Changes in redstart breeding territory.—Several recent studies of bird territory (Odum and Kuenzler, 1955; Stenger and Falls, 1959; Stefanski, 1967; Root, 1969), show the area a breeding pair uses may change drastically in size between successive stages of the breeding cycle. The "utilized area," the space a breeding pair actually occupies, as opposed to territory, which it defends (Stefanski, 1967), can be estimated by recording the location of individual birds. This paper uses data on the location of individual birds, gathered for a study of foraging behavior in the American Redstart (*Setophaga ruticilla*), to show how the size of the area this species uses changes during the breeding season.

In Renwick Bird Sanctuary, a 28-acre alluvial woods near the shore of Lake Cayuga in Ithaca, New York, I watched four redstart pairs from 9 May to 20 July 1965 on all but 11 days, and six pairs from 14 May to 18 July 1966 on all but 7 days, mostly from 1½ hours before to 3½ hours after sunrise. I spent over 400 hours in the field.

Observations of five color-banded adults confirmed my identification of individual redstarts by plumage and vocalization. To catch the birds for banding, I used the predator-decoy method (Root and Yarrow, 1967). I marked off the paths through the study area in 100-foot intervals with numbered stakes and recorded the distance of a bird from one or more stakes for each observation.

Because I made the original observations only on foraging birds, data are adequate for only two stages of the breeding cycle: the period of self-maintenance before the young hatch and the period of feeding nestlings between hatching and fledgling. For one pair I had enough observations on a third period, that of feeding fledglings. Although the data are restricted to foraging birds, I feel they represent the utilized area because redstarts interject foraging behavior into almost every other type of behavior pattern.

The estimated areas for the different pairs, based on unequal numbers of observations, were not comparable because the size increases with the number of observations up to a point (Odum and Kuenzler, 1955). Nor, as my data consisted of only a few observations for a pair per day, could I calculate comparable asymptotes by Odum and Kuenzler's (1955) method. I therefore made the area estimates comparable by selecting 20 observations at random for each pair in each of the two sampling periods, plotted the points on a map of the study area, and connected them to form polygons with no concave sides. Areas based on all the observations for a given pair in a given period were up to one-third larger than the polygons based on 20 observations. But as each polygon encompassed over 90 per cent of the total observations for its pair in the period it represented, this method apparently yields an adequate representation of the area where adults obtained the bulk of their food.

All seven of the successful pairs used a smaller area during the period of feeding nestlings than during the period of self-maintenance. Figure 1 shows this decrease for the five pairs with adequate observations in both periods to estimate the size as described above. The average size of these polygons decreased from 0.41 hectares (1.01 acres) during self-maintenance to 0.07 (0.18 acres) while feeding young. Pair II-1966, whose successful nest was only 18 inches above ground in a brushy opening, often foraged in tall trees some 50 feet away while feeding nestlings. The other pairs, all with nests in large trees, centered their activities in the immediate vicinity of the nest. Although the males made some longer forays, no differences were apparent in the sizes of the areas each sex used.

I was able to follow only pair IV-1965 well into the fledgling period (21 days), but the data from this pair and scattered observations on other pairs suggest that the

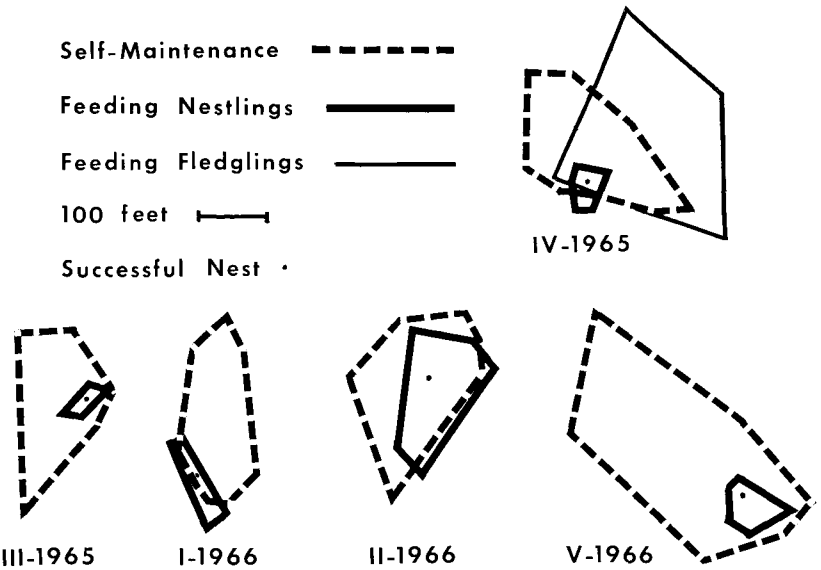

Figure 1. Comparative sizes of areas used by American Redstarts during three stages of the breeding cycle.

utilized area may expand again during this period (Figure 1). The fledglings of these pairs moved with the parent birds (and often appeared to be leading them) where the pairs had not been noted before, suggesting a breakdown in the previous territory boundaries.

Six other passerine species (Young, 1951; Odum and Kuenzler, 1955; Stefanski, 1967; Root, 1969) have been noted using a smaller area while feeding nestlings than earlier in the season, although the more closely related Ovenbird (*Seiurus aurocapillus*) showed the reverse (Stenger and Falls, 1959). Explanations for these changes in utilized area are as diverse as the functions ascribed to territorial behavior. The small area used while feeding nestlings could, as Willson (1966) suggests for the Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*), conserve energy during this demanding period by shortening flights to and from the nest. The large initial area may insure an adequate supply of nest sites (Ficken, 1962), each with ample food nearby so that efficient feeding is possible. Alternatively, the large initial area may reserve adequate food for periods when conditions are unfavorable or when fledglings are being fed (Root, 1969).

This paper is based on part of a M.S. thesis presented to Cornell University. I wish to thank Richard B. Root for his generous help thoughout the study, including aid in banding redstarts, suggesting pertinent literature, and critically reading the manuscript. I thank my husband, Michael Yarrow, for his constant encouragement.

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First report of Cattle Egret in Chile and range extensions in Peru.—At 12:30 on 17 January 1969 I discovered a Cattle Egret (*Bubulcus ibis*) on the rocks at the seashore in back of the Hotel Antofagasta, Antofagasta, Chile (23° 31′ S, 70° 20′ W). I immediately called Adrian J. Brown to photograph the bird as this was the first known occurrence in Chile (cf. A. W. Johnson, The birds of Chile, Buenos Aires, Platt Establecimientos Gráficos S. A., 1965–1967).

The bird was present all afternoon and evening in the company of other species. Among these was a pair of Snowy Egrets (*Egretta thula*). The Cattle Egret was about the same height as the Snowys but had a shorter, heavier, all orange-yellow bill. The legs and feet were black. The plumage was entirely white. The distinctive stocky, short-necked build was also obvious. The photograph, although not suitable for publication, was readily recognized as a Cattle Egret by Oliver L. Austin, Jr. and Eugene Eisenmann.

In 1964 Frazier (Auk, 81: 553, 1964) summarized the status of the Cattle Egret in Peru. At that time the species had not been recorded south of the Central Coast (department of Lima), nor south of Cuzco in the South Andean Plateau. R. A. Hughes (in litt.) has recently seen Cattle Egrets along the south coast of Peru, in the vicinity of Mollendo, department of Arequipa (17° 00′ S, 72° 01′ W). During 1968 Hughes saw single Cattle Egrets on seven occasions in February, March, September, November, and December. None was seen in previous years. Only a single individual was seen at any one time. Although the sightings were made in different localities 2–8 km from Mollendo, all of Hughes' records could refer to the same bird.

Eugene Eisenmann informs me that in 1969 he and Lieutenant R. S. Ridgely saw hundreds of Cattle Egrets in Peru both at Yarinacocha, an oxbow lake of the Ucayali River northwest of the town of Pucallpa, daily from 15–19 March, and at Puno on Lake Titicaca at an elevation of 3822 m, on 27–28 March. The abundance of these birds at both localities suggests that they had been present for several years, although their occurrence there seems not to have been reported in the literature. As I failed to find the species at Puno in September 1968, and R. A. Hughes (in litt.) did not find a single bird during a specific search for it along the shores of Lake Titicaca in May 1969, its presence in the Peruvian altiplano is apparently seasonal. Niethammer (Bonn Zool. Beitr., 7: 84, 1956) lists a specimen taken in Bolivia 3 December 1953.

I know of no records of Cattle Egrets from Argentina.—PETER W. POST, *575 West 183 Street, New York, New York 10033.*