TAXONOMY OF PALAEARCTIC GOSHAWKS

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THE Goshawk (*Accipiter gentilis*) is distributed in the Palaearctic region from western Europe through Siberia to the Japanese Islands and the most northeasterly portions of Asia. Farther to the east it extends to North America. Occupying a vast area of distribution the Goshawk forms a series of subspecies of which the following have been thus far described for Europe: the nominate form *A. g. gentilis,* proper to the Scandinavian Peninsula, *A. g. gallinarum,* described by Brehm for western Europe, *A. g. marginatus* Piller and Mitterpacher and its synonym *A. g. balcanicus* Lönnberg known from the Balkans. For middle Russia, P. P. Sushkin described *A. g. moscoviae,* while the northeast of Europe and the west of Siberia are inhabited by *A. g. buteoides* Menzbier with its synonym *A. g. poecilopterus* Lönnberg. Farther east to the Chukotsk Peninsula and Kamchatka inclusive, there extends *A. g. albidus* Menzbier, a name which has for synonyms *A. candidissimus* Dybowski and *A. caesius* Buturlin.

A. g. arrigonii Kleinschmidt is peculiar to southern Sardinia, *A. g. caucasicus* Kleinschmidt dwells in the Caucasus, *A. g. schwedowi* Menzbier, *A. g. khamensis* Bianchi and, finally *A. g. fujiyamae* Swann and Hartert are distributed over Asia, extending eastward from the southerly part of middle Siberia.

The above-named forms are far from being all universally accepted and the accumulation of material and the study of individual variability have shown that the distinctions between races are certainly not so clear as has been conceived. For verifying the status of middle-Russian Goshawks I was able, besides examining the collections in the Zoological Museum of Moscow University, to use material from Ukraine (Museum of the Academy of Sciences of the Uk.SSR and that of Kiev University) as well as from the Kirov, Stockholm and Warsaw Museums. Thus I studied about four hundred specimens, which considerably exceeds the number of Goshawks investigated previously by P. P. Sushkin, particularly with respect to eastern-European individuals. This rich material, comprising specimens from Switzerland to the Amur and Kamchatka inclusive, allows me to raise once more the question of individual and geographical variability of the Goshawk. Sushkin indicated that the geographical races of Eurasian Goshawks formed two natural groups: first, the northern group composed of larger races, such as *gentilis, moscoviae,*

buteoides and *albidus;* second, the southern group including forms of smaller size, to which Sushkin referred *arrigonii, caucasicus, schwedowi, khamensis* and *fujiyamae.* The forms *gallinarum* and *marginatus* were considered by Sushkin as intermediates. The northern subspecies are not distinguishable in size, except *albidus* which is somewhat larger than the others. The southern forms are smaller. Consequently, the differences are reduced to color characters, the western and southern Goshawks being dark, the eastern and northern forms lighter.

The material examined by me serves to confirm once more the fact that Goshawks are subject to considerable individual and age variability, the latter, as is to be noted, being to a certain degree parallel with the geographical variability. Thus, young birds grow lighter with age and by the end of winter the ground color of the under side fades nearly to white. What in *gentilis* is acquired with age, is found in eastern forms, *buteoides* and particularly *albidus,* in the early stages. As to Swedish birds, as they become old they lose more and more the original brownish tints of their plumage, acquiring a bluish hue on the back, while the cross-bars of the under surface become narrower. A comparison of Swedish Goshawks with *buteoides* shows the latter to be more bluish above and to have narrower bars below. A general lightening of the plumage and the absence of a brownish hue become even more noticeable when comparison is made with *A. g. albidus.* The course of age modifications in *A. g. buteoides* is in general the same as in *A. g. gentilis,* yet the former begins to change its plumage, as it were, at a later stage than does *A. g. gentilis* of the same age. This circumstance connected with a wide range of individual variability renders the study of geographical variation in Goshawks extremely difficult. All color characters in European forms of Goshawks, especially in *gentilis* and *buteoides,* are seen to overlap to a considerable extent.

The Goshawk certainly performs distant migrations. In autumn, birds with pronounced characters of *A. g. buteoides* may be encountered in Poland, Hungary and in the south of Ukraine (Ascania Nova). Therefore only material collected from May till August can be utilized for subspecific analysis. A certain admixture of foreign material is always possible among earlier and later collections, while in winter one form may even be completely replaced by another. The same occurs in Siberia and Turkestan. Thus, the specimens of Goshawks in our Museum secured during the non-breeding period in the Altai all belong to *A. g. buteoides* and not to *A. g. schwedowi.* On

the strength of this fact only extreme variants and those approaching them can be identified in the collections made in the non-breeding time, all the others being, practically speaking, indefinable.

In my investigations I have utilized only summer material, and have considered the remainder only after the breeding forms had been studied, which finally proved to be not so very numerous. Most of the Goshawks that I examined pertain to the winter and migration period. By making a strict distinction between breeding and non-breeding specimens I was able to notice an interesting phenomenon which will be discussed below. Thus it appears that young light-colored Goshawks with well-marked characters of *buteoides* occur in our parts, but only in winter or, more exactly, in the non-breeding season. Nothing is known of their summer whereabouts. All the specimens of *A. g. buteoides* under my examination, obtained in the breeding season, were much nearer to *A. g. gentilis* in their appearance than is commonly believed.

Since the work of Sushkin contains very detailed descriptions of all the subspecies of Goshawks studied by him, I find it unnecessary to recapitulate them, but begin directly, therefore, with a comparison of forms, adding only the most indispensable corrections and supplements.

The comparison of adult Goshawks from Sweden, Poland and westerly parts of the Ukrainian Socialist Soviet Republic shows them to be practically indistinguishable.

According to the existing descriptions, *A. g. gallinarum,* to which specimens from Poland are also referable, differs from the nominate race as a somewhat more brownish, but not a darker form. However, variations in this character in both the former and the latter race are very considerable, for some Swedish specimens are of a much more brownish hue than birds of corresponding age from Poland or the westerly portions of Ukraine. The bands of the tail may be strongly reduced, but in some cases the latter is rather bright, its bands having even a faint white edging. Observations on tame Goshawks have shown the reduction of tailbands to be an age modification as well (V. Vietinghoff, 1937). It seems that, perhaps, in some Swedish Goshawks the superciliary stripe is more conspicuous. There are, however, a few specimens from the vicinity of Kiev (a town which according to Sushkin is included in the area of *A. g. gallinarum*), whose superciliary stripes are even more pronounced than in Swedish birds.

As to the under surface, in separate individuals from Sweden its

general color is somewhat purer. Yet there are some Goshawks of a more brownish tint than those from Poland, despite their being in some cases older than the latter. Thus, if in some specimens of Swedish Goshawks the general color of the under side is purer and lighter, while in the others it is more brownish than in birds of central Europe, then, consequently, the distinction, to which a diagnostic significance has been formerly attached, wholly fits into the range of individual variability.

The most detailed comparison of Swedish, Polish and Ukrainian Goshawks was made by me with adult females. Although there were fewer males, all the above comments relate likewise to the latter. Polish specimens are not more brownish than the Swedish birds and, it may be added, Moscow Goshawks are neither lighter nor purer in hue than Swedish. All together they form a general mass indistinguishable in the geographical respect, and showing a very wide range of individual variability. Neither are there any differences in dimensions. Female Goshawks from middle Russia cannot be said to have a lighter coloration than those from Sweden. Rather the contrary is to be noticed. Separate individuals from the Moscow district show less-pure tints than Swedish birds. The tail is either dull or rather bright, and the forehead whitish or blackish. There is also no difference between Swedish and Russian specimens in regard to the development of the superciliary stripe. At first I made the most minute comparison of Swedish females with four adult females from near Moscow, then I joined thereto other females from the area of *A. g. moscoviae* distribution except the most peripheral birds, finding after all no essential distinctions between *A. g. moscoviae* and the nominate form. I have already said some words about males. As to females from the borders of the supposed area of *A. g. moscoviae* distribution, they will be treated somewhat later, when passing to the analysis of *A. g. buteoides* characters.

The comparison of young birds from Sweden and middle Russia shows that the Moscow Goshawks do not differ in mass by the intensity of their coloration from Swedish forms. The range of variability in Moscow birds is so great that it entirely covers all kinds of coloration of young Swedish Goshawks. There occur specimens which are darker than Swedish birds and some of lighter color. It may be recalled that according to P. P. Sushkin's diagnosis *A. g. moscoviae* in juvenal plumage differs from *A. g. gentilis* in being paler on the upper side and more reddish on the mantle, but I failed to notice that detail. Most of the Moscow specimens differ from Swedish

birds in the character of spotting of their under parts, although to a small degree only. For example, spots on the under side of the body of Moscow Goshawks are somewhat narrower, having the appearance of elongated markings, while in some Swedish specimens they are nearly twice as broad and drop-shaped. However, the drop-like form of spots occurs, too, in some specimens of *moscoviae,* particularly on the sides of the body, which creates the appearance of a band. The difference just indicated between the Swedish and the Moscow Goshawks is not sharply displayed and can be traced on only a part of specimens. Two breeding birds with their feathering still incomplete are extremely interesting. The first (from Smaland, dated July 3, 1924) has the ground color of its under surface nearly white and heavily spotted, the spots being almost coal-black; the throat is mottled. On the feathering of the feet the spots are grayer and more rounded, which causes a flecking of a woodpecker type. The second specimen (Smaland, June 27, 1927) is ochraceous below, the spots are narrow, elongated and of a much less intense color than in the preceding bird. The feathering of the feet is one-colored, the thighs alone exhibiting narrow longitudinal stripes. From above, the second specimen is somewhat lighter and more spotted than the first. These two birds sharply differ from each other in the color of their plumage, presenting extreme limits (as far as I know) of variability of Swedish Goshawks in juvenal plumage. The variability of young Moscow birds fits almost entirely into these limits.

It may be said that most Swedish Goshawks in juvenal plumage have somewhat purer tints above, their upper side is gray-brown, while in many Moscow specimens it is rather rusty brown. This feature of distinction is, however, far from being always traceable. A certain variegation of the upper side is more proper to a part of Moscow Goshawks, which thus approach *A. g. buteoides.*

Goshawks from the north of the European part of the USSR, particularly from the Vologda district and Lower Pechora, differ from birds of the Scandinavian Peninsula in being less brownish above, more bluish and with a nape showing the so-called ultraventral coloration (Kleinschmidt) of a more or less pronounced type. Yet in some specimens this coloration is rather faint. The forehead is markedly more whitish than in Scandinavian birds or in those of middle Russia. The tail is not infrequently rather brightly colored, though sometimes there are strongly blurred bars on it too. The under side is lighter, the stripes are narrower. In *A. g. gentilis,* however, the general hue of the under surface seems occasionally to

be purer than in *A. g. buteoides*. Goshawks from the vicinity of Kirov (former Viatka) belong to *A. g. buteoides*. Separate specimens from the same parts, killed in non-breeding time, may even be referred to *A. g. gentilis* or in any case to a form intermediate between this race and *A. g. buteoides*. A part of these Goshawks was examined by P. P. Sushkin who also determined them as being of a transitional type (between *A. g. moscoviae* and *A. g. buteoides* according to this writer's notes made on the labels).

The differences just indicated between the Goshawks from the northernmost parts of Europe (*A. g. buteoides*) and those from Scandinavia and middle Russia (*A. g. gentilis*) become conspicuous only on comparing a large number of specimens; separate individuals are sometimes indistinguishable. I handled some birds from the Lower Pechora, about which it was impossible to say with much confidence that they belonged precisely to *buteoides,* and not to *gentilis*. In such cases instead of the bird's color it is more its provenance that serves as a decisive factor for determination. Adult birds with the most pronounced characters of *buteoides* can be found in the collection among autumn and winter specimens, many of them obtained far from the breeding area of *buteoides,* in the middle regions of the European part of the USSR, in the west of Ukraine, in its south (Ascania Nova), in the Caucasus and Altai. The most typical *buteoides* from the breeding area of that form are also represented by winter specimens (Kirov district). Doubtless, Goshawks from the northernmost parts of Scandinavia (Lapland) should likewise be referred to *A. g. buteoides.*

It is to be noted than contrary to the general trend of the Goshawk variability from west to east, there occur some specimens among *A. g. buteoides* from near Kirov, that have a very dark under side with broad transverse bars and conspicuous longitudinal stripes, so that every separate feather has the same color pattern as those of the Scandinavian, Moscow and particularly south-European Goshawks. The throat is also heavily mottled. In the coloration of their upper side these specimens approach more to *buteoides*. A part of the above birds was investigated by P. P. Sushkin who referred them to *A. g. buteoides.*

Young *A. g. buteoides* are in general of a lighter and more variegated coloration than Goshawks of corresponding age from Scandinavia, middle Europe and middle Russia. However, separate individuals, in case of their being local birds, are hardly separable. There occur some specimens with a pronounced spotting of the under

side, the ground hue of which is rather dark, intensively ochraceous instead of whitish. Occasionally the upper surface, too, is no more variegated than in individuals of *A. g. gentilis,* and the marbling is faintly developed.

Young Goshawks with the most pronounced characters of *A. g. buteoides* as well as adult birds are represented in the collection by autumn and winter specimens only. At this time they may be encountered in Ascania Nova, according to published data in Hungary and in a number of other places lying at a considerable distance from the breeding area of *A. g. buteoides.* It is these wandering birds that create among ornithologists the idea that the form *buteoides* differs sharply from *gentilis,* particularly when in juvenal plumage. Meanwhile local specimens are far from justifying such a notion as to the existence of a sharp distinction between these two races, and in winter there occur not infrequently specimens with typical characters of *gentilis* side by side with birds exhibiting the most well-marked features of *buteoides.* Only in the case of a very restricted number of summer specimens from the northeast of Europe is it possible to surmise that by winter they may acquire the variegated and generally light coloration which characterizes some winter birds. But then the question concerning the whereabouts of those individuals remains unsolved. I have seen no specimen of the second year still keeping its juvenal plumage, which would but a little recall the winter birds of a pronounced *buteoides* type.

It may be pointed out that M. A. Menzbier described this form by using non-breeding birds from the former Province of Wladimir. At any rate the winter specimens of Goshawks under discussion are by no means to be considered as 'typical' or practically speaking, as average representatives of the form *A. g. buteoides.* They are, on the contrary, but extreme representatives of the form indicated, having gone farther than any others in the direction which is in general characteristic of *A. g. buteoides* as distinguished from *A. g. gentilis.*

Among the nomadic specimens, I have seen four skins belonging apparently to the whitish form. In their appearance they approach nearer to the dark form of *A. g. albidus* than to the dark (normal) form of *A. g. buteoides.* The breeding place of these light-colored *buteoides* as well as that of other extreme representatives of the same species remains unknown with the exception of a single find on the Nadym River, affluent of the Gulf of Obi, mentioned by I. N. Shukhov and P. P. Sushkin. These birds are, perhaps, characteristic of the forest-tundra of western Siberia.

One specimen in juvenal plumage, killed near Krasnoyarsk in winter, is practically indeterminable. It may be referred with equal success to the whitish form of *buteoides* or to the dark form of *albidus*.

With regard to *A. g. albidus* I am unable to add anything to what was said by P. P. Sushkin, for I could examine only a few specimens belonging to this form. The distribution area of the latter is usually indicated as east of the river Yana. At the same time there are reasons for believing that over the extreme north of Siberia in the forest-tundra region, *A. g. albidus* is distributed even west of the Yana. In the Museum there are, it is true, some non-breeding specimens from Jigansk on the Lena and from the Lower Yenisei, Igarka, September 29, 1905. Are they to be considered as a white phase of *buteoides*? South of the distribution area of *A. g. albidus*, in the Far East, we encounter *A. g. schwedowi* and *A. g. fujiyamae*. As I have seen but few specimens of the latter form, I omit it from consideration. The form *A. g. khamensis* occurring in southeastern Tibet is quite unknown to me; P. P. Sushkin leaves it in his work under a note of interrogation, while most authors reduce it to the synonymy of *A. g. schwedowi*. West of *A. g. fujiyamae* area the south of Siberia is inhabited by *A. g. schwedowi* Menzbier; the latter form ranges north as far as Yakutsk and Krasnoyarsk and reaches Barnaul in the west. This form is well characterized as being small in size and dark in color with a well-developed bluish tint to its plumage. It differs rather conspicuously from the northern form of the Goshawk, *A. g. buteoides*, but the distinctions from other races belonging to the southern group of subspecies (e. g., from *A. g. caucasicus*) are much less pronounced.

In the vicinity of Krasnoyarsk it is possible to encounter in non-breeding time both typical, easily determinable *A. g. schwedowi* and well-marked *A. g. buteoides*. Besides, as I have already said, in the same locality there was obtained a Goshawk intermediate in type between the whitish form of *A. g. buteoides* and the dark form of *A. g. albidus*. In winter, in the Altai, *A. g. schwedowi* seems to be fully replaced by *A. g. buteoides*.

However strange it may appear, up to the present the status of Goshawks inhabiting the vast territory of the south of western Siberia and the north of Kazakhstan between the Altai and the Ural, has remained unknown. In our Museum this region is represented for the most part by birds secured during the non-breeding period. Goshawks in juvenal plumage occurring in those localities seem to approach more to *buteoides*, while in old age they are nearer to

schwedowi. A specimen obtained November 28, 1927, near Sterlitamak deserves particular attention. It is an old male, comparatively small in size (wing, 332 mm.) and very light. The blue tint of the upper surface of the body shades off into an ashy hue or, as I would say, into grayness. In this respect the specimen from near Sterlitamak is quite identical with a representative of the dark form of *A. g. albidus* from Srednekolymsk which I have examined. On the under side of the body the obliteration of the dark pattern is also very well marked and the barring there is delicate and fine. It is remarkable that P. P. Sushkin, too, had a Goshawk from near Kustanai, basin of the Upper Tobol River, killed March 27, which was colored above like a beautiful old *schwedowi,* but presented an exaggeration of white patterns and an abnormally fine barring of the under side.

Apparently Goshawks from the southern part of West Siberia deserve to be separated as a peculiar form. I refrain as yet, however, from describing it, since our modern notions concerning the individual and age variability of Goshawks and their migrations in nonbreeding time do not allow any description to be made without being confirmed by a sufficiently large series of local specimens. Goshawks from near Pensa seem already to represent a transition from *A. g. gentilis* to *A. g. schwedowi,* or, more accurately, they should be referred to the still-undescribed form of Goshawk from the southern parts of West Siberia, to which we shall also refer Goshawks of the lower Volga and of the environs of Kuibyshev and Orenburg. On the middle Volga (near Ulianovsk) a transition from *A. g. gentilis* to *A. g. buteoides* might be expected, but birds, which I handled, approached more the type occurring in the south of western Siberia and in the north of Kazakhstan.

Caucasian Goshawks are easily distinguished from *A. g. gentilis* of middle Russia. In winter they may be found outside their breeding area as, for example, near Taganrog. I am unable to add anything more to the description of this form, than what has already been said by P. P. Sushkin, but it is to be noted that the differences between *A. g. caucasicus* and the Balkanian form of *A. g. marginatus* still remain obscure to me. I am totally unacquainted with the latter race, but judging from descriptions and knowing the general character of the Goshawk variability, it is permissible to suppose that in the absence of a sufficiently large material these two races are to be united. Unfortunately we know almost nothing about Goshawks from Asia Minor.

Thus, the taxonomy of Palaearctic Goshawks appears to be as follows: The nominate form, *Accipiter gentilis gentilis* (Linnaeus), occupies Scandinavia except its northernmost parts (Lapland), Baltic countries, eastern Europe northward to Vologda approximately, eastward to Kirov (exclusively) and, speaking generally, as far as Volga. Goshawks of middle Europe are also referable to this form which has for synonyms *A. g. gallinarum* and *A. g. moscoviae.* Without knowing *A. g. marginatus,* I do not take it upon myself to judge where lies the limit between that form and *A. g. gentilis,* but to all appearance the territory which was formerly considered as the breeding area of *A. g. gallinarum* must be divided into two parts: the larger one including the distribution area of the nominate form, i. e. of *A. g. gentilis,* and the smaller southernmost part formed by that of *A. g. marginatus.*

The next form, *Accipiter gentilis buteoides* Menzbier, extends from the northernmost parts of Scandinavia eastward across the northern regions of the Soviet Lapland, Archangelsk and Vologda districts into the vicinity of Kirov and farther east into western Siberia. In the non-breeding period it is widely distributed over the whole of eastern Europe and Scandinavia, occurring in Germany, Poland, Hungary, in the south of Ukraine (in Ascania Nova); it reaches the Caucasus, appears in Central Asia and in winter replaces in the Altai Mountains *A. g. schwedowi* which is known to breed there. *Accipiter gentilis albidus* Menzbier ranges from the river Yana eastward to Kamchatka inclusive. There are reasons for believing that over the extreme north of Siberia in the forest-tundra region this Goshawk is distributed much more to the west than the Yana.

Sakhalin and the Japanese Islands are occupied by *Accipiter gentilis fujiyamae* Swann and Hartert, a form whose existence I am, unfortunately, unable either to confirm or to refute, having had too restricted a material at my disposal.

Accipiter g. schwedowi Menzbier lives in southern Siberia, occurring also on the Amur River. I know it goes north as far as Krasnoyarsk. In winter it appears in the Tian Shan. The form *Accipiter gentilis khamensis* Bianchi remains quite unknown to me.

Goshawks from the southern part of West Siberia and from northern Kazakhstan as well as from the Lower Volga have still to be submitted to a careful study in taxonomic respect.

Accipiter gentilis caucasicus Kleinschmidt dwells in the Caucasus, in the forest region of the Crimea and, as P. P. Sushkin supposed, in northern Iran. It is possible that later on this form will be united

with *Accipiter gentilis marginatus* Piller and Mitterpacher and then the name *A. g. caucasicus* will be dropped into synonymy.

I am wholly unacquainted with the form *Accipiter gentilis arrigonii* Kleinschmidt; it inhabits Sardinia and probably Corsica. Its distinctions from *A. g. marginatus* are not quite clear to me.

Thus, the principal thing which I assert in this paper is the necessity of uniting Swedish, Middle-European and East-European Goshawks into one geographical race under the name of *Accipiter gentilis gentilis* (Linnaeus). The same opinion has been already partially advanced by some experienced authors (e. g., by Stresemann and G. Dementiev), but it has not received its proper recognition as yet. The recent review of a vast material allows me to affirm this statement in a more categorical form. At the same time it may be indicated that P. P. Sushkin, whose authority and thoroughness of investigation serve as a most weighty argument for separating *A. g. moscoviae,* has described this form not without hesitation. As regards *A. g. gallinarum* a number of writers have expressed their doubt as to the reality of the above form in connection with a series of characters. My investigation serves to confirm once more that those doubts were well founded, for there exist neither the form *A. g. gallinarum* nor *A. g. moscoviae.*

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