

## The Subalpine Warbler, *Sylvia cantillans* (Pallas, 1764), new to the fauna of Russia, with a review of records of its northern vagrancy (Aves: Sylviidae)

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The appearance of two females of the Subalpine Warbler in Russia (Biological Station of the Zoological Institute, Courish Spit) on May 28, 1992 and April 24, 1997 is described. Characteristic features are given which make it possible to distinguish individuals of this species from morphologically similar representatives of Ménétries' Warbler, *S. mystacea*. Geographical variation of the Subalpine Warbler is described, and a map of breeding areas of its four subspecies is presented. A summary of 435 records of the species in northwestern Europe from 1951 to 1995 is given along with a map of the vast northern area of vagrancy. Birds were recorded over an eight-month period, from late March to the 2nd ten days of November. Sex and age composition of vagrants, range of frequency in various years and seasons were analyzed. The principal factors that caused the increase in the number of northern vagrants over the last 45 years include the increased number of observers and the general rise in mean annual temperature in the northern hemisphere. The "overshooting" of migrating individuals in spring anticyclonic conditions, the vagrancy of unsuccessful breeders, and the post-juvenile dispersal affect mainly the frequency of vagrants in various years. There are no indications that the total population size has increased or that a northward expansion has occurred. Most vagrants presumably die of starvation or become victims of carnivores and birds of prey. The probability of nesting in places well beyond the normal breeding range is quite small even for single pairs.

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On 28 May 1992, L.V. Sokolov using the Rybachy trap at the "Fringilla" field station (23 km of Courish Spit, 55° 05' N, 20° 43' E, Rybachy Biological Station of the Zoological Institute, Russian Academy of Sciences) caught a bird unfamiliar for this region. The bird resembled a female of Ménétries' Warbler (*Sylvia mystacea*) in habitus and plumage colour, but appeared to be smaller and more mobile. In the cage, the bird occasionally uttered a short sharp monosyllabic call "tec". It weighed 9.8 g immediately after catching, with little fat; other measurements (in mm): wing chord, 55.6; tail, 52.3; tarsus, 8.3; bill from feathers of forehead, 8.1; bill from nostrils, 6.4. Its skin, prepared by V.G. Vysotsky, was handed over by V.A. Payevsky to the Ornithology Department of the Zoological Institute (ZIN), Russian Academy of Sciences (collection number 169197 / 217-992).

V.M. Loskot and V.A. Payevsky identified the bird as a female of the Subalpine Warbler (*Sylvia cantillans*). This species differs from Ménétries' Warbler primarily in the wing formula: the relatively long 2nd primary nearly equal to the 5th primary (by 0.6 mm shorter only), while in Ménétries' Warbler the 2nd primary is shorter, and its tip is usually situated between tips of the 6th and 7th primaries, rarely barely longer than 6th or barely shorter than 7th primary. The tip of the 1st primary, which is reduced, very narrow and pointed, is situated at the level of the longest upper primary coverts, while in Ménétries' Warbler the 1st primary is longer than primary coverts by 1-4 mm (by 2.6 mm on average, see Cramp, 1992). The tail is less rounded: the outermost pair of rectrices is by 4.6 mm shorter than the middle pair, the next (5th) pair by 3.2 mm, while

in Ménétries' Warbler the average values of respective measurements are 7.2 and 4.9 mm. The rectrices are brown, not black as in Ménétries' Warbler; the white colour on the outermost rectrices is less developed and less contrasting; it is absent on other rectrices, except the right 4th feather which has a slight trace of a very narrow light tip border. Also, the identified specimen of the Subalpine Warbler differs from females of Ménétries' Warbler in a brighter and clearer buff tint of the breast and flanks, in greyish-brown upper side (without any light ochreous tint) and in smaller base width of the bill.

Considerably worn tips of primaries and tail feathers and relatively weakly developed buff colour on underparts indicate that the identified specimen was apparently a first-year bird.

Another female of the same species in similar, rather worn plumage was caught in a mist-net by N.P. Zelenova on 24.IV.1997, 9 A.M., at Rybachy. The net was placed on the coast of the bay near the border of reed brakes and willow shrubs surrounding a small glade. During the two preceding days (22 and 23 April) there was a strong west-to-southwest wind. The bird was identified by V.A. Payevsky; after the standard measurements were taken, it was ringed (R 2004342) and released. The female had no traces of fat (fat, 0; mass, 8.8 g), length (mm) of wing, 62.0; tarsus, 18.7.

The Subalpine Warbler is a typical Mediterranean species. It occurs as a breeding bird (Fig. 1) in most of the Iberian Peninsula, southern France, Apennine and Balkan Peninsulas, the extreme west of Anatolia, Atlas Mountains from Morocco to Tunisia, and some Mediterranean islands including Balearic (Majorca, Cabrera), Corsica, Sardinia, Sicily, certain Ionian and Aegean Islands, Crete and Rhodes (Watson, 1986; Cramp, 1992; Gargallo, 1994). The two latter islands delimit the southeastern part of the nesting area of this species. This Warbler inhabits mainly dry mountains from the sea level to 1000-1100 m in Spain and Greece, and to 2000 m in Morocco (Cramp, 1992).

Geographic variation of the plumage colour in males is well marked, and three subspecies have usually been recognized: the nominotypical one, *S. c. cantillans* (Pallas, 1764) in the north-western part of the breeding area, up to Italy in the east (Fig. 1), the eastern one, *S. c. albistriata* (C.L. Brehm, 1855) and *S. c. inornata* (Tschusi, 1906) in

mountains of northwestern Africa (Hartert, 1909; Vaurie, 1954, 1959; Williamson, 1968; Watson, 1986). Apart from differences in plumage coloration, the birds of the eastern subspecies have a longer and more pointed wing (the 2nd primary is longer than the 5th). It was later shown that birds of different subspecies also differ in common and alarm calls. The use of this important character along with morphological and distributional differences allowed Gargallo (1994) to justify the separation of the fourth, island subspecies, *S. c. moltonii* Orlando, 1937, inhabiting the two Balearic Islands, Corsica and Sardinia.

The exact identification of the subspecies by the external morphological features only is not possible for some females, especially young ones. The plumage of the studied specimen has less buff tint including fringes of the secondaries as in *S. c. albistriata*. On the other hand, its small size is a feature of *S. c. cantillans*: the wing is only by 0.6 mm longer than in the smallest bird among 23 females of the nominotypical subspecies (Cramp, 1992, p. 356, and specimens in the collection of ZIN); the 2nd primary is short (shorter than 5th). But the abovementioned features of the voice of the studied specimen (the monosyllabic call "tec") are characteristic of the nominotypical subspecies (Gargallo, 1994) and together with the small size and wing shape allow identification of it as northwestern subspecies, *S. c. cantillans*. The subspecies determination of the second specimen has not been attempted.

Apart from the Atlas birds, *S. c. inornata*, which apparently perform vertical seasonal movements only, the warblers of other subspecies are common trans-Saharan migrants, and their winter quarters are located mainly in the arid zone of the Sahel savanna forming a belt along the southern border of Sahara from the Atlantic Ocean to the Red Sea (Cramp, 1992). Most birds of the northwestern subspecies (*S. c. cantillans*) and the eastern one (*S. c. albistriata*) fly separately to the western and eastern parts of this zone, respectively. Migrants probably belonging to *S. c. moltonii* were collected in spring in Tunisia (Gargallo, 1994), possibly attesting to the western location of their winter quarters. Spring migrations occur from late February until early May, mostly in March-April, and autumn migrations begin in the second half of July (mostly first-year birds), the modal frequency coinciding with late August and

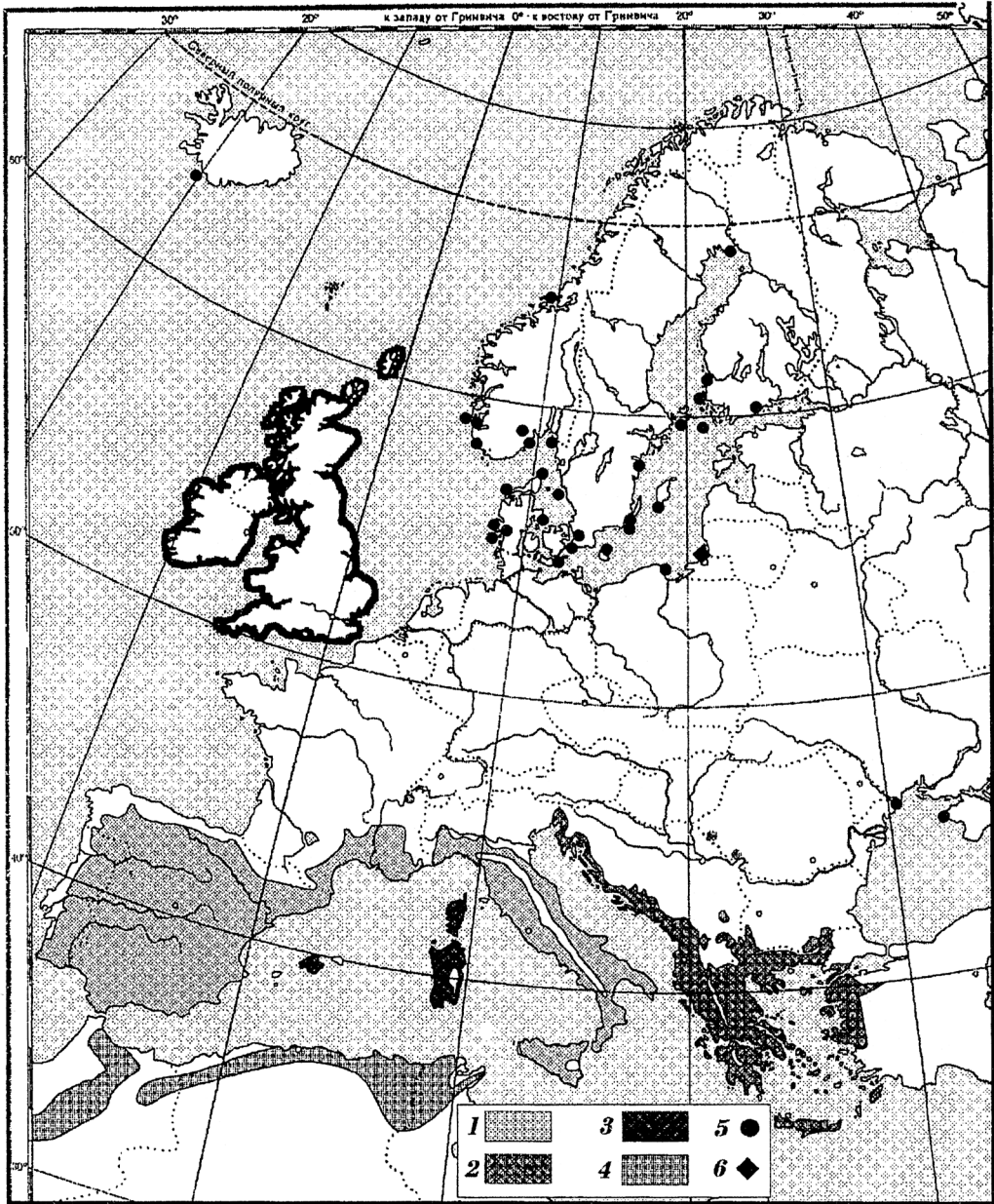


Fig. 1. Regions of nesting and distant northern vagrancy of the Subalpine Warbler. 1-4, breeding areas of *Sylvia cantillans cantillans* (1), *S. c. albistriata* (2), *S. c. moltonii* (3), *S. c. inornata* (4); 5, localities of distant registrations; the solid line marks the coast of British Islands from where the largest number of birds (360) was recorded; 6, Courish Spit.

September; some birds are wintering in the Mediterranean (Cramp, 1992).

Overall, the northermost limits of the breeding area of *S. cantillans* are situated south of 46° N. However vagrant Subalpine Warblers were found many times (ca. 500

times by 1995) in Great Britain and Western Europe considerably further north of these limits, and not only in spring, but also in summer and autumn. The northwestern limits of the vagrancy range are indicated by records from the southern coast of Iceland

(Pétursson, 1994), from Heimaey Island (63° 25' N, 20° 17' W), its northeastern limits by records from Sweden (Kjellén & Svenson, 1984), near Haparanda Sandskär (65° 50' N, 24° 10' E). Most birds, however, were recorded in the sector between 50° and 60° N, 10° W and 25° E (Fig. 1). Given the regularity with which vagrant birds occur in northwestern Europe and their wide distribution in this region, the registration of this species in Courish Spit seems to be less astonishing than its absence here in the preceding years.

To reveal the peculiarities of this northern vagrancy well beyond the normal range, records concerning the occurrence of the Subalpine Warbler from 1951 to 1995 in the following regions were analysed: British Islands (mainly annual reports on rare birds in Great Britain published by special "Rarities Committee" of British Ornithologists' Union in "British Birds") as well as in Scandinavian Peninsula, Denmark, Poland (analogous reports in "Sterna", "Vår Fuglefauna", "Vår Fågelvärld", "Lintumies", "Dansk Ornitologisk Forenings Tidsskrift", "Notatki ornitologiczne") and Russia (Table 1), totalling about 100 publications. The information on Finland is incomplete, data on the 4th and 6th records of the species there are lacking. The information on Belgium, Germany, Switzerland, and Austria was not considered since these countries are relatively near to the northern limits of the breeding area.

It should be emphasized that before 1951 only six northern vagrants were known (exclusively in the British Islands): the first bird (a mature male) was recorded from the St. Kilda Islands on 14.VI.1894, four more birds in 1908, 1924, 1933 and 1935 (Whistler, 1935). By mid-20th century, vagrancy records from Great Britain become more regular, and since the mid-60s the species has been recorded also in Scandinavia (the years of the first registration are given in the Table 1). But the first record from Poland dates only to May 1989 (Avifaunistic Commission, 1991).

Most individuals were recorded near the shores of the North Sea and the western part of the Baltic Sea, mainly near the ornithological stations where bird migrations were studied by catching and ringing (Fig. 1). The increase in the total number of registrations of vagrant and rare species, including *S. cantillans*, in northwestern Europe over the last 30 years is mainly due to the increase in the number of these stations and observers, es-

**Table 1.** Summary of records of northern vagrancy of *Sylvia cantillans*

Region	Years	Number of birds
British Is.	1951-1995	360
Norway	1966-1992	21
Sweden	1967-1991	19
Finland	1968-1993	9
Denmark	1969-1993	23
Poland	1989	2
Russia	1992	1
<b>Total</b>		<b>435</b>

pecially birdwatchers. But the lack of data on the Subalpine Warbler in Scandinavia before mid-60s or on the southeastern shore of the Baltic Sea before late 80s – early 90s as well as sharp fluctuations of the number of vagrants over many years (Fig. 2) cannot be due to these factors only.

Before attempting to answer these questions, we will consider annual and seasonal fluctuations of the number of vagrants, their sex and age composition.

In 1951-1978, representatives of this species might be regarded as regular but not annual vagrant scanty birds of northwestern Europe: 10-11 records are known only for two years (1968 and 1970), 5-8 records for five years, 4-5 records for four years, 1-2 records for 11 years; this warbler was not recorded during six seasons out of 28, the last one being 1973. Since 1974 it has been recorded each year, relatively often since 1979: from 10 records in 1980 to 43 in 1988, 22 times per year on average, except for the abrupt decrease in 1991 (four records). Since 1970 similar decreases occurred thrice: in 1972-1973, 1978 and 1991 (Fig. 2).

Most of the vagrants are males (70.6%), the proportion of females is 22.8%, and the remaining 6.6% are birds of unknown sex. Over 23 years of observations (1951-1973), females were seldom recorded, only during five seasons; since 1974 they have been recorded annually, 1 to 11 (Fig. 2), four on average (91 specimens over 22 years).

It is impossible to assess the proportion of young (first-year) individuals since the data on age were not always given. It can be roughly estimated based on observations in Great Britain, where over the last 12 years (1984-1995) 11 out of 57 females (19.3%) and 25 out of 169 males (14.8%) were attributed to first-year birds. These data probably attest more to the observers qualification

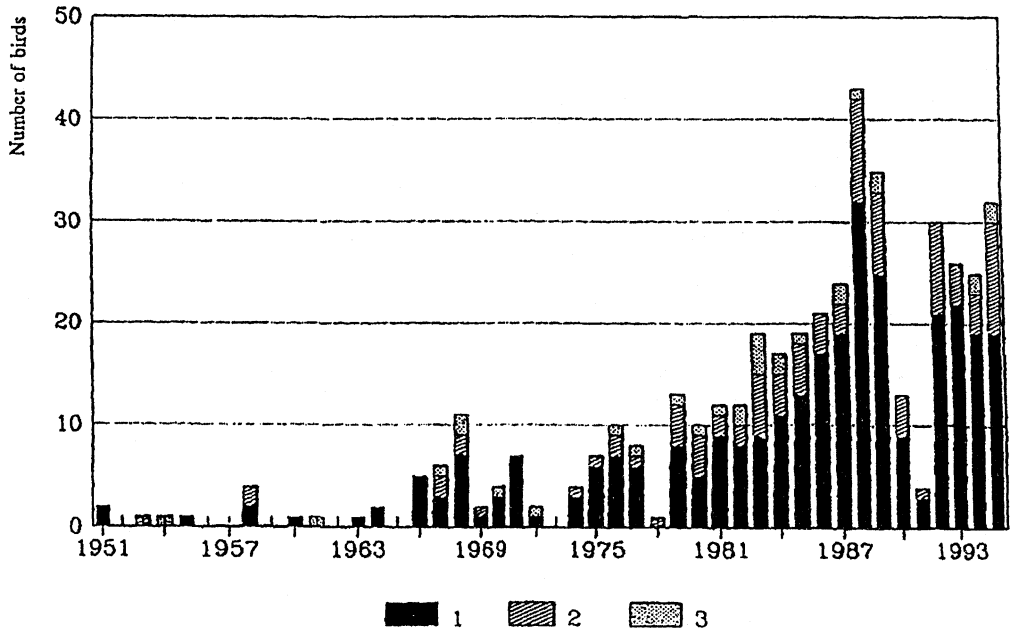


Fig. 2. The number of northern vagrants of the Subalpine Warbler in different years: males (1), females (2), birds of unknown sex (3).

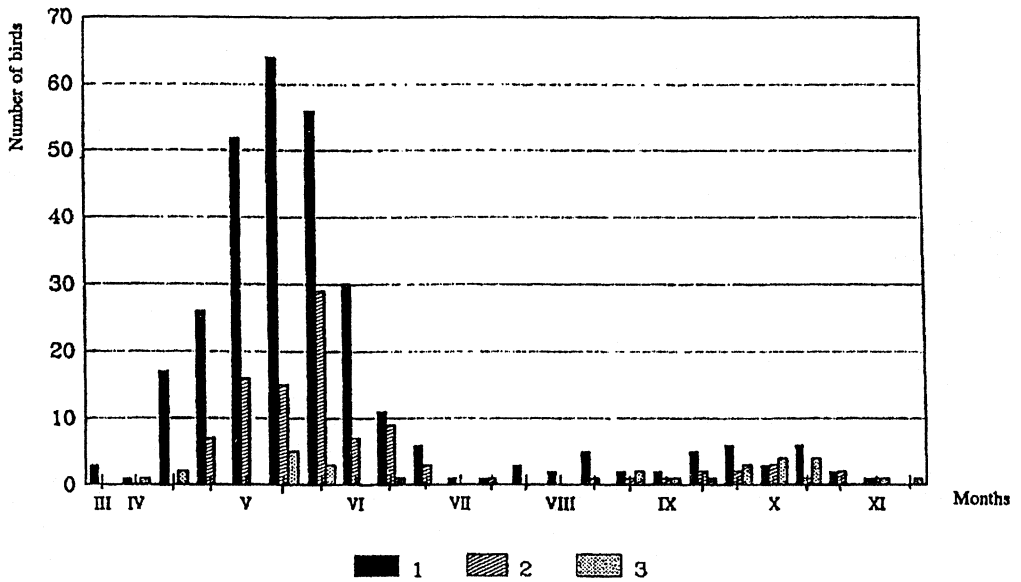


Fig. 3. Seasonal distribution of northern vagrants of the Subalpine Warbler: males (1), females (2), birds of unknown sex (3).

than to the real ratio of different age cohorts, and in some years the share of young individuals was noticeably larger: two females out of four recorded in 1986 and 1993, one female out of four in 1984 and 1985; five males out of 20 in 1989 and four males out of 16 in 1994. Nevertheless, there is no doubt that individuals older than one year predominate among the vagrants.

Vagrants were recorded over eight months per year, from late March to mid-November, with a peak of frequency coinciding with late April and May (Fig. 3). The extreme dates of registration are 26 March 1989, male, Skomer Island near the southwestern coast of England (Rogers et al., 1990) and 19 November 1984, female, first-year, Low Hauxley, Northumberland (Rogers et al., 1985). Dates of occurrence of birds in spring and their disappearance in autumn vary considerably depending on the weather conditions of the specific year (Fig. 4, a-d). Probably the unusual distribution of vagrants on the British Islands in spring 1955 may be explained by the same factor (Fig. 4, e): two peaks of frequency were recorded in the 1st and 3rd ten days of May, whereas there were none in mid-May (Rogers et al., 1996).

When describing the seasonal fluctuations of birds' number, it should be noted that the birds were recorded most often in the 2nd and 3rd ten days of May (84 and 88 individuals, or 19.3% and 20.2%, respectively) and, more rarely, in the 1st ten days of May (68, or 15.6%). The vagrants are considerably less frequent in the 3rd ten days of April and the 1st ten days of June (37 and 33 individuals, or 7.6% and 8.5%, respectively) and in the 2nd ten days of these months (19 and 21 individuals, or 4.4% and 4.8%, respectively). The total number of individuals recorded in late spring and early summer is 350 (80.5%). The second rise in the number of birds (an insignificant one, though) occurs in autumn, from the 2nd ten days of September through the 2nd ten days of October, when 40 individuals, or 9.2% (8-11 birds per ten days) were recorded. In the last ten days of June, the 2nd and 3rd ten days of August and the 1st ten days of September the warblers occur relatively seldom: nine, six, five and four birds, respectively, per ten days (24 individuals, or 5.5%). The frequency of vagrants was minimal in July and early August (1-3 records per ten days, the total of eight individuals, or 1.8%), and in late autumn, in

late October and November (1-4 individuals per ten days, eight individuals altogether).

The following differences in the dynamics of seasonal distribution of sexes should be noted (Fig. 3). Females were not recorded in early spring, in March and in the 1st and 2nd ten days of April; in late April, the 1st and 2nd ten days of May, and in the 2nd ten days of June their proportion varied insignificantly, within 18-23%, and was noticeably larger in the 3rd ten days of May (33%), the 2nd and 3rd ten days of June (43% and 33%, resp.). Small samples of birds in other months do not allow assessment of the sex ratio in late summer or autumn. Judging by the peculiarities of seasonal distribution of individuals of unknown sex, the difficulties of sex determination by external characters only undoubtedly increase in autumn when birds have fresh plumage, and also in the 2nd and 3rd ten days of May, when the largest number of vagrants are recorded, some records being made by unexperienced observers.

The vagrants to northwestern Europe are mainly *S. c. cantillans*, less often eastern birds, *S. c. albistriata*; males of the latter subspecies were recorded also in Ukraine (Fig. 1): 21.V.1978 near Odessa, in the seaside part of Tiligulskiy Liman (Chernichko, 1980) and 25.IV, 8.V.1990 in Northern Crimea, on Mys Tarkhankut (Andryushchenko et al., 1993).

The data discussed allow to make the following conclusions. The increase in the frequency of registrations of vagrant Subalpine Warblers in northwestern Europe in the second half of this century was primarily due to the increase in the number of ornithological stations and of birdwatchers knowing the birds well and observing them throughout the year, but especially during migrations. Also, the increase of vagrancy registrations coincides with the rise in the mean annual temperature in the northern hemisphere in these years by ca. 1 °C (Jóhannesson et al., 1995). The significant correlation ( $r_s = 0.49$ ,  $p < 0.05$ ) of records of bird number in April with the temperature in April in 1966-1990, as well as the correlation between the number of records in May and the temperature in April ( $r_s = 0.43$ ,  $p < 0.05$ ) and May ( $r_s = 0.39$ ,  $p < 0.05$ ) and also that of records in May, in summer and autumn with temperature in May ( $r_s = 0.48$ ,  $p < 0.05$ ) also attest to the possible influence of temperature. Quite often the occurrence of birds in spring was preceded by days getting warmer and

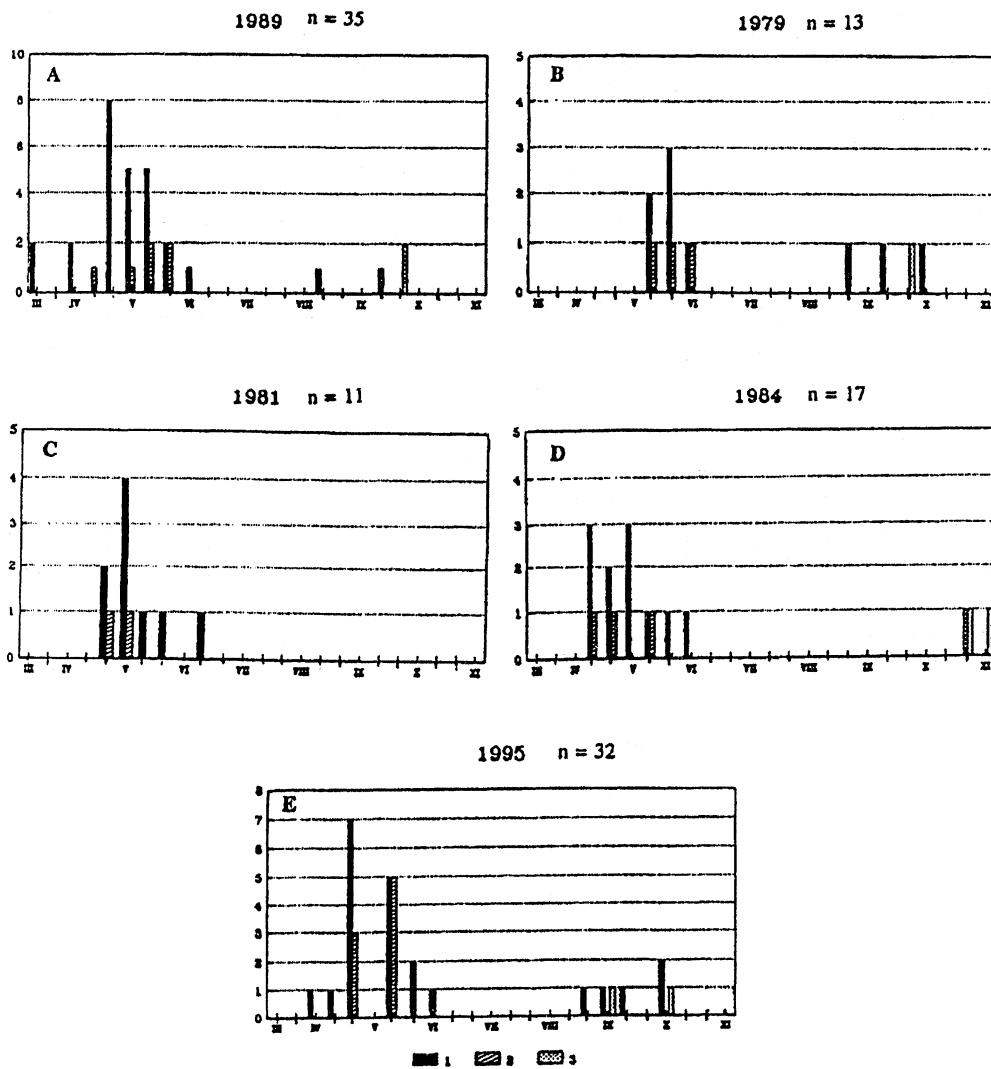


Fig. 4. Seasonal distribution of northern vagrants of the Subalpine Warbler in years with the earliest (A) and latest (B) dates of their arrival and the earliest (C) and latest (D) dates of the last registration. E, seasonal fluctuations in the number of British vagrants in 1995 (see Fig. 3 for explanations).

strong southern winds (Williamson, 1952; Lid, 1967; observations at Courish Spit in 1997). The weather conditions in spring 1992 in some regions of Europe, including Great Britain, were favourable for early and successful nesting of numerous bird species including small passerines. An early and warm spring contributed to the earlier occurrence on the islands of long-distant migrants such as Swift (*Apus apus*), Swallow (*Hirundo rustica*), Pied Flycatcher (*Ficedula hypoleuca*)

and some others (Glue, 1992). In the Courish Spit on May 1992, the earlier arrival of some species, especially Warblers (genus *Sylvia*) was also recorded. Their migration over the Courish Spit, judging by average data on catchings in large stationary traps, begin somewhat earlier: 10.V. for Blackcap (*S. atricapilla*), 14.V. for Lesser Whitethroat (*S. curruca*), 23.V. for Whitethroat (*S. communis*), 27.V. for Garden Warbler (*S. borin*), as compared to average date of the begin-

ning of flight over 38 years (1959-1996) which, in these species, was 21.V, 22.V, 25.V, and 28.V, respectively.

The temperature apparently also caused the sharp decrease in the number of records in 1991 when only three males and one female were recorded in late April and May as against 13 birds in 1990 and 30 in 1992. The spring of 1991 in Western Europe was a late and cold one which resulted in the decrease of the reproduction success in numerous passerine birds.

Apparently the spring peak of records in April and in early May is mainly due to the "overshooting" of the breeding regions by migrants in spring anticyclonic conditions. In late May and especially in June the part of unsuccessful breeders having lost their links with nesting territories increases among the vagrants, especially the frequency of first-summer males left without a mate; at the same time, postjuvenile dispersal begins. The summer minimum of records in July and early August coincides with the moulting period and is due to lesser mobility of birds at this time. A rather prolonged period of autumn migrations causes a small increase of registration number mainly from mid-August to mid-October. In all observation seasons the effect of possible delay of the first registration of the individuals which arrived earlier should be kept in mind.

The sharp predominance of males over females may be explained mainly by a brighter colour and stronger mobility of males; during the breeding season they immediately attract the observers' attention by a demonstrative behaviour including mating flights and sonorous singing. Certain general numerical predominance of males over females established for birds (Payevsky, 1993) may also be important.

No data suggestive of an appreciable growth of the species and its expansion in the northern direction are known. Probably the northern limit of the nesting region of Subalpine Warbler is closely related to the distributional limits of certain plant associations including several typical xerophyte shrubs (Beven, 1960; Donchev, 1965; Simeonov, 1970). Although the vagrant individuals stayed repeatedly in one locality for a long time, frequently for 1-3 weeks, sometimes much longer, for 36-104 days (Rogers et al., 1986, 1989, 1990, 1991), most of them perish in unusual habitats. There are records of warblers killed by Sparrowhawk (*Accipiter nisus*) or by cats (Rogers et al., 1989) or

found dead (Pyman et al., 1960; Smith et al., 1972; Olsen, 1989; Rogers et al., 1989, 1994). The probability of successful nesting even of individual pairs in considerable distance from the main breeding region (Chernichko, 1980; Stepanyan, 1990), seems to be small.

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