

A more difficult question to answer is why the Blue Jay has evolved raptor calls (regardless of whether the evolution has been directly by acoustical convergence or indirectly through the ability to mimic the calls). At least four hypotheses may be proposed. (1) One possibility is that the jay uses such calls iconically; that is, gives the call to indicate that the particular raptor species is in the vicinity. I never heard either the Red-shouldered Hawk or Osprey calls given when the raptor species was present, although Atkins (1989) did. (2) A related and more likely possibility is that a jay is indicating to companions the site where such a raptor was in the past. All my observations were within 10 m of where Ospreys had been seen. This hypothesis also gains credence from the fact that Ospreys are known to take a variety of non-fish prey, including corvids and some passerines the size of Blue Jays (Wiley and Lohrer 1973). Furthermore, Northern Mockingbirds (*Mimus polyglottos*) were seen mobbing an Osprey (Wiley and Lohrer 1973). (3) Yet another possibility is that the jay is calling to deceive some third species into believing a raptor is present, although the possible benefit to the jay from such deception is unclear. Finally, (4) it might be simply that jays incorporate environmental sounds into their repertoires, and preferentially choose the loud and fairly simple calls of raptors because they are easy to produce. Hypothesis (2) seems the most viable, and the entire subject of mimicry in corvid vocalizations would profit from systematic study.

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Florida Scrub Jay Mortality on Roadsides

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Brevard County, Florida supports two of the three largest remaining Florida Scrub Jay (*Aphelocoma coerulescens coerulescens*) populations, with about 1,870 birds on Kennedy Space Center and 920 birds on Cape Canaveral Air Force Station (Breininger 1989). Between 24 May and 5 June 1989, four Scrub Jay carcasses were collected on two roadsides in Brevard County, apparently killed by vehicles. Two were found at the same location on 24 and 30 May at a bend in the road where the nearest scrub was about 11 m from the edge of the road. The individual found on 1 June was located on a straight section of the road where the nearest scrub was about 22 m from the edge of the road. The fourth, a brown-headed juvenile, was found on 5 June, on an intersecting road, where the nearest

scrub was about 16 m from the road edge. All of the roads are two lane, paved with asphalt, lack shoulders and have grass adjacent to the edge of the road. These roads are heavily traveled during the periods 0600 to 0800 hrs and 1500 to 1700 hrs on weekdays with moderate to light traffic during other times. Another juvenile was collected the previous year on 20 June on a two-lane dirt road where the nearest scrub was about 4 m from the road edge.

Areas of scrub oaks with sandy openings are preferred Florida Scrub Jay habitat (Westcott 1970, Woolfenden 1973, Breininger 1981), but scrub often lacks openings (Westcott 1970, Cox 1984, Schmalzer and Hinkle 1987, Breininger et al. 1988). Roadsides provide attractive habitat for Scrub Jays to hunt insects and cache acorns (Breininger and Smith, pers. obs.). Individual territories sometimes will include both sides of roads (Breininger and Smith, unpub. data), so that territorial disputes between neighboring families occur across roads. Researchers at Archbold Biological Station (ABS) regularly find and receive jays hit by vehicles on paved roads near the station (R. Mumme, G. Woolfenden, pers. comm.). Mortality exceeded reproduction in territories located along a road at ABS, suggesting that Florida Scrub Jays can not maintain stable populations where there is high speed traffic (Woolfenden and Fitzpatrick, in press). Mortality may be related to habitat characteristics, including the width of road shoulders or height of the adjacent vegetation. Data on habitat features are needed to develop strategies to mitigate the problem throughout the range of the Florida Scrub Jay. Road mortality can be significant for small populations where it may contribute to the extirpation of small local populations (Cox 1984).

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