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# Sex Reversal In Banded Cardinal

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The following history of Northern Cardinal 891-50186 presents a clear-cut case of sex reversal in a wild bird, based on banding records compiled over a period of almost four years.

This bird was banded at my backyard station near Jay, Oklahoma, on November 12, 1981, sex *female*, age unknown. In my card file are five winter records from late November to March 7, 1982. She was recaptured on August 3 and December 4, 1982; on January 29 and May 10, 1983, on February 5, April 7, and June 11, 1984. On September 13, 1984 (at the age of at least three years) the notation read "head molt".

Each appearance noted above was consistently recorded as *female*.

On the morning of August 2, 1985, I removed a banded Cardinal from one of my nets. I noted that the number was an old one that I had not seen for some time, and entered the record in my field notebook: 891-50186 *male*. To my chagrin, I found that my file cards year after year read *female*. I decided to hold my tongue and hope I might recapture this bird sometime.

The following morning our summer assistant, Laurel K. Stevenson, volunteered the information that she had just released 891-50186 *male*.

The age at which this sex reversal occurred has been deducted by "educated guess": Although banding operations at our station have been more or less continuous since 1975, this bird was not trapped until late fall of 1981, suggesting it was a first-year bird (HY). From the infrequency of encounters over the next four years, but occurring almost every month of the calendar, we surmise that this was a permanent resident with a regular territory some distance from the banding station.

Between September 13, 1984, and August 2, 1985, Number 50186 was at least three to four years old when it was retrapped in incontestible *male* plumage.

As of December 4, there have been no further encounters, though there are many cardinals in the yard, some older than this bird.

In over fifty years of banding, and over 26,000 individuals, this is my only experience with sex reversal in a wild bird. It has been suggested that a tumor may have created the hormone imbalance. I am aware of experimental studies involving hormone-induced sex reversal in a variety of vertebrate animals. However, a search in the Index of *Biological Abstracts* 1963-1984 produced no reference to natural sex change in wild free birds.

The likelihood of happening upon a statistical formula for such occurrences is remote, and my records may or may not be an adequate sampling, but I have combed them thoroughly in an effort to determine the frequency of this phenomenon.

In my files are records of over 1000 Cardinals in four locations, of which 678 had been banded at least three years before my residence in that area terminated, and are therefore pertinent for this study. Of these 678 Cardinals, only 26 individuals (14 males, 12 females) had attained the age of four years when last encountered (the minimum possible age of 50186 in August 1985). If age is a factor in sex reversal, then of a given population 26 (3.8 percent) may live long enough to have aged enough, and 1 of that 26 (also 3.8 percent) might happen to be encountered by a bander with a previous record of that bird (maybe 3.8 percent of North American bird banders?).

Any information either first-hand or in literature on this phenomenon will be appreciated.

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(Inland)