VOCAL MIMICRY IN STARLINGS

by

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(With 5 Figures)

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Introduction

Interspecific vocal mimicry is common among birds. Earlier reviews have suggested that around 15-20% of passerine species are mimics to some degree (MARSHALL, 1950; VERNON, 1973) and this is almost certainly an underestimate as sonographic analysis may reveal unsuspected mimics (e.g. GUTTINGER, 1974, 1977). Probably at least one fifth of passerines sing songs that contain elements which closely resemble the songs or calls of other species. This makes it all the more remarkable that very few authors have studied vocal mimicry to any great extent.

The most extensive work to date has been with marsh warblers (Acrocephalus palustris), which have been shown to imitate an average of 76 species of which about 40% are European and 60% African (LEMAIRE, 1974; DOWSETT-LEMAIRE, 1979). The repertoire of warblers from different areas closely paralleled the local avifauna (LEMAIRE, 1975) but very few details are given about the nature of the imitated songs or calls or the frequency of use by individuals.

ADKISSON & CONNOR (1978), working with white-eyed vireos (Vireo griseus), found that about 53% of notes were imitative and were composed of 16 calls from 15 species. Again, however, little information was given about individual variation other than that it existed.

This pattern of a superficial study, usually involving few individuals, giving little information about either individual variation or the nature of

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the imitated calls or both is true of most of the literature on vocal mimicry (e.g. Bell, 1976; Harcus, 1977; Remsen, 1975; Snow, 1974). The aim of this work is to provide quantitative information on mimicry by individual birds. In particular I set out to answer the following questions:
a) The nature of imitations: which calls from which species?
b) Individual variation: how do mimicked repertoires vary between individuals?
c) Geographical variation: how do mimicked repertoires vary between areas?
d) Functional interpretation: although the study is essentially descriptive, the data can be used to test certain hypotheses about the function of vocal mimicry.

The starling (Sturnus vulgaris) is one of the world’s commonest species of bird, occurring in large numbers throughout Europe and Asia Minor and in North America, Australia and New Zealand where it has been introduced. Its song can be heard throughout much of the year but occurs mostly in Autumn and Spring and is usually described as a ‘lively, rambling melody with a peculiar creaky quality’ (Witherby, 1943). A song bout, which lasts 20-40 seconds, typically begins with several calls and ends with a series of high pitched screams. In the middle is the lively melody, frequently characterised by a rattling sound produced by the bill. At any time during the song bout, or between the bouts, imitations, usually of other birds but also non-avian sounds, can be heard. The imitations are generally very accurate, witnessed by the fact that most ornithologists can relate an anecdote about how they have been fooled by a starling.

Its reputation as a mimic and the availability of a study site with some colour-ringed birds of known breeding success made the starling an ideal bird for the study of vocal mimicry.

Methods

Singing male starlings were recorded on Fair Isle during 16-26th April, 1982 and 6-24th April, 1983. In 1982 150 minutes of recording were obtained from 11 individuals and in 1983 580 minutes from 24 individuals. For the analysis of general aspects of mimicry all of the recordings were used, although data for the two years were analysed separately. For analysis in which individual variation was an important factor, only recordings from individuals whose full mimicked repertoire was known were used and this was defined as those individuals with more than fifteen minutes of recording. A plot of recorded time against mimicked repertoire size appeared asymptotic for times greater than fifteen minutes and the correlation coefficient for this region of the graph was -0.023 (p > 0.1, 1983 data) (Fig. 1). These individuals were recorded for a mean time of 23.6 minutes (range 15.5-31.0 minutes).