

## On the type specimens of *Locustella ochotensis* (Middendorff, 1853) in the collection of the Zoological Institute, St.Petersburg (Aves: Sylviidae)

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Individual variation of the size and plumage colour in three type specimens of Middendorff's Grasshopper Warbler, *Locustella ochotensis* is examined, the dates and localities of collecting are defined more exactly and the lectotype is designated. Examination of all preserved specimens, collected by Middendorff, and of the original description show that he misidentified adult birds of *L. ochotensis* as *L. certhiola*. This is important for understanding of the diagnosis of *L. ochotensis* based on characters of young birds in juvenile plumage.

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During the trip to Eastern Siberia A. Th. Middendorff in July 1844, and his assistant in the early August 1845 have collected eight warblers of the genus *Locustella*, two of which Middendorff identified as Pallas's Grasshopper Warbler, *Locustella certhiola* (Pallas, 1811). From the remaining six specimens, he described a new species *Sylvia (Locustella) ochotensis* Midd. (now Middendorff's Grasshopper Warbler, *Locustella ochotensis*) (Middendorff, 1853, p. 184-186). In doing so, Middendorff had not got the necessary comparative collection materials and identified *L. certhiola* using descriptions and colour plates by Gould (1837, Tab. 104 and 105) and Temminck & Schlegel (1844-1850, p. 51, Tab. 19). Gould's (Tab. 105) figures of the Pallas's type specimen show a bird in fresh spring plumage with wide light fringes and comparatively pale, dark brown (not blackish) lanceolate shaft-spots on feathers of crown, mantle and rump. Usually, *L. c. certhiola* have in summer plumage much more variegated and contrasting coloured upper parts: rufous, with intensely dark brown, blackish or nearly black shaft-spots with sharply delineated edges.

Now, only three specimens of the type series of *L. ochotensis* are kept in the collection of Zoological Institute, Russian Academy of Sciences (ZISP); other three birds from this series and one specimen determined by Middendorff as *L. certhiola* are missing. It is likely that they were exchanged for some other specimens soon after their depositing in Zoological Museum; Pleske (1891) already did not mention them. The collecting date and locality of these birds should be

made more precise, as there are some differences in the published data (Middendorff, 1853, 1860) and those on the secondary labels of specimens (original labels of the preserved specimens are missing).

For comparison, 45 specimens of *L. c. certhiola* and 131 specimens of *L. ochotensis* from ZISP collection were used.

### Birds determined by Middendorff as *Locustella certhiola* (Pallas)

In a section on birds, Middendorff (1853, p. 185) wrote that he collected only two males of this species in the late June and early July (Old Style) at the mouth of Uda River running into the Sea of Okhotsk. According to the diary (Middendorff, 1860, p. 23), the expedition was staying at the mouth of Uda River from 29.VI till 8.VII [11-20.VII] 1844, and both birds should have been collected at that time. The rather detailed description of them (Middendorff, 1853, p. 184-185) evidences that they were *L. ochotensis* rather than typical *L. c. certhiola* breeding in that part of the species area. Both males were adult birds, as evidenced by the lack of yellow coloration on under parts, white throat and upper belly, intense rufous colour on the sides of breast and flanks. Middendorff (1853, p. 184) has mentioned their much less spotted upper parts, as compared with the figure of Gould (1837, Vol. 2, tab. 105). In addition, Middendorff's description of coloration of the central pair of rectrices also indicates that the birds belong to *L. ochotensis* rather than to *L. certhiola*.

This conclusion is completely confirmed also by the examination of the skin of the preserved male. This specimen has two labels: an old label of the Zoological Museum (with both edges rounded and old coll. no. 11750) and a standard new label (ZISP, no. 100398). On the face of the first label, there is an inscription in black Indian ink: "*Locustella ochotensis*, Midd. ♂ juv. [erroneously]. 14[26].VII.[18]44. Ost. fl. Uda. Middendorff". On that day, the expedition worked at the southern coast of Udskaya Guba in the mouth of Dzhuksandran River (54°35'N, 136°14'E), about 60 km east of the mouth of Uda River.

Measurements (here and below, in mm): wing 67.6, tail 54.5, tarsus 23.4, bill from skull 15.5, bill from feathers 12.2, bill from nares 9.4, bill depth (at the front edge of the nares) 3.0, bill width 2.7; primaries (numbered from the outermost): P1 – 31.7, P2 – 65.5, P3 – 67.6, P4 – 65.3, P5 – 62.1, P10 – 50.6; 1st secondaries (S1) – 49.2; 1st greater coverts (GC1) – 30.1. Thus, P1 > GC1 by 1.6 mm and the length of P2 is nearly the same as of P4; wing top (P3 > S1) – 18.4. The notch on the outer vane is present on the top of P3 only. The tail is rounded: R1 > R5 by 8.2 mm and > R6 by 13.7 mm. With some small differences, these data correspond to measurements given by Middendorff (1853, p. 184-185) for birds determined by him as *L. certhiola*. But this male sharply differs in the plumage coloration, especially of upper parts and rectrices, from adult *L. c. certhiola* from middle Amur valley. From birds collected in southern part of Sakhalin Island and South Kurile Islands inhabited by typical *L. ochotensis*, it differs in somewhat darker and more distinctly delineated shaft-spots on the crown and mantle, which may be explained by very worn plumage of the bird before the moult. Judging from the combination of all mentioned characters, this male certainly belongs to *L. ochotensis*. Thus, it becomes clear that Middendorff (1853, p. 184-185) has erroneously identified two adult males of *L. ochotensis* as *L. certhiola*.

### Syntypes of *Locustella ochotensis* Middendorff, 1853

The original description of this species (Middendorff, 1853, p. 185-186) was based on the characters of plumage coloration and dimensions of six young birds in juvenile plumage, which were erroneously considered by Middendorff to be adult specimens ("erwachsene Exemplare"). They all were collected "... um den 24sten Juli [Old Style] herum bei Udskoj-Ostrog [= Udskoje]...". Middendorff did not mention the year of their collecting, old Zoological Museum labels give 1845. An important little known fact

should be noted here. The stay of Middendorff's expedition in Udskoy Ostrog was rather short, from 9 to 28.VI.[21.VI.-10.VII.] 1844. The diaries of the expedition evidence that Middendorff himself did not collect animals later than autumn 1844 and returned to St. Petersburg on 5.III.[17.III.] 1845. But one member of the expedition, assistant M. Furman, was left by him in Udskoy Ostrog for conducting of long-term meteorological observations on the coast of the Sea of Okhotsk more than for a year (Middendorff, 1860, p. 14). In addition to meteorological observations, Furman collected several hundreds of bird skins. It is evidenced by their original labels which are different from labels of the 1843-1844 expedition: they are written in different handwriting and different ink, with only a single locality "Udskoe" and dates from January to September 1845. The name of collector is not indicated on all original labels of 1843-1845; the more recent Zoological Museum labels bear only Middendorff's name. In St. Petersburg, two specimens were mounted for the exposition of Zoological Museum. Now, these syntypes with the third one (a skin) are kept in ZISP collection. The preserved syntypes are described below.

(1) The former mounted bird with half-open wings (this bird is figured in Middendorff, 1853. Tab. XVI, figs 7, 8) has two labels. On the old orange-red Zoological Museum label (this colour designated belonging of the specimen to the fauna of Russia), there is an inscription in black Indian ink: "[Old Museum] no. 3837. *Locustella ochotensis* Midd., juv. 24.VII.[5.VIII]. [18]45. Udskoi Ostrog. Middendorff". The standard ZISP label with new no. 100397 has a somewhat different name of the locality: "Coast of the Sea of Okhotsk. Udskoje."

Measurements: wing 64.2, tail 51.1, tarsus 22.2, the apex of bill is broken, bill depth (at the front edge of the nares) 3.0, bill width 2.7; primaries: P1 – 28.6, P2 – 60.7, P3 – 64.1, P4 – 62.3, P5 – 59.3, P10 – 47.1; S1 – 45.1; GC1 – 28.6. Thus, P1 and GC1 are of equal length and P2 < P4 by 1.6 mm; wing top (P3 > S1) – 19.0. Only P3 has a notch on the top of the outer vane. R1 > R5 by 8.7 mm and > R6 by 15.7 mm.

This specimen does not differ in the coloration of upper parts, including brown shaft-spots with diffuse margins on crown, mantle, rump and upper tail-coverts, and also of rectrices from seven young birds collected in the southern part of the Sakhalin Island and in Kunashir Island. Its belonging to *L. ochotensis* is beyond question.

(2) Another former mounted bird bears identical two, old red and new standard, labels (old Zool. Mus. no. 3836, ZISP no. 100396) with the same data.

Measurements: wing 64.7, tail 44.5 (rectrices have not completed their growth), tarsus 22.2, bill from skull 14.4, bill from feathers 10.1, bill from nares 7.9, bill depth (at the front edge of the nares) 2.9, bill width 2.3; primaries: P1 – 30.7, P2 – 61.7, P3 – 64.7, P4 – 63.6, P5 – 60.5, P10 – 48.7; S 1 – 46.1; GC1 – 29.4. Thus, P1 > GC1 by 1.3 mm and P2 < P4 by 1.9 mm; wing top (P3 > S1) – 18.6. The distinct notch on the outer vane is present on the top of P3 only. Growth of R1-3 is not finished.

Shaft-spots on upper parts are distinctly darker than in the previous specimen, but they are dark brown, not blackish or black with sharp margins as in typical young birds of *L. c. certhiola*. Rectrices are as in *L. ochotensis* without black or blackish pattern. Phenotypically, this specimen may be considered as intermediate between *L. certhiola* and *L. ochotensis*, with predominance of coloration characters of *L. ochotensis*.

(3). This skin has two labels, same as in adult male no. 100398 (see above). The old Zoological Museum label bears an inscription: “No. 11751. *Locustella ochotensis* Midd. 25.VII [6.VIII.]. [18]45. Udskoi Ostrog. Middendorff.” The standard ZISP label is as in two preceding birds, but with no. 100395.

Measurements: wing 62.4, tail 54.5, tarsus 22.3, bill from skull 14.8, bill from feathers (forehead feathers are damaged), bill from nares 8.1, bill depth (at the front edge of the nares) 3.0, bill width 2.8; primaries: P1 – 32.1, P2 – 60.7, P3 – 62.4, P4 – 60.1, P5 – 57.7, P10 – 47.3; S1 – 45.2; GC1 – 28.7. Thus, P1 > GC1 by 3.4 mm, P2 > P4 by 0.6 mm only; wing top (P3 > S1) – 17.2. Only P3 has a notch on the top of the outer vane. R1 > R5 by 8.4 mm and > R6 by 14.7 mm.

The coloration of upper parts in this specimen is intermediate between the two previous birds: its shaft-spots are somewhat darker than in specimen no. 100397, but lighter than in specimen no. 100396. This individual may be considered as presenting a combination of characters of both species, but with considerable predominance of coloration characters of *L. ochotensis*.

Thus, from three preserved syntypes of *L. ochotensis*, one specimen (No. 100397) is a phenotypically pure *L. ochotensis*; in plumage coloration of two other birds, characters evidencing possible influence of hybridization with *L. certhiola* are present, but in combination of all characters these two specimens are phenotypically closer to *L. ochotensis*.

## Discussion

Though characters related to age variation (somewhat smaller size, bright yellow feathers on under parts and somewhat more distinct dark

brown spots on upper parts) predominate in the original diagnosis of *L. ochotensis*, Middendorff (1853, p. 185-186) has given the main difference of the new species from *L. certhiola*: “Ferner ist diese Art auf dem Rücken deutlicher gefleckt [as compared with adult males of *L. ochotensis*, identified by Middendorff as *L. certhiola*], obgleich immer noch weniger als die Abbildung der *Loc. certhiola* bei Gould” (stressed by me). The same is evidenced by the sentence in the beginning of the description: “Diese Art ist der vorigen [*L. certhiola*, but in reality, adult males of *L. ochotensis*] in der Färbung der Oberseite ihres Körpers vollkommen ähnlich...”.

The validity of the name *L. ochotensis* was not doubted and was accepted during 140 years. Meise (1938) found specimens intermediate in coloration and size between *L. certhiola* and *L. ochotensis* among four birds collected by G. Heinrich in winter on south-eastern Sulawesi (= Celebes) Island. He suggested that their breeding places are situated on the border between areas of these two forms, somewhere on the coast of the Sea of Okhotsk. On this reason, Meise considered *L. ochotensis* only as a subspecies of *L. certhiola*. Vaurie (1959) has also seen a similar intermediate specimen from Luang Island (Maluku, Indonesia) and included *L. ochotensis* among subspecies of *L. certhiola*, but with a question mark: “*Locustella (certhiola?) ochotensis*”. He noted that “...some authors disagree with Meise and consider that *ochotensis* and relative *pleskei* constitute separate species”.

More recently, Nechaev (1979) has summarized the extensive original and collection material in a special article on *L. ochotensis*; he came to a conclusion about existence of hybridization between *L. certhiola* and *L. ochotensis* in a narrow zone of contact between these related species. The zone of contact extends along the coast of the Sea of Okhotsk from Tauyskaya Guba in the north to North Sakhalin in the south and includes off-shore islands. Nechaev did not question that *L. ochotensis* is a separate species, but suggested that Middendorff might have described *L. ochotensis* from a specimen of hybrid origin, and then “...this species would be more properly to call *L. japonica* described by J. Cassin in 1858”.

This suggestion was more definitely substantiated by Kalyakin et al. (1993), who concluded that “...A.Th. Middendorff, when describing in 1853 *L. ochotensis* as a new species, in fact shows a young *certhiola* with somewhat less striking than usually characters of Pallas’s Grasshopper Warbler. Judging from the illustration, description and based on acquaintance with the specimens collected by him in environs of Udskoi Ostrog (ZIN) [= ZISP], we concluded that the

author meant a young *certhiola*." And further (p. 181): "On this reason, one is forced to accept that using of the name *L. ochotensis* is erroneous... The Middendorff's Grasshopper Warbler should be called *Locustella japonica* (Cassin 1858), Proc. Ac. Sc. P. 193".

This conclusion contradicts not only to syn-types of *L. ochotensis* (see above), but also to initial data of the authors themselves, who identified the bird ZISP no. 100397 as *L. ochotensis* (Kalyakin et al., 1993, p. 173). All this gives grounds for designation of the specimen no. 100397 having no traces of hybridization with *L. certhiola* as the lectotype of *Locustella ochotensis* Middendorff, 1853. The designation corresponds also to the Recommendation 74B of ICZN (1999). The specimens ZISP 100395 and 100396 should be considered paralectotypes; the necessary data on all type specimens are given above.

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