is known not to be hand-tamed to humans, but it does live in a territory frequently traversed by deer. Fourth, the foraging jay's mate appeared about to land on the deer as well.

In response to our interest in his video, Mr. Reiner sent us a photograph he had taken several years earlier at a locality within 1 km of the encounter described above. The photograph clearly shows an adult white-tailed deer browsing, head lowered, amidst palmettos. On its back near the shoulders is an adult Florida Scrub-Jay perching comfortably. The identity of the jay is unknown, but the earlier date precludes this being the same individual as in the video. In addition to Mr. Reiner's two encounters, we know of one other example, reported to us recently from scrub in the vicinity of Wekiva Springs, FL (P. Small, pers. comm.).

Biologists rarely have a chance to observe deer casually browsing in the Florida scrub, because these deer—which are hunted in most places—tend to detect

humans easily and flee. Fortuitous video-taping by a patient observer in a blind provided us a window into an interaction that may be common but inherently difficult for humans to observe.

Until only a few thousand years ago, upland habitats of Florida were frequented for millions of years by many species of large, herbivorous mammals representing numerous families (Webb 1990). No doubt, such beasts supplied ample foraging opportunities for Florida Scrub-Jays. Although the large mammal fauna of the Florida scrub has all but vanished, that mega-fauna—along with deer—may have contributed to the innate tendency of Florida Scrub-Jays to acquire fearlessness around large, strange, food-providing creatures, which now include humans.

We thank Andrew Reiner for bringing this observation and video to our attention. We sincerely thank Lt. Dale Knapp of the Florida Game and Fresh Water Fish Commission for his unfailing and alert attention to duty, which helped renew our acquaintance with Mr. Reiner. Parks E. Small, also of the Florida Game and Fresh Water Fish Commission, kindly allowed us to mention his unpublished field observation. We thank Archbold Biological Station for continued support of our long-term studies of Florida Scrub-Jays.

#### LITERATURE CITED

- BABER, D. W., AND J. G. MORRIS. 1980. Florida Scrub Jays foraging from feral hogs. *Auk* 97:202.
- BENT, A. C. 1946. Life histories of North American jays, crows, and titmice. U.S. Natl. Mus. Bull., no. 191.
- DIXON, J. G. 1944. California Scrub Jay picks ticks from mule deer. *Condor* 46:204.
- ISENHART, F. R., AND D. F. DESANTE. 1985. Observations of Scrub Jays cleaning ectoparasites from black-tailed deer. *Condor* 87:145-147.
- KILHAM, L. 1982. Cleaning/feeding symbioses of Common Crows with cattle and feral hogs. *J. Field Ornithol.* 53:275-276.
- LINSDALE, J. M. 1946. American Magpie (*Pica pica*), p. 133-154. In A. C. Bent [ed.], Life histories of North American jays, crows, and titmice. U.S. Natl. Mus. Bull. 191.
- LINSDALE, J. M., AND P. Q. TOMICH. 1953. A herd of mule deer. Univ. of California Press, Berkeley, CA.
- MASSEI, G., AND P. GENOV. 1995. Observations of Black-billed Magpie (*Pica pica*) and Carrion Crow (*Corvus corone cornix*) grooming wild boar (*Sus scrofa*). *J. Zool. Lond.* 236:338-341.
- WEBB, S. D. 1990. Historical biogeography. p. 70-100. In R. L. Myers and J. J. Ewel [eds.], Ecosystems of Florida. Univ. of Central Florida Press, Orlando.
- WOOLFENDEN, G. E., AND J. W. FITZPATRICK. 1984. The Florida Scrub Jay: demography of a cooperative-breeding bird. Princeton Univ. Press, Princeton.