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## Evidence for Vocal Learning by a Scrub Jay

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The vocalizations of corvids, other than their faintly uttered and seldom heard whisper song, are typically referred to as calls rather than songs (Hardy 1983, Goodwin 1986). This convention reflects a widespread impression that these calls are more simple than the primary advertising songs of many other oscines and are delivered in a different way. Corvids mimic the sounds of other bird species and even the sounds of inanimate objects (Goodwin 1986), but the evidence that they learn their distinctive species-specific calls is sketchy. We present evidence that a captive Scrub Jay (*Aphelocoma coerulescens superciliosa*) from California learned two calls from Florida Scrub Jays (*A. c. coerulescens*).

A California jay was captured near Carmichael, Sacramento County, as a late-stage nestling (23 June 1979) and hand-raised. On 5 August 1979, it was given to the Florida Museum, where it lived in a large aviary with other wild-caught Scrub Jays from Florida and California (Webber and Cox 1987). In the following account, we refer to this California jay as "Red" because of its red leg bands.

In mid-January 1981, Webber noticed that a male Florida Scrub Jay (pink leg bands: "Pink") in the aviary was pairing with a female ("Green") from California. Pink passed food to Green, called in response to her flights, and flew back and forth in front of her

while calling loudly. Green gave the rattle call (Webber 1984) in response to Pink's flights. This behavior is typical of Scrub Jays when they form pairs in the wild (Webber 1984). Other jays in the aviary, including Red, often called and flew in response to Pink and Green's pair-forming behavior, as wild Scrub Jays do when a new pair forms in a neighboring territory (Webber 1984). Red gave two kinds of calls (referred to as A [Fig. 1a] and B [Fig. 1d]) that, to Webber, sounded identical to those of Pink (Fig. 1b, e) and another male Florida Scrub Jay ("Yellow") in the same aviary. Webber recorded the calls of Red, Pink, and Yellow on six days from 11 January to 29 March 1981. These recordings include at least 138 calls of type A by Pink and 40 by Red, as well as at least 100 calls of type B by Pink, 36 by Red, and 7 by Yellow (Florida Museum of Natural History Bioacoustics Archives master tapes 905-907).

Webber (1984) found no calls of types A or B in a 12-month study of Scrub Jay calls in Los Angeles County, California (FSM masters 633-637B, 639A-641B). Stefani (pers. obs.) also found no calls of types A or B in a 3-month study of Scrub Jay vocalizations in Davis, California, 28 miles from Carmichael. We think it unlikely that wild Scrub Jays in Carmichael give calls A and B.

Wild Scrub Jays in Florida give calls (FM masters

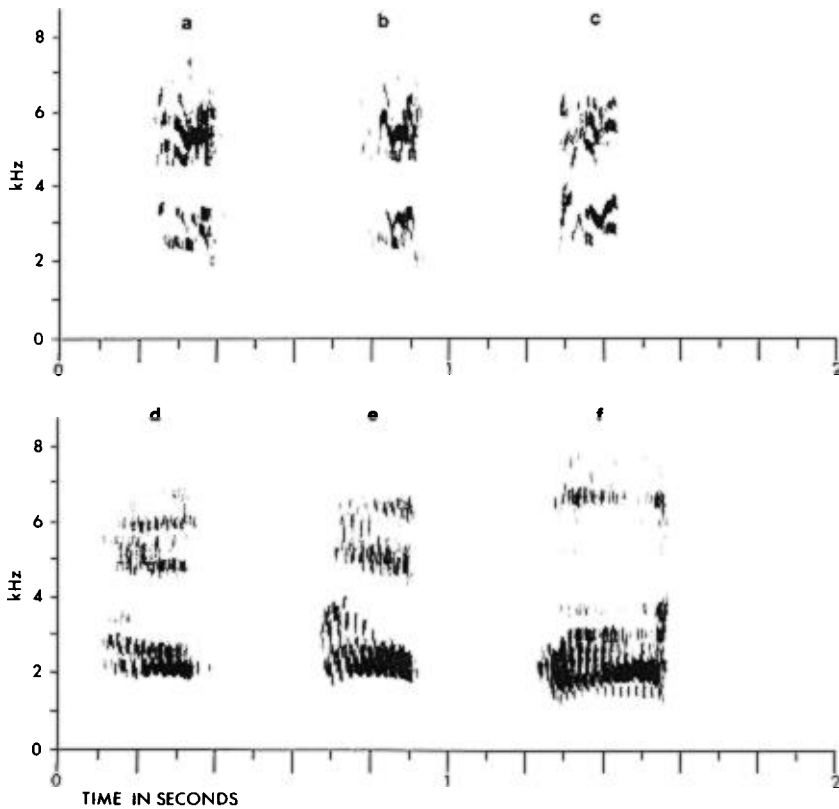


Fig. 1. (a) Call A given by Red, 1 March 1981; FM master 905B cut 3. (b) Call A given by Pink, 27 March 1981; FM master 907A cut 1. (c) Closest match of call A by a wild Scrub Jay, Cedar Key, Levy County, Florida, 5 March 1976; FM master 904 cut 6. (d) Call B given by Red, 29 March 1981; FM master 907B cut 1. (e) Call B given by Pink, 27 March 1981; FM master 907A cut 1. (f) Closest match of call B by a wild Scrub Jay, Cedar Key, Levy County, Florida, 17 March 1981; FM master 906B cut 1. (Kay Sona-Graph 7029A, wide band.)

904 and 906B) that sound the same as A and B. The sonograms of these wild Scrub Jay calls (Fig. 1c, e) match those of A and B more closely than do sonograms of any known California Scrub Jay calls. Red, the California jay, seems to have learned two of its calls and, to the extent that the confines of the aviary allowed, to have used them like wild Scrub Jays.

We have found no account of similar vocal learning by a corvid. Kroodsma and Baylis (1982) infer that Blue Jays (*Cyanocitta cristata*) learn their bell calls (Kramer and Thompson 1979) because these calls vary over short distances in a dialect-like pattern (see also Racine and Thompson 1983). Brown (1985) found that captive American Crows (*Corvus brachyrhynchos*) imitated elements in the whisper songs of other crows in their social group. Coughs (*Pyrhrocorax pyrrocorax* and *P. graculus*) can imitate the individual variants in their associates' calls (Sitasuwan and Thaler 1985), as can Common Ravens (*Corvus corax*; Gwinner and Kneutgen 1962).

The extent and nature of geographical variation in Scrub Jay calls is little known, but there certainly are

differences between the calls of the Florida and various western populations, as well as variation within Florida (Webber pers. obs.) populations. Red's acquisition of several new calls suggests that the geographical variation in some call types may be traditional, and that if wild jays move from one area to another where the calls are different, they may learn the local calls.

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