Systematic Notes on Palearctic Birds. No. 13
Zoothera mollissima and Zoothera dixoni

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These two thrushes breed in the Himalayas and in the mountainous region to the east as far as the borders of western Szechwan at altitudes of 8000 to 15,000 feet and extending from the forest to well above the tree line. They were long confused, for Z. dixoni was considered to be but a plumage stage of Z. mollissima until Delacour and Kinnear (1930) emphasized that they are distinct forms and probably separate species. Some doubt still persists, however, as to whether or not they are separate species (see Smythies, 1953), for their breeding ranges are not well known.

In an attempt to settle this question and to review the two forms, I prepared a map of their distribution (fig. 1), which shows that they appear to be sympatric virtually throughout their breeding ranges and hence are species. Opportunity is taken here also to compare their morphological characters in greater detail than has been done heretofore in the literature and to discuss the geographical variation.

The material examined consists of 44 specimens of Z. mollissima and 28 of Z. dixoni, adults as well as first year birds and immatures. A number of theses specimens, mostly from the taxonomically important eastern end of the range, were kindly lent to me by the authorities of the Academy of Natural Sciences of Philadelphia, the Museum of Comparative Zoology, and the United States National Museum, to whom I wish to express my gratitude.
SPECIES CHARACTERS

Some of the morphological characters by which these two sibling species can be differentiated have already been discussed in the literature. The characters usually mentioned are that in adult *Z. dixoni*, but not in adult *Z. mollissima*, the median and greater upper wing coverts are broadly tipped with buff, forming two “wing bars,” and that *dixoni* has a shorter and weaker bill but a longer tail.

The two species are olive-brown above and are buffy and whitish below and heavily barred. They are very similar, and the most conspicuous differentiating character is the presence or absence of the wing bars. In specimens in fresh plumage, which are not foxed or are but little foxed, *dixoni* is slightly greener and cooler in shade above, less rich and “golden,” than *mollissima*. It is whiter, less buffy, on the throat and breast and shows a few very small and very narrow pale shaft streaks on the fore crown which are almost always lacking in *mollissima* in fresh plumage but present in this last form when in worn plumage. The under parts are more heavily barred in *mollissima*, particularly on the abdomen, while the under tail coverts are very broadly edged with olive-brown. In *dixoni* the buffy edges are more reduced and the longest coverts are almost wholly white, and the black tips of the feathers which form the bars on the breast and abdomen are usually narrower and less crescentic in shape.

<table>
<thead>
<tr>
<th></th>
<th>Z. mollissima</th>
<th>Z. dixoni</th>
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<tbody>
<tr>
<td>Wing length</td>
<td>131–161 (143)</td>
<td>131–146 (140)</td>
</tr>
<tr>
<td>N specimens</td>
<td>37</td>
<td>26</td>
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<tr>
<td>Bill length</td>
<td>26–31 (29)</td>
<td>26–29 (27)</td>
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<tr>
<td>N specimens</td>
<td>35</td>
<td>25</td>
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<tr>
<td>Tail length</td>
<td>76–104 (88)</td>
<td>94–110 (102)</td>
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<tr>
<td>N specimens</td>
<td>35</td>
<td>24</td>
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<tr>
<td>Tail/wing</td>
<td>53–70 (61)</td>
<td>66–78 (73)</td>
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<tr>
<td>N specimens</td>
<td>35</td>
<td>24</td>
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* Over-all measurements, not separated as to subspecies.

In *dixoni* the bill has been said to be distinctly smaller and lighter than in *mollissima*. No constant difference in the coloration of the bill is apparent in my specimens. The bill is usually a little weaker and averages
shorter in *dixoni* (table 1) but in quite a few specimens is identical in shape and length in both species. In *dixoni* the tail averages very distinctly longer than in *mollissima*, and when compared in length to the wing is proportionately longer. This difference is more clear-cut than the differences in the dimensions of the bill, but the populations (*griseiceps*) from the eastern end of the range of *Z. mollissima* have long tails (table 2), and the tail measurements in these populations show a fair amount of overlap with the tail measurements of *Z. dixoni*.

**DISTRIBUTION**

The distribution of the two species on the breeding range as well as on the winter grounds is shown in figure 1. *Zoothera mollissima* apparently ranges farther west than *Z. dixoni* for it breeds in the Khagan Valley at the northern tip of North West Frontier Province. The westernmost record of *Z. dixoni* that I am aware of is from Rampur-Bashahr in northern Punjab. Both species then range eastward; *dixoni* is the only one which appears so far to breed in Burma; but both seem to breed in the Likiang Range in northern Yunnan and both have been collected at Mt. Omei on the western border of Szechwan. This last record is apparently the easternmost.

The migratory movements are not well known. The movements of the western populations of both species may be merely altitudinal, but (see below) the populations from the eastern end of the range of *Z. mollissima* winter in northern Tonkin and have been described as a separate form. They also occur in northern Yunnan after or before the breeding season, and specimens which do not appear to be separable, or differ but very slightly, from nominate *mollissima* have been examined by me from northern Tonkin, Burma, and Manipur. I have examined *Z. dixoni* from northern Tonkin and northern Burma, and it is reported from northern
### KEY TO LOCALITIES IN FIGURE 1

1. Darkali, Rampur-Bashahr, November 22–27
2. Mandali, Rampur-Bashahr, December 17
3. Kurumtali, Garhwal, May 10–11
4. Sumdu-Ralam Pass, northern Kumaon, June 17
5. Thankot, Nepal, April 6
6. Nepal, no date, Kinnear (1934)
6a. Mangalbaré, Nepal, February 2
7. Langdang Bato (not located, eastern ?), Nepal, August 29, Kinnear *in Ludlow (1944)
8. Linkoo, Sikkim, not located, August 21
9. Sikkim, no date or locality
10. Darjeeling, January
11. Gangtok, Sikkim, August
12. Karponang, Sikkim, May 6, Ludlow (1937)
13. Changu, Sikkim, May 11, Ludlow (1937)
14. Tsamba (not located), northern Bhutan, July 4, Kinnear *in Ludlow (1944)
15. Rudo La, Bhutan, July 19, Ludlow (1937)
16. Shingbe, Bhutan, August 3–7, Ludlow (1944)
17. Me La, Bhutan, August 6, Kinnear *in Ludlow (1944)
18. Cho La, southeastern Tibet, August 20, Ludlow (1937)
19. Margo [? Mago, southeastern Tibet], August 2–5, Kinnear *in Ludlow (1944)
20. Chungkar, Phongmi, Changpu, and Gyipu, eastern Bhutan, February 23 to March 24, Ludlow (1944)
21. Sur La, southwestern Sikang, August 17, Ludlow (1944)
22. Bimbi La, southwestern Sikang, June 13, Ludlow (1944)
23. Molo, southwestern Sikang, Ludlow (1944), (April 18 for *Z. dixoni* and October 3 for *Z. mollissima*)
24. Yigrong, southwestern Sikang, “breeding,” Ludlow (1951)
25. Lisum, southwestern Sikang, May 28, Ludlow (1951)
26. Nyima La, southwestern Sikang, July 4, Ludlow (1944)
27. Tripe, southwestern Sikang, September 10, Ludlow (1951)
28. Adung Valley, northernmost Burma, August 12, Kinnear (1934)
29. Mekong-Salwin divide, latitude 28° 20' N., northwestern Yunnan, September 21
30. Malashi south of Litang, eastern Sikang, October 3
31. Mupin (Paohing), eastern Sikang, September 30
32. Mt. Omei, southwestern Szechwan, November–December
33. Raronki Forest, north of Muli, southeastern Sikang, August (immature, probably bred locally)
34. Kutien, northwestern Yunnan, October
35. Ndamucho, northwestern Yunnan, October
36. Mt. Gyi na Loko, northwestern Yunnan, October or November
37. Likiang, northwestern Yunnan, May 8 as well as February and October to December for *Z. mollissima*, Vaurie, and “Likiang Range,” August for *Z. dixoni*, Kinnear (1934)
38. Kamaing-Hukawng Valley road, northern Burma, February 8, Stanford (1938)
39. Htawgaw, Pyepat, and other localities, northeastern Burma, November 26 to April 2 for Z. dixoni and February 5 for Z. mollissima at Hpawte–Chimili road
40. Lauhkaung, northeastern Burma, December 20
41. Hpare Pass, northeastern Burma, March 24
42. Kambaiti, northeastern Burma, April 29, Stanford (1938)
43. Manipur, Z. mollissima, Vaurie, no date; Z. dixoni, no date, Kinnear (1934)
44. Chanting–Yangpi road, northern Yunnan, August, Kinnear (1934)
45. Bhamo, northern Burma, April 4–7
46. Southern Shan States, March, Kinnear (1934)
47. Karenni, June, Kinnear (1934)
48. Doi Pha Hom Pok, northern Siam, Deignan (1945)
49. Chapa and Fan si pan, northern Tonkin, November 24 to December 20

Siam and from Manipur. Because Z. dixoni shows no evidence of geographical variation, the breeding grounds of these specimens are uncertain, but they were probably visitors from the eastern end of the range.

In figure 1 I have assumed arbitrarily that all birds collected from May 1 to August 30 were on the breeding grounds. This can be questioned. For instance, the individual reported from the Chanting–Yangpi road in Yunnan (number 44 on the map) may not have been on its breeding grounds, although it is reported by Kinnear (1934) as having been collected in August. However, the position of this locality as indicated on the map is only approximate, for I did not succeed in finding it. I am very strongly inclined to doubt that the specimen of dixoni reported by Kinnear (1934) as having been collected in Karenni in June was a breeding bird.

The records shown in figure 1 are those of the specimens examined by me as well as those reported by several authors who distinguished, or who are aware of the distinction, between the two species.

**GEOGRAPHICAL VARIATION**

The material of Z. dixoni examined shows no evidence of geographical variation.

The geographical variation in Z. mollissima is not very well marked, but the material examined shows that birds from the western end of the range are somewhat paler above and that specimens from the eastern end of the range average largest and have, in most specimens, a darker, grayer crown which contrasts with the color of the mantle, whereas in the other populations these parts are concolorous.

2, p. 164, type locality, Simla, northern Punjab); nominate *mollissima*
Blyth, 1842, Jour. Asiat. Soc. Bengal, vol. 11, p. 188, type locality, Dar-
jeeling); and *griseiceps* Delacour (1930, Ibis, p. 581, type locality, Chapa,
northern Tonkin). The breeding range of *whiteheadi* seems to extend as
far east as Kumaon to perhaps Nepal. I have examined only one specimen
from Nepal, taken in Nepal Valley, and it is indeterminate. The breeding
range of *griseiceps* seems to extend, as Mayr (1941) suggests, from the
Liqiang Range in northwestern Yunnan to Szechwan.

I consider that *simlaensis* is best regarded as a synonym of *whiteheadi*
until adequate material in good plumage can be compared from northern
Punjab and North West Frontier Province. As the original description
of *whiteheadi*, repeated in 1924 by Baker, seems to show, *whiteheadi* was
based on a comparison of material from North West Frontier Province
and from the range of nominate *mollissima* which was not in comparative
plumage. The only specimens available to Baker when he described *white-
headi* were ones collected by Whitehead at the height of the breeding
season, and one of these specimens now before me collected on July 12 is
in such worn plumage that it is totally unfit for color comparison. When
Baker described *simlaensis* in 1924 he failed to state whether or not he had
specimens in good plumage from North West Frontier Province, and he
later (1933) stated that spring birds which are apparently indistinguish-
able from *whiteheadi* were collected in Garhwal although this region is
well to the east of Simla. Specimens in worn plumage from North West
Frontier Province, northern Punjab, and Garhwal examined by me are
identical but too badly worn for valid comparison. Judging by the geo-
graphical variation prevailing throughout the range of the species, I doubt
that two forms sufficiently well differentiated to warrant separation occur
in the western Himalayas. My evaluation of the color characters of
*whiteheadi* is based on specimens in fresh or little worn plumage col-
lected in November in northern Punjab.

I have examined nine of the 10 specimens of nominate *mollissima* col-
lected by Delacour in November and December, 1929, in northern Tonkin.
These specimens which are winter visitors from some unknown region
are, as noted by Delacour in the description of *griseiceps*, somewhat darker
than specimens from India, but the difference is very slight. The speci-
mens examined by me from northern Tonkin do not include specimens of
*griseiceps*. The specimens which show the characters of this race were ex-
amined from northwestern Yunnan, from the Likiang Range where they
had been collected in May, February, and from October to December,
from Ndamucho south of Kutien in October, and from Sikang and
Szechwan in September and November. Two specimens collected on
October 22 and December 12 in the Likiang Range are not *griseiceps*, however, but nominate *mollissima*.

The individual wing length of the specimens of *griseiceps* are: males, 155, 161; females, 139, 145, 153, 154, 154; unsexed, 141. It can be seen (table 2) that there is a certain amount of overlap between the measurements of these birds and those of specimens from India, and in about a third of the specimens the color of the crown is only faintly grayish and scarcely darker than in nominate *mollissima*.

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