

EARLY REFERENCES TO TERRITORY IN BIRD LIFE

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In recent years a number of ornithologists have discovered references to territory in bird life in the writings of early naturalists. All those so far published and again quoted in full by Nice (1941) will not be repeated here. But a number of other references, some of them remarkable, have been overlooked until now. These form the subject of the present paper. [Complete citations in the bibliography are based on sources available to the editors in the library of the University of California. In some instances it has not been possible to examine first editions; citations are based, then, on subsequent editions or on Wood's catalogue (1931).—F.A.P.]

One might perhaps have guessed that so plausible a hypothesis as the food-territory theory would be put forward first by Aristotle (*ca.* 300 B.C.). "The fact is that a pair of eagles demands an extensive space for its maintenance, and consequently cannot allow other birds to quarter themselves in close neighbourhood" (D'Arcy Wentworth Thompson's translation of "Historia Animalium," 1910:619a). Again, "In narrow circumscribed districts where the food would be insufficient for more birds than two, ravens are only found in isolated pairs; when their young are old enough to fly, the parent couple first eject them from the nest, and by and by chase them from the neighbourhood" (Thompson, 1910:618b). This belief concerning the Raven (*Corvus corax*) is widespread but has not, so far as I know, been checked one way or the other by an ornithologist.

A century after Aristotle, Zenodotus produced the proverb, "Unicum arbustum haud alit duos erithacos" (one bush does not shelter two Robins). The Latin version occurs in various other forms. This is the only other reference to territory by a classical writer of which I am aware.

Conrad Gesner published the third volume of his "Historiae Animalium," subtitled "De Avium Naturae," in 1555 (Gesner, 1617:661). He quoted Zenodotus' statement about the Robin (*Erithacus rubecula*), and himself wrote "Erithacus avis est solitaria." Essentially the same statements appear in a German edition of Gesner's work prepared by Horst (1669:80).

Olina's "Uccelliera" was published in 1622 and includes a clear reference to territory in the Nightingale (*Luscinia megarhyncha*), which is quoted in full by Nice (1941:442). Olina noted that the bird sang in its defended area. A second reference to territory in the same book seems to have escaped attention. Of the Robin, Olina wrote: "Ha per proprio dove stanza di non comportavi compagno, perseguitando con ogni sforzo, chi gli sturba il suo possesso." (It has a peculiarity that it cannot abide a companion in the place where it lives and will attack with all its strength any who dispute this claim.) It may be added in passing that Olina's "Uccelliera" is a delightful book, with attractive plates of many European birds and the various methods for catching them, while one picture shows a group of players on lute, viol, virginals, and various wind instruments "per stimolare il rusignolo al canto."

A seventeenth century English reference to territory in the semi-domestic Mute Swan (*Cygnus olor*) was found by Ticehurst (1934:308; see also Nice, 1941:442).

A French work appeared in 1774, based in part on a translation of Olina and written anonymously. It is of interest here for its elaboration of details concerning territory in the two species, Robin and Nightingale. A translation follows the original French. Of the Robin ("la rouge-Gorge"), it is stated that,

Pendant l'été elle est toujours seule dans les bois, dans les buissons & dans les lieux ensemencés: elle n'aime pas d'avoir d'autres oiseaux autour d'elle; lorsqu'elle a une fois pris possession d'une place, elle poursuit tous ceux de sa grosseur qui veulent y former leur séjour. Il est même passé en proverbes que deux rouges-Gorges ne peuvent pas se trouver sur un même buisson . . ." (anonymous author, 1774:148). Of the Nightingale ("le Rossignol"), it is stated that, "Le Rossignol ne vit point en société de même que les autres oiseaux: aussi ne place-t-il jamais son nid dans le voisinage d'un autre . . ." (1774:5). "Pour chanter, il se place communément dans un lieu le plus convenable à être entendu par sa femelle pendant qu'elle couve, & à pouvoir veiller en même tems [*sic*] sur son nid: mais il ne se tient cependant pas toujours dans la même place, il en adopte deux ou trois, qui lui paroissent les plus avantageuses. Il s'y rend constamment pour récréer sa femelle par son chant, & pour faire en même temps sentinelle (1774:6).

(In summer, it is always solitary in the woods, scrub and cultivated land: it does not like to have other birds near it; once it has taken possession of a place, it attacks all of its size which try to take up residence there. It has become a proverb that one cannot find two robins in the same bush. The nightingale does not live in company like other birds: and it never places its nest in the neighborhood of another. When singing, he usually selects the place where he can be heard best by the female while she broods, and where, at the same time, he can watch over the nest; but he does not remain to sing always in the same spot, but selects two or three which seem to him the most suitable. He places himself there to please the female by his song, and at the same time to act as a sentinel.)

Buffon's "Histoire Naturelle des Oiseaux," which was written partly by Montbeillard, appeared between 1771 and 1783. I quote from an English translation published in 1793. Buffon noted that the male Robin "chases all the birds of his own species, and drives them from his little settlement" (1793:186). This was perhaps taken from Olina, especially as the only other species in which Buffon mentions territory is the Nightingale. However, in regard to the latter species he goes considerably further than Olina, and provides the second statement in literature of the food-territory theory.

The Nightingales are also very solitary . . . The union between the sexes in the spring seems to increase their aversion to society: they select certain tracts, and oppose the encroachments of others on their territories. But this conduct is not occasioned by rivalry, as some have supposed; it is suggested by the solicitude for the maintenance of their young, and regulated by the extent of ground necessary to afford sufficient food. The distances between their nests are much smaller in the rich countries, than in others which reluctantly yield a penurious supply (1793:89).

This English translation of Buffon, though somewhat free, includes the main ideas; nevertheless, the original French version is added.

Il est aussi-très-solitaire . . . & lorsqu'au printemps le mâle & la femelle s'apparient pour nicher, cette union particulière semble fortifier encore leur aversion pour la société générale; car ils ne souffrent alors aucun de leurs pareils dans le terrain qu'ils se sont approprié; on croit que c'est afin d'avoir une chasse assez étendue pour subsister eux & leur famille; & ce que le prouve, c'est que la distance des nids est beaucoup moindre dans un pays où la nourriture abonde; cela prouve aussi que la jalousie n'entre pour rien dans leurs motifs, comme quelques-uns l'ont dit, car on fait que la jalousie ne trouve jamais les distances assez grandes, & que l'abondance des vivres ne diminue ni ses ombrages ni ses précautions (Buffon, 1778:98).

In 1772 (published in 1789, however), Gilbert White wrote to Daines Barrington that he attributed the "equal dispersion of birds in the spring over the face of the country" to a "spirit of jealousy" (1822:246); that is, his view was opposite to that of Buffon. His statement is quoted in full by Nice (1941:443), as is also one by Oliver Goldsmith at about the same period (1774:301), in which the word "territory" is used.

George Montagu's "Ornithological Dictionary," published in 1802, was a necessary corrective to the ornate and often inaccurate works of the late eighteenth century. His views on the manner of pair formation in song birds, and the important part played by song in this behavior, are remarkably up-to-date. "The males of song birds, and many others, do not in general search for the female, but, on the contrary, their business in the spring is to perch on some conspicuous spot, breathing out their full and amorous notes, which by instinct the female knows, and repairs to the spot to choose

her mate" (p. xxix). Montagu described the decline in song after a cock required a mate (p. xxx), and even carried out experiments with a wild maleRestart (*Phoenicurus phoenicurus*) to show that when its mate was removed, the bird returned to full song (p. xxxii). Montagu also discussed why each species had a different song and correctly concluded that "the peculiar notes of each is an unerring mark for each to discover its own species" (p. xxviii). Charles Darwin, who quoted Montagu's observations in detail in his essay on "Selection in Relation to Sex" (1871:49), could justifiably remark of their author, "Few more careful observers ever lived . . ." Even though repeated by Darwin, Montagu's correct interpretation of one of the most important functions of bird song did not acquire general recognition until rediscovered by Eliot Howard rather over a hundred years later. Both Montagu's and White's parts in the history of the concept of territory are discussed by Nethersole-Thompson (1934).

For other references to territory in the nineteenth century, culminating in Altum's work of 1868, the reader is referred to Nice (1941:443). But it may be worth adding that a number of English writers in this period mention territory in the Robin. Further, three separate workers showed that a Robin would attack a mounted specimen of its own kind, thus anticipating by nearly one hundred years the recent experiments on bird behavior with the help of stuffed specimens (Thompson, 1845:72-74; Morris, 1853:111-113, quoting two observers).

SUMMARY

Aristotle was the first to subscribe to the food-territory theory. Zenodotus and Gesner noted the solitary nature of the Robin. Olina mentioned that both Nightingale and Robin held territories. Buffon subscribed to the food-territory theory while, on the other hand, Gilbert White attributed territory to sexual jealousy. Montagu correctly described pair formation in song birds and the part played in it by song.

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