The Phenology of the Common Swift *Apus apus* in Eurasia and the Problem of Defining the Duration of their Stay

ULRICH TIGGES  
Erlanger Straße 11, 12053 Berlin, Germany – Email: tigges@bgu.ac.il  
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**Abstract:** The breeding range of the Common Swift *Apus apus* covers large parts of Eurasia from the Atlantic Ocean to the Yellow Sea. Arrival and departure dates were clearly defined. The phenological dates from different locations were analysed and compared. There are only a few dates from most of the locations, while those from places in north and central Europe were numerous. The situation regarding the phenological dates of the different locations is variable. Arrival in the breeding areas extends from February in Israel to June in the Murmansk area. It turned out that the first birds seen were the local breeders. The dates presented do not show a consistent pattern. The stay in the whole breeding area seems to be 95±3 days. In all sub-areas, however, shorter and longer stays are recorded. This article discusses whether or not these differences result from locally differing behaviour of the Common Swift or simply from insufficient data. There are indications that the geographical location as well as the elevation above sea level influences the duration of their stay.

**Keywords:** Common Swift, *Apus apus*, phenology, latitude, duration of stay, arrival, departure, Eurasia.

**INTRODUCTION**

During the Common Swift’s stay in its breeding areas, two aspects of its behaviour have to be carefully differentiated. The first is distinguishing between the breeders’ and the non-breeders’ presence in the colonies, and the second is identifying which movements are of migrants on passage and which are the temporal activities of local birds. It is all too easy to introduce confusion if such discrimination is absent. This paper offers a better understanding of the phenology of the Common Swift at its breeding colonies, particularly at the nest, over a very large geographical area.

The species has been a subject of study for a long time and it is known as a ‘punctual’ species (*e.g.* Taczanowski 1888). A comparison
of dates in west, central and northern Europe shows that the phenological dates have not changed since the 1750s, thus characterising the Common Swift as a species whose migratory behaviour is rigid.

The duration of stay is the difference between the arrival and the departure dates, where the determination of both events is complicated. The extant ornithological literature uses loosely defined and inconsistent terminology, for example such terms as “first seen” and “first observation” (Weitnauer & Scherner 1980), "arrival", "migration" (sometimes specifying "return" [spring] or "outward" [autumn]) (Berthold 1999) and "departure", (where "departure" all too often refers to passage migrants). To regularise the terminology that should be applied to the movements of Common Swift in and across its breeding area, I have defined from my analyses the arrival of the species from its wintering ground as developing in four waves during the return migration – these four waves can clearly be differentiated.

In a previous paper (Tigges 2006), the most recent data from a nest under observation in Berlin were presented. The medians of breeding birds’ arrival at, and departure from that nest from 1990 until 2005 are 8 May and 10 August respectively (n=13). The variation of the arrival date is from 27 April to 17 May and for the departure is from 30 July to 20 August, producing a median duration of stay on the nest of 95 days (variation: 84–106 days). If the days are counted from the first record of the Advance Guard, which in Berlin is (median date) 24 April (n=25, variation: 16 April to 1 May, for sources see Tigges 2000a), a median of duration of stay in the breeding area of 109 days can be obtained.

Koskimies (1950) compared data sets from South Finland and North Switzerland and found a similar length of stay of about 80 days; Tigges (2002) recorded dates from Tel Aviv and found them similar to Berlin (95 days); both surmised that the Common Swift stays for the same amount of time in its breeding grounds, no matter what their geographical location. To test this thesis I collected phenological data from as many different locations in the breeding grounds as possible.

MATERIALS AND METHODS

The breeding distribution of the Common Swift stretches from western European coasts east to the northwest Korean border and from Morocco and Beer Sheva in Israel in the south to beyond the Arctic Circle to as far as 20 km south of Murmansk (Cramp 1994, Cheng 1987, Shirihai 1996, A. Gyljazov in litt.).

To determine the duration of stay of Common Swift in a breeding area, we must obtain local correlation with records from a colony. Ideally, the observer should monitor nest-hole selection to assess the number of occupied nest-holes, keeping careful records from regular visits to maintain a register of arrivals at and departures from the site, over a continuous sequence of breeding seasons.

Table 1 lists the arrival and departure dates from 45 different locations across much of the Common Swift’s breeding range. The locations are those available where dates have been recorded and are not statistically representative across the breeding range. Except for Europe, I know of no other published or otherwise recorded data. I omitted data which are suspect or cannot be validated, such as a reported stay of more than five months in Cyprus (Bannerman & Bannerman 1958). Where dates were imprecise, I indicated this in Table 1 in the Remarks column, using phrases such as ‘early May’ or ‘from…to…’. All records that did not specifically note ‘first sightings’ might, theoretically, be regarded as either inclusive or exclusive of the period of occurrence of the Advance Guard. As explained, where the duration of stay closely coincides with the expected limits when the Advance Guard was neither detected nor reported, it is likely that the duration of stay excluded the Advance Guard period.

RESULTS AND DISCUSSION

Phenology

The first wave of arrival is the ‘Advance Guard’, which may arrive 12–14 days before the ‘Vanguard’ and the ‘Main Body’, while the ‘Rearguard’ which contains the immature birds will arrive about the middle of the stay (Tigges 2000a, 2002, 2006). The first three waves comprise mature birds. Until recently, it was
not clear to which wave the first birds seen could be assigned. But the analysis of the dates shows that they are also local breeders.

Von Haartman (1951) and Tigges (2000a, 2001) noted that at first, one sees only one or two birds, or sometimes small flocks of 1–5 that tend to disappear for periods. I want to make clear that this pattern is not evenly spread, and therefore does not occur everywhere across the breeding range. Furthermore, these birds do not perform social or partner flights which the observer might see easily, which is why despite an observer’s best efforts, it may not be possible to find them. In Berlin, for example, the first Common Swifts are registered on (median) 24 April \( (n=25, \text{sources in Tigges 2000a}) \). My own first records in the city are for (median) 30 April \( (n=14) \) and the first breeder arrives in the nest under my observation on (median) 8 May \( (n=13) \). These represent the main values of the arrival process, and have been confirmed by long-running observation schemes. The first wave comprises the sighting of the first breeders (the Advance Guard), but the more spectacular arrival of the second wave (the Vanguard) and the third wave, the Main Body (or Mass) of the residents arriving, tends to occur about two weeks later and is more commonly seen. The first wave represents the beginning of the species’ stay in the breeding area and the second the beginning of the breeders’ period of stay at the nest site, two quite different events.

Dr Esa Lehikoinen established arrival dates at Turku in south Finland over the period 1749–1761, the median date being 19 May \( (n=11) \). More recently, the median date for the Advance Guard at Turku is 8 May \( (n=36, \text{E. Lehikoinen in litt.}) \). Meisner & Schinz (1815) describe the arrival time in Switzerland as “end of April” and Maumary \( \text{et al.} \) (in press) cited the “last decade of April” \( (21^{\text{st}}–30^{\text{th}}) \). The median of Couch’s dates (1832) for the arrival in the early 19\text{th} century in southwest England is 5 May \( (n=17) \), where since 1977 it has been 29 April \( (S. \text{Christophers in litt.}) \). Hintz (1857) reported a median date arrival on the southern Baltic Sea shore as 10 May \( (n=24) \) for the first half of the 19\text{th} century and P. Busse \( \text{in litt.} \) quotes 6 May \( (n=6) \) as the recent median. The arrival median from 1914–1920 in Viborg, north Denmark is 8 May (Skovgaard 1924) and from 1981–2005 is 10 May \( (n=22, \text{H. Pedersen in litt.}) \). Heinroth & Heinroth (1924) quote the last days of April or the first days of May as the arrival date at, and 6–8 August for the departure from, Berlin in Germany.

Determination of departure dates and patterns from the breeding area is also difficult. Departure here is defined as the time when the breeders leave their nesting sites and colonies. Non-breeders may leave earlier, because they have a more sensitive reaction to weather conditions, having no endogenous imperative to feed young. They will leave the colonies when the weather is bad and may not return, especially later in the breeding season. Non-breeders may be numerous and so their leaving may lead observers to assume that the species has left as a whole, yet breeders’ behaviour at this time is relatively inconspicuous because they do not take part in the demonstrative social flights over the colony territory because of their demanding, full-time involvement in feeding their young.

This makes it understandable why the durations of stay reported in the literature differ so much \( (e.g. \text{Beklová 1975, Klůz 1950, Couch 1832 and S. Christophers in litt.}) \). These apparent differences cover periods of up to about two weeks, depending upon which arrival wave the birds belonged to, or upon the degree of fortune the observers had in recording the first wave.

Because the first wave comprises only a few scattered birds, it is important to obtain and find as many records as possible to test and support the hypothesis of its occurrence. From Beklová (1975), the duration of stay for Czechoslovakia as a whole was 106 days, indicating that the arrival of the first wave was indeed noticed, whereas local observers stated 95 days (Klůz 1950). For larger, long-observed colonies, it was a relatively straightforward process to record the birds from the first wave. Analysis of the dates shows correspondence between these first sightings and the Advance Guard being breeders. Lack (1958) reported the first Common Swifts arriving at the colony at the Museum in Oxford around 1 May, most of them having left by around 17 August, representing a duration of about 109 days. E. Kaiser \( \text{in litt.} \), who has observed a colony of about 55 breeding pairs since the 1960s, has confirmed that the first birds he finds at the beginning of the breeding season fly to his colony in
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Kronberg and into the neighbouring church tower. Weitnauer & Scherner (1980) stated that the arrival phase lasts “1–14 days”. Tigges (2003) documented an early arrival on nest some 10 days earlier than the median. One can also find this pattern in Bernis (1988), noting that in Madrid, the first sightings are on 12 April (*n*=21) and that they go to the nest site on 25 April (*n*=18). Furthermore, a figure in his book shows that 5 different observers recorded a major departure of the population around 27 July 1985, giving durations of stay of 94 days for the Main Body and 107 days since the arrival of the Advance Guard.

**Duration of stay**

In this survey, the arrival and departure dates from 22 locations (Table 1) are very similar, being within ±3 days of the Berlin dates. The 22 locations include all geographical extremes, Tel Aviv in the south, Coimbra/Porto and Glasgow in the West, Drammen and Viborg in the north and Peking in the east. But from some places there are only few records, for example, from Tel Aviv, Peking and from Portugal. The number (*n*) of breeding seasons monitored per site (where known or listed) is higher in the north than in the south, which tends to validate the shorter duration of stay recorded in the north.

If the breeding range of *A. apus* is roughly divided into three regions, the northernmost being 56°–68°N, the middle 44°–55°N and the southernmost 32°–43°N, then we find a reasonable correlation with the recorded duration of stay in those regions, the values obtained being; north, c. 85–100 days, middle, c. 90–110 days and south, c. 100-120 days (Fig. 1).

In general, the duration of stay recorded in the south of the breeding range is longer than in the north. The dates given for the duration of stay in breeding areas (Table 1 and Fig. 1) show that the duration increases with decreasing latitude. In most places the species stays 95 ±3 (92–98) days on the nest; longer and shorter stays appear to be widely spread, but concentrate in the north and east (shorter, 77–91) and south (longer, 99–111) (Fig. 1).

Observations of fewer than 13 records in 37 locations are presented separately in Table 1. Although they cannot provide more than suggestions, we have to take them into discussion, because of the lack of other dates. Observations of at least 13 years (*n*≥13) are valued as conclusive, because both in Berlin and in Skurup the control of dates from 13 and 14 data showed that the dates got the same results, either as median or as medial calculation. Observations with fewer dates are therefore judged as inconclusive. This is why the duration of stay of only 8 locations in this collection can be seen as conclusive, and I want to stress that the following discussion can take place only under the condition that many dates are inconclusive.
To my knowledge, only a few authors (Klůz 1950, Koskimies 1950, Weitnauer 1990) ever broached the issue of the duration of the Common Swift’s stay. The average length of stay at Lázně Bělohrad in northeast Bohemia was 96.5 days for 1936–1949 \((n=14)\), the median being 95 days. Beklová (1975) calculated the average stay in the whole of what was then Czechoslovakia (ČSSR) as 106 days (1964–1971), citing Zdeněnek Klůz’ shorter period, but without any explanation of the difference. The shortest durations of stay were in northwest Russia, 77 days in the Murmansk \((n=45)\) region, and in Fennoscandia, 81 days at Lahti \((n=5)\), south Finland, and 87 days at Skurup \((n=11)\), south Sweden and in 97/88 days in Oltingen, north Switzerland \((n=42/43)\). These dates were collected over a longer period.

The longest stay of 125 days comes from the Bosphorus area \((n=6)\), but here the data are in parts imprecise. The better the differentiation between the different phases of the arrival process and the differentiation between residents and migrants, the higher the quality of the data. However in each region, both longer and shorter stays have been recorded in sub-areas.

**Mean duration of stay**

All dates, with the exceptions of the Murmansk area, Lahti, and the Bosphorus area occur in the 85 to 122 day band, and lie inside the variation recorded in Berlin of 84 to 123 days. A mean duration of stay value of from 95 to 109 days \((±3\text{ days})\), which also corresponds to the median dates in Berlin, is the most common value, occurring across the whole area, like Aasla Island, Drammen, Ivanovo, Viborg, Glasgow, Aalsmeer, Oxford, the ČSSR, Lázně Bělohrad, Cornwall, Cherkasy, Tul’chin, Solymosvár, Forli, Livorno, Coimbra, Porto, Madrid, Erzurum and Tel Aviv. In Fennoscandia and Northwest Russia, the stay at four locations (Skurup, Lemsjöholm, Laht, Murmansk) is shown to be becoming steadily shorter from south to north; apart from the isolated short stay in Oltingen (Switzerland).

**Shorter Duration of Stay**

In 12 locations a shorter period (<92 days) was reported; six of these are in the north, five are in the central region and the last is at Bishkek (Frunse) in the south. The dates, from the northernmost locations in the Murmansk region are the shortest recorded from any locations in this paper, the median being 77 days \((n=44/45)\). There are no dates from nest sites in the Murmansk area; but in three out of 21 successfully raised broods in Skurup the last adult left the nest after 73, 77 and 78 days (J. Holmgren *in litt.*), which indicates that successful broods were possible in the Murmansk area as well.

In Switzerland a 44-year data sequence proves a stay of 97 (species) and 88 (individuals) days. On Aasla Island the 104-day duration of stay is indeterminate, for it could represent a stay of normal duration or a short stay if two weeks of it has been included because the Advance Guard had been detected. The single observation from Bishkek reports that the start of nest building was observed over a period of 10 days, which occurs just a short time after arrival at the colony, and so these data might actually be representative of the normal duration of stay.

However, the duration of stay in Skurup does not correspond latitudinally with the dates obtained from Drammen, Glasgow, Viborg, Konakovskiy, Ivanovo and Ulyanovsk, all of which are situated further north than Skurup. Why this should be is unclear. In Drammen, Glasgow and Viborg the range of the duration of stay is 95–97 days, coinciding almost precisely with that measured in Berlin.
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**Table 1.** Arrival, departure and duration of stay of Common Swift in Eurasian breeding areas (Sequence followed is from south to north). Key: C=central, N=north, W=west, E= east, S=south, dec. = decade, M = median, Mass = main body of migrants, Max/min stay = days (median arrival to median departure at extremes recorded). Dates follow European convention of ‘day - month’.

<table>
<thead>
<tr>
<th>Location</th>
<th>Decimal Lat/Long: Elevation above sea level</th>
<th>Arrival range</th>
<th>n</th>
<th>Departure date</th>
<th>n</th>
<th>Max/min stay</th>
<th>Sources</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oettingen, N Switzerland</td>
<td>47.43° N, 7.93° E 600m</td>
<td>M 29.4/M 8.5 43</td>
<td>2.3.8</td>
<td>42</td>
<td>97/88</td>
<td>Weitnauer 1990</td>
<td>Only generalized dates. A consecutive row of n=16 is 1./2.5</td>
<td></td>
</tr>
<tr>
<td>Lázně Bělohrad, Czech Republic</td>
<td>50.42° N, 15.35° E 300m</td>
<td>M 4.5 14</td>
<td>M 6.8 14</td>
<td>95</td>
<td>Klüz 1950</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berlin, E Germany</td>
<td>52.48° N, 13.42° E 53m</td>
<td>M 24.4/M 8.5 24/13</td>
<td>M 10.8 13</td>
<td>109/95</td>
<td>Tigges 2000, U. Tigges</td>
<td></td>
<td></td>
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<tr>
<td>Skurup, S Sweden</td>
<td>55.46° N, 13.50° E 50m</td>
<td>M13.5/24.5 14/36</td>
<td>17.8</td>
<td>14</td>
<td>97/87</td>
<td>Holmgren in litt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helsinki, S Finland</td>
<td>60.17° N, 24.94° E 20m</td>
<td>M 8.5/ M 27.5 29/20</td>
<td>M 20.8 20</td>
<td>105/86</td>
<td>Kolunen in litt.: Kärkkäinen in litt. after Hällsten</td>
<td>Early/late dates Kolunen, 20.5-1.6/15-25.8 over 20 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aasla Island, SW Finland</td>
<td>60.29° N, 21.95° E 20m</td>
<td>M 21.5 31</td>
<td>31.8</td>
<td>20</td>
<td>104</td>
<td>Saari in litt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemsjöholm, SW Finland</td>
<td>60.50° N, 22° E 6m</td>
<td>20.5/27.5 13</td>
<td>23.8</td>
<td>14</td>
<td>96/89</td>
<td>von Haartman 1951</td>
<td>Mass 27.5</td>
<td></td>
</tr>
<tr>
<td>Murmansk area, NW Russia</td>
<td>68.96° N, 33.08° E 100m</td>
<td>M 9.6 45</td>
<td>M 24.8 44</td>
<td>77</td>
<td>Gyliazov in litt.</td>
<td>Some remain into September</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infirm situation (n112)</td>
<td></td>
<td></td>
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<tr>
<td>Tel Aviv, C Israel</td>
<td>32.07° N, 34.77° E 10m</td>
<td>11.2/28.2 1</td>
<td>7.6</td>
<td>1</td>
<td>118/101</td>
<td>Tigges 2001</td>
<td>Leap year! Many 28.2</td>
<td></td>
</tr>
<tr>
<td>Tel Aviv, C Israel</td>
<td>32.07° N, 34.77° E 10m</td>
<td>19.2/6.3 1</td>
<td>8.6</td>
<td>1</td>
<td>110/95</td>
<td>Geron 2005</td>
<td>Many 6.3</td>
<td></td>
</tr>
<tr>
<td>Teheran, N Iran</td>
<td>35.67° N, 51.43° E 1300m</td>
<td>M 11.3 4</td>
<td>5.7</td>
<td>4</td>
<td>117</td>
<td>Khaleghizadeh 2005</td>
<td></td>
<td></td>
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<tr>
<td>Meshed, NE Iran</td>
<td>36.27° N, 59.57° E 980m</td>
<td>29.3/8.4 29.7</td>
<td>121/111</td>
<td>Zarudnii 1903 [Feflov 2006]</td>
<td>17.3-26.3 and dep. “middle July”. Jul. calendar in original</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beidaihe, E China</td>
<td>39.90° N, 119.48° E 40m</td>
<td>3.5</td>
<td></td>
<td></td>
<td></td>
<td>Jesper Hornskov in litt.</td>
<td>27.4-8.5 (1997-2005)</td>
<td></td>
</tr>
<tr>
<td>Erzurum, E Turkey</td>
<td>39.91° N, 41.29° E 1900m</td>
<td>M 29.4 2</td>
<td>M 17.8 2</td>
<td>111</td>
<td>McGregor 1917</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peking, E China</td>
<td>39.93° N, 116.40° E 50m</td>
<td>1.4</td>
<td>31.7</td>
<td>122</td>
<td>David &amp; Oustalet 1877</td>
<td>Arr April, dep end July</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peking, E China</td>
<td>39.93° N, 116.40° E 50m</td>
<td>12.4</td>
<td>3.8</td>
<td>114</td>
<td>Ia Touche 1931-1934</td>
<td>Arr from 1-23 April dep early Aug</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peking, E China</td>
<td>39.93° N, 116.40° E 50m</td>
<td>1/6.5</td>
<td></td>
<td></td>
<td>Bertilsson, Hornskov, Johannessen on different websites</td>
<td>Spot observations on 1, 5 and 6 May</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Decimal Lat/Long; Elevation above sea level</td>
<td>Arrival date range</td>
<td>n=</td>
<td>Departure date</td>
<td>n=</td>
<td>Max/min stay</td>
<td>Sources</td>
<td>Remarks</td>
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<tr>
<td>Coimbra, C Portugal</td>
<td>40.22° N, 8.43° W 90m</td>
<td></td>
<td></td>
<td>18.7</td>
<td></td>
<td></td>
<td>Tait 1924</td>
<td>Third week July</td>
</tr>
<tr>
<td>Madrid, C Spain</td>
<td>40.42° N, 3.71° W 670m</td>
<td>M12.4/25.4</td>
<td>21/18</td>
<td>27.7</td>
<td>107/94</td>
<td></td>
<td>Bernis 1988</td>
<td>2 different medians: M 15.4 + M 17.4 in summary</td>
</tr>
<tr>
<td>Bosporus, NW Turkey</td>
<td>41.10° N, 29.00° E 50m</td>
<td>M 13.4</td>
<td>6</td>
<td>15.8</td>
<td></td>
<td></td>
<td>Mathey-Dupraz 1921</td>
<td>Breeders have left mid Aug.</td>
</tr>
<tr>
<td>Oporto (Porto), N Portugal</td>
<td>41.15° N, 8.42° W 400m</td>
<td>11.4/18.4</td>
<td></td>
<td></td>
<td>99/92</td>
<td></td>
<td>Tait 1924</td>
<td>Occ. 2nd week and 3rd week April abundant</td>
</tr>
<tr>
<td>Frunse (Bishkek), N Kyrgyzstan</td>
<td>42.87° N, 74.57° E 750m</td>
<td>29.4</td>
<td>1</td>
<td>27.7</td>
<td>1</td>
<td>90</td>
<td>Fedyanina 1981</td>
<td>25.4-4.5 “start nest building”</td>
</tr>
<tr>
<td>Livorno, NW Italy</td>
<td>43.35° N, 10.30° E 10m</td>
<td>5.4</td>
<td>1</td>
<td>19.7</td>
<td>1</td>
<td>106</td>
<td>Paesani in litt.</td>
<td></td>
</tr>
<tr>
<td>Nîmes, S France</td>
<td>43.84° N, 4.35° E 70m</td>
<td>13.4</td>
<td></td>
<td>5.8</td>
<td>135</td>
<td></td>
<td>Hugues &amp; Cabanes 1918</td>
<td>4-6.8</td>
</tr>
<tr>
<td>Nîmes, S France</td>
<td>43.84° N, 4.35° E 70m</td>
<td></td>
<td>19.4</td>
<td>10.8</td>
<td></td>
<td></td>
<td>Hugues &amp; Cabanes 1918</td>
<td></td>
</tr>
<tr>
<td>Forlì, NE Italy</td>
<td>44.22° N, 12.03° E 30m</td>
<td>M 9.4</td>
<td>4</td>
<td>13.7</td>
<td>96</td>
<td></td>
<td>Belosi in litt.</td>
<td>Dep. 17.7.03, 9.7.04</td>
</tr>
<tr>
<td>Solymosvár (Arad), W Romania</td>
<td>46.19° N, 21.32° E 106m</td>
<td>21.4</td>
<td>1</td>
<td>12.8</td>
<td>1</td>
<td>114</td>
<td>Warga 1929</td>
<td></td>
</tr>
<tr>
<td>Solymosvár (Arad), W Romania</td>
<td>46.19° N, 21.32° E 106m</td>
<td></td>
<td>4.5</td>
<td>6.8</td>
<td>1</td>
<td>95</td>
<td>Warga 1929</td>
<td></td>
</tr>
<tr>
<td>Berdyansk, E Ukraine</td>
<td>46.75° N, 36.79° E 4m</td>
<td>M 30.4</td>
<td>4</td>
<td>25.8</td>
<td>4</td>
<td>118</td>
<td>Loshakov 1969</td>
<td></td>
</tr>
<tr>
<td>Dijon, E France</td>
<td>47.33° N, 5.03° E 250m</td>
<td>M 23.4</td>
<td>6</td>
<td>30.7</td>
<td>99</td>
<td></td>
<td>Paris 1910</td>
<td>Last days of July</td>
</tr>
<tr>
<td>Tul’chin, W Ukraine</td>
<td>48.68° N, 28.86° E 250m</td>
<td>M 12.5</td>
<td>6</td>
<td>16.8</td>
<td>2</td>
<td>97</td>
<td>Ocheretny 1998 [Fefelov 2005]</td>
<td></td>
</tr>
<tr>
<td>Letychiv District, W Ukraine</td>
<td>49.30° N, 27.50° E 300m</td>
<td>M 15.5</td>
<td>5</td>
<td>M 13.8</td>
<td>10</td>
<td>91</td>
<td>Novak 2002 [Fefelov 2005]</td>
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<tr>
<td>Cherkasy District, C Ukraine</td>
<td>49.43° N, 32.07° E 100m</td>
<td>M 1.5</td>
<td>6</td>
<td>M 20.8</td>
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<td>112</td>
<td>Gavrilyuk 2002 [Fefelov 2005]</td>
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</tr>
<tr>
<td>CSSR, former Czechoslovakia</td>
<td>50° N, 15° E 200-300m</td>
<td></td>
<td></td>
<td></td>
<td>106</td>
<td></td>
<td>Beklová 1975</td>
<td>M after source</td>
</tr>
<tr>
<td>Bil’kivtsi village, C Ukraine</td>
<td>50° N, 28° E unknown</td>
<td>M 8.5</td>
<td>5</td>
<td>M 28.8</td>
<td>2</td>
<td>113</td>
<td>Poljushkevich 1998 [Fefelov 2005]</td>
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<tr>
<td>Polperro, SW England</td>
<td>50.33° N, 4.51° W 5m</td>
<td>M 5.5</td>
<td>17</td>
<td>M 9.8</td>
<td>10</td>
<td>97</td>
<td>Couch 1832</td>
<td></td>
</tr>
<tr>
<td>Cornwall, SW England</td>
<td>50° N, 4° W 50m</td>
<td>M 20.4</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td>Christophers in litt.</td>
<td></td>
</tr>
<tr>
<td>Oxford, S England</td>
<td>51.76° N, 1.26° E 60m</td>
<td>1.5</td>
<td></td>
<td>17.8</td>
<td>109</td>
<td></td>
<td>Lack 1958</td>
<td></td>
</tr>
<tr>
<td>Aalsmeer, Netherlands</td>
<td>52.27° N, 4.76° E 0m</td>
<td>24.4</td>
<td></td>
<td>29.7</td>
<td>97</td>
<td></td>
<td>Middlekoop in litt.</td>
<td></td>
</tr>
<tr>
<td>Ulyanovsk (Simbirsk), S Russia</td>
<td>54.15° N, 48.50° E 100m</td>
<td>M 9.5</td>
<td>5</td>
<td>5.8</td>
<td>90</td>
<td></td>
<td>Moskvichev 2005</td>
<td>1. dec. August</td>
</tr>
<tr>
<td>Uyan, SE Siberia</td>
<td>54.34° N, 101.99° E 420m</td>
<td>M 21.5</td>
<td>6</td>
<td>M 17.8</td>
<td>6</td>
<td>89</td>
<td>Fefelov 2004a</td>
<td></td>
</tr>
</tbody>
</table>
The phenology of the Common Swift *Apus apus* in Eurasia … – U. Tigges

### Table 2. Comparison of Common Swift datasets at four sites; Lahti, Skurup, Berlin and Oltingen.

<table>
<thead>
<tr>
<th>Year</th>
<th>Arrival of 1st bird in area</th>
<th>Arrival of 1st adult on nest</th>
<th>First egg laid</th>
<th>Adult begins to incubate</th>
<th>Hatching begins</th>
<th>Departure of 1st chick (omits hatch day)</th>
<th>Departure of last adult</th>
<th>Duration of adults stay on nest</th>
<th>Brooding duration of 1st chick (omits hatch day)</th>
<th>Departure (omits hatch day)</th>
<th>Source/ Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murmansk area</td>
<td>65.96°N, 33.06°E</td>
<td>M 9.6 n=45</td>
<td>10.05 n=3 (18.05 n=5)</td>
<td>10.06 n=6</td>
<td>12.06 n=7</td>
<td>11.08 n=7</td>
<td>18.08 n=7</td>
<td>Difference from medians 81 days</td>
<td>Difference from medians 21 days</td>
<td>Difference from medians 39 days</td>
<td>Gyljazov In litt.</td>
</tr>
<tr>
<td>Lahti</td>
<td>60.99°N, 25.66°E 100m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Kolunen In litt.</td>
</tr>
<tr>
<td>Skurup</td>
<td>55.46°N, 13.50°E</td>
<td>13.05 n=14</td>
<td>24.05 n=36</td>
<td>09.06 n=33</td>
<td>13.06 n=24</td>
<td>02.07 n=7</td>
<td>10.08 n=25</td>
<td>16./17.08 n=14</td>
<td>Difference from medians 86 days</td>
<td>Difference from medians 19 days</td>
<td>Difference from medians 39 days</td>
</tr>
<tr>
<td>Berlin</td>
<td>52.52°N, 13.38°E</td>
<td>30.04 n=14</td>
<td>08.05 n=13</td>
<td>27.05 n=12</td>
<td>30.05 n=11</td>
<td>21.06 n=9</td>
<td>03.08 n=13</td>
<td>10.08 n=13</td>
<td>Difference from medians 95 days</td>
<td>Difference from medians 19 days</td>
<td>Difference from medians 39 days</td>
</tr>
<tr>
<td>Oltingen</td>
<td>47.43°N, 7.93°E</td>
<td>29.04 n=43</td>
<td>29.04/08.05 (mass) n=43</td>
<td>20.5 n=43</td>
<td>*22.5 n=43</td>
<td>*10.6 n=43</td>
<td>*22.7 n=43</td>
<td>3.08 n=42</td>
<td>Difference from medians (mass) 88 days</td>
<td>Difference from medians 19 days</td>
<td>Difference from medians 43 days</td>
</tr>
</tbody>
</table>

NB. When dates taken from different years were not close, they were assessed separately. Decimal latitudes and longitudes of locations are from http://www.world-gazetteer.com, from contributors or Google Earth. The altitude is taken from Google Earth.

<table>
<thead>
<tr>
<th>Location</th>
<th>Decimal Lat/Long; Elevation above sea level</th>
<th>Arrival range</th>
<th>Date</th>
<th>n=</th>
<th>Departure range</th>
<th>Departure date</th>
<th>n=</th>
<th>Max/min stay</th>
<th>Sources</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow, Scotland</td>
<td>55.87°N, 4.27°W 30m</td>
<td>13.5</td>
<td>7</td>
<td>16.6</td>
<td>5</td>
<td>96</td>
<td>John S. Wilson in litt.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Konakovskyi District, W Russia</td>
<td>56°N, 35°E 200m</td>
<td>16.5</td>
<td>2</td>
<td>12.8</td>
<td>2</td>
<td>89</td>
<td>Nikolaeff 1998 [Shergalin 2005a]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viborg, N Denmark</td>
<td>56.46°N, 9.41°E 40m</td>
<td>M 8.5</td>
<td>7</td>
<td>M 10.8</td>
<td>6</td>
<td>95</td>
<td>Skovgaard 1924</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tomsk, W Siberia</td>
<td>56.50°N, 94.97°E 100m</td>
<td>27.5</td>
<td>9</td>
<td>19.8</td>
<td>85</td>
<td>Savchenko et al. 2001 [Fefelov 2004b]</td>
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</tr>
<tr>
<td>Ivanovo, W Russia</td>
<td>57.01°N, 40.99°E 120m</td>
<td>M 19.5</td>
<td>8</td>
<td>20.8</td>
<td>8</td>
<td>94</td>
<td>Gerasimov et al. 2000 [Shergalin 2005b]</td>
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<td></td>
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</tr>
<tr>
<td>Drammen, S Norway</td>
<td>59.75°N, 10.20°E 20m</td>
<td>M 20.5</td>
<td>8</td>
<td>24.8</td>
<td>97</td>
<td>Haftorn 1971 [E.Chapman in litt.]</td>
<td></td>
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</tr>
<tr>
<td>Leningrad (St Petersburg), Russia</td>
<td>59.93°N, 30.32°E 10m</td>
<td>M 18.5</td>
<td>9</td>
<td>10.9</td>
<td>10</td>
<td>116</td>
<td>Krabryi 1991 [Shergalin 2005c]</td>
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<tr>
<td>Lahti, S Finland</td>
<td>60.99°N, 25.66°E 100m</td>
<td>12.5/30.5</td>
<td>41/5</td>
<td>18.8</td>
<td>7</td>
<td>99/81</td>
<td>Kolunen in litt.</td>
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</tr>
<tr>
<td>Dokkas/Gällivare, N Sweden</td>
<td>67.15°N, 20.65°E 960m</td>
<td>22.5/10.6</td>
<td>(10.9) uncertain</td>
<td>(112/93)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Altitude</th>
<th>Elevation above sea level</th>
<th>Arrival range</th>
<th>Date</th>
<th>n=</th>
<th>Departure range</th>
<th>Departure date</th>
<th>n=</th>
<th>Max/min stay</th>
<th>Sources</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
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<td>M 9.6 n=45</td>
<td>10.05 n=3 (18.05 n=5)</td>
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<td>12.06 n=7</td>
<td>11.08 n=7</td>
<td>18.08 n=7</td>
<td>Difference from medians 81 days</td>
<td>Difference from medians 21 days</td>
<td>Difference from medians 39 days</td>
<td>Gyljazov In litt.</td>
</tr>
<tr>
<td>Lahti</td>
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</tr>
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<td>Oltingen</td>
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<td>29.04/08.05 (mass) n=43</td>
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</tr>
</tbody>
</table>
**Longer Duration of Stay**

In nine locations, durations of stay longer than the mean were reported. Two in east China are the furthest known from the wintering grounds. The older datasets from Peking give dates covering a very wide range (e.g. “April” or “1–23 April”). These very generalised dates of an unknown number of observations which I mediated to 12 April, do not correlate with more recent datasets (around 1st week of May; Bertilsson *in litt.*), Hornskov *in litt.*, Johannessen *in litt.*), nor do they align with those from Beidaihe (China, Hebei Province), 280 km further east on the coast (*J. Hornskov in litt.*). Although the recent dates from Peking are from travellers passing through making observations and not from study sites, Bertilsson *in litt.* reported an increasing count later in the month, and so it is likely that the latter observations coincide with the arrival of the Main Body. This conclusion is supported by his observation from Beidaihe, where *J. Hornskov in litt.* ascertains the Main Body as arriving between 27 April and 8 May, the early arrivals (Advance Guard) being seen on 10 April, in both 1997 and 2005. However, none of the three observers have recorded departure dates yet.

Nevertheless, since this breeding area is the furthest away from the African wintering areas (Ali & Ripley 1970), the later arrival date would be more likely, especially if we assume that the species does not arrive at the same time in places like Turkey, relatively close to the wintering area, and distant eastern China. Although Ali & Ripley (1970) mentioned that small numbers of Common Swifts overwinter in northern India, they allowed that this might have been casual and not regular. Certainly Grimmelt *et al.* (1998) and Rasmussen & Anderton (2005) do not admit to this hypothesis.

Confusion may be sown amongst observers by the possible presence of birds from further north or east pausing on passage to Africa; the scope for erroneous records of departure is considerable. For example, Table 1 shows that in Tel Aviv the median departure date of Common Swift is 8 June, but in Jerusalem some Common Swifts can often be seen in late June or early July (*Y. Cornfeld in litt.*). However, unlike Tel Aviv, Jerusalem lies on the main outward migration route through the Middle East (Leshem & Bahat 1996). Although it remains to be confirmed whether the Common Swift actually uses this route, it seems a worthwhile assumption explaining why the species is recorded in Jerusalem for longer than the 109 day period on a more or less regular basis. It is also unlikely that the Common Swift would exhibit radically different behaviour in locations separated by only 70 km.

The observations of Mathey-Dupraz (1921) from the Bosphorus area differ widely from the others. She quotes a range of 10 days for the departure, which I mediated. In addition, the Bosphorus, like Iran and the south of France, lies on a migration route. The dates from Teheran indicate a duration of stay of 117 days, at Meshed 121/111 (max/min) and at Berdyansk 118, all of which may indicate a longer stay in the south. But when we consider the migration factor and compare the Teheran results with those from Berdyansk, c. 1650 km further north, the question arises as to why shorter periods have not (yet) been detected over such a long distance. Some Mediterranean and central Asian locations are in the distribution ranges of *A. pallidus, affinis* and *unicolor*, whose movements and their timing might be a source of confusion, contributing to apparent longer durations of stay.

The development of the chicks at mean and shorter stays is presented in Table 2, but the discrepancies revealed are not linear. There are no dates available from the Murmansk area. The development time from the first egg to the departure of the last chick in Skurup from the three broods observed during the very short stays of 73, 77 and 78 days were 64, 64, 62 days, respectively.

**Is length of stay influenced by behavioural differences or physical conditions?**

Nearly all the collected dates are within the variation of the length of stay that the Common Swift shows in Berlin, which lies right in the middle of the three approximate latitudinal divisions of its breeding range. Only the data from parts of Fennoscandia, northwest Russia and the Bosphorus area lie outside these variation limits of which the latter is an infinite date.
Koskimies (1950) compared the arrival and departure dates in northern and central Europe (Finland and Switzerland) and found that the northern dates just shifted into the summer. So far, Oltingen in Switzerland seems to be an island of a short stay amongst middle term stays. This might be caused by the vertical temperature gradient, because the location lies at 600 m altitude (see further below).

What makes the Common Swift leave the breeding areas? Certainly not the food supply, because flying insects are available everywhere until deep into autumn. Because the light period across its range reduces with reducing latitude, it is also certainly not a light period of 17 hours, as Weitnauer & Scherner (1980) surmised. What I and other observers (e.g. Koskimies 1950) have seen is that the main departure is related to the end of the breeding process, when the fledglings leave the nest. When early broods leave the nest, the adults may linger, probably to attain ideal migration condition, for a few days in the colonies, but parents of late broods tend to depart immediately after the young have left the nest.

There are two potential ways that the Common Swift might adapt its breeding process either to cope better with year-on-year conditions (weather, food availability) or changing conditions (environmental, climatic), and both involve varying the duration of stay. The species is therefore less than adequate as an indicator of climate changes.

The first is the degree by which the Common Swift might vary the extent of the arrival process, which in central Europe, for example, takes two weeks. It could be imagined that evolutionary pressures might produce behavioural changes in favour of shortening this aspect for the northernmost populations and possibly enlarging it for populations in the south of the breeding range, if such changes favoured better breeding success. Amongst other migrant species, some exhibit the adaptive behaviour of some males and females arriving early and breeding early, if conditions permit, well ahead of the majority, yet others arrive early to commandeer primary breeding habitat. Generally, such a strategy is not favoured by the Common Swift, which almost always uses the same nests or nest locations.

The second adaptation that the Common Swift might exhibit is variability in chick development. Because the species is limited to airborne food, periods of bad weather can cause long periods of food shortage, to which pressure the development of young has adapted by entering a process of torpidity whereby normal bodily processes enter dormancy. The parents may even leave the nest area for some days. Consequently the growing process may extend, the median for those studied by Lack & Lack (1951) was 41.5 days, but they recorded 35% extensions to 56 days (Lack & Lack 1951). The longer process of development does result in a longer duration of stay. The median period of 41.5 days also occurs in Berlin. Cramp (1994) similarly gives 42.5 days.

In the warm and dry year of 1995 the development of the young in the nest in Berlin under my observation took only 40 days (Tigges 2000b). During brooding, the duration of the eggs to fledging stage is about 68 days in the middle region and differs little from other swifts, A. pallidus taking 67 days or A. affinis 62 days, but further to the south (Cramp 1994). It might be expected that the less than ideal weather conditions for Common Swift in its northernmost breeding range that the duration of stay there would extend rather than shorten, but counterintuitively, the dates from Skurup, Lahti and the Murmansk area indicate that the opposite happens. The different phases of the stay (Tigges 2000b) shorten like this (The numbers are the median periods, in days, for Berlin, Skurup and Lahti in that sequence):

a. From arrival at the nest until the first egg is laid – 19-16-11.
b. Length of time first egg takes to hatch – 25-23-21.
d. From fledging of first chick to departure of parents – 7-5-7.

An evident advantage of early arrival at the breeding ground and a shorter chick development period is the chance of producing a second clutch over an extended duration of stay where conditions permit, behaviour exhibited by many resident and migratory species. However, for the Common Swift this phenomenon is conspicuous by its absence. There have been recent reports from central Europe of attempts at a second clutch (Kaiser 2004), but I was unable to find any from the southern region of the breeding range, where
conditions would seem to be ideal for this strategy. It would seem that even a duration of stay of 125 days in the Bosphorus region is insufficient for a second brood. A pair that raised a successful second brood in Germany stayed about 145 days on the nest (E. Kaiser in litt.). If conditions rule out the possibility of a second brood, or if the impulse to do so is not endogenous in the bulk of the breeding population, there is no need for a longer stay in the breeding grounds.

If we exclude genetic determinations causing differing behaviour in the Common Swift, we do have to consider that climatic values would be a reason for the apparent differences in the duration of stay. The shorter stay in some places in the north leads us in that direction. The same goes for the shorter stay recorded in Switzerland at an elevation of 600 m above sea level. A comparison of the climatic situation in the different locations, such as sums of temperature during the stay and the fictive additional period would bring more light to the problem. But since weather varies from year to year, a long period of recorded dates would be necessary for any definite statements. A first check had to be abandoned, because dates for only four years were available (Table 3; Source: Russia’s Weather Server – Weather Archive, http://195.170.225.189/wcarch/html/). This survey of temperatures over four years does not show any significant changes from short or long to mean stays. The years of 2000–2003 are remembered as having been warm.

Table 3. Comparison of weather dates of some locations with different lengths of stay. Fictive data (calculated to and from the mean stay of 95 days) are in square brackets.

<table>
<thead>
<tr>
<th>Location</th>
<th>days from last frost</th>
<th>sum arrival temperature</th>
<th>sum departure temperature (fictive dates)</th>
<th>days until next frost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murmansk</td>
<td>14</td>
<td>54</td>
<td>48 34 [62] [23]</td>
<td>26 [8]</td>
</tr>
<tr>
<td>Ulyanovsk</td>
<td>4</td>
<td>72</td>
<td>96 52 [106] [44]</td>
<td>50 [44]</td>
</tr>
<tr>
<td>Uyan</td>
<td>13</td>
<td>76</td>
<td>89 41 [96] [45]</td>
<td>28 [22]</td>
</tr>
<tr>
<td>Oltingen</td>
<td>26</td>
<td>87</td>
<td>122 52 [99] [59]</td>
<td>92 [84]</td>
</tr>
<tr>
<td>Berlin</td>
<td>37</td>
<td>102</td>
<td>103 68</td>
<td>97</td>
</tr>
<tr>
<td>Viborg</td>
<td>30</td>
<td>74</td>
<td>92 58</td>
<td>86</td>
</tr>
<tr>
<td>Teheran</td>
<td>-8</td>
<td>54</td>
<td>9 [112] [74] 144 95 141 [163] [8251] [3912] 11140 5568</td>
<td></td>
</tr>
</tbody>
</table>

At present there is no evidence that the Common Swift is responding to long-term climate change by breeding earlier or by raising second broods. However, the relatively low observer density across much of the Common Swift’s southern breeding distribution might have a bearing on the lack of double-brood records in that region. Nevertheless, it seems clear that in its northernmost breeding distribution, the species does seem to have adapted to take advantage of the short Arctic summer, when insect food is superabundant. With regard to the differences in the recorded stays there (on one hand the coincidence with dates from the middle area and on the other, proven shorter stays on the nest), there is evidence that the species is probably in the process of adapting to the northern conditions.

Further research is clearly needed to establish the limits of the area and the governing conditions (e.g. altitude, temperature, etc.) in which this shortened duration of stay is apparent, because it is not simply related to latitude.

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REFERENCES


Haftorn S. 1971. [Birds of Norway]. Universitetsforlaget, Oslo-Bergen-Tromsø, p. 468–473. [In Norwegian]


Of mixed mineralogy, geology, and meteorology… – U. Tigges
Hintz W. 1857. An kunft u. Wegzug der Vogel
Pommerns [Arrival and departure of the birds of
Hugues A. & Cabanes G. 1918. Le départ des
Martinets en 1917 [The departure of the Swifts in
1917]. Revue française d'Ornithologie 102: 146–
148. [In French]
Zweitbruten beim Mauersegler Apus apus
[Accumulating reports of second broods in
Common Swifts Apus apus]. Vogelwelt 125: 113–
115. [In German]
Swift Apus apus in the Middle East - Tehran, Iran.
Sangdrouse 27(1): 79–82.
Fauna, distribution, conservation]. St.-Petersburg.
In: Paevsky V.A. (ed.), Proc. of Zool. Institute of
Russ. Ac. of Sc. 236, 276 pp. [In Russian].
Accessible under Shergalin [2005c].
Klüz Z. 1950. [Contribution to the nidobiology of
the Swift (Micropus a. apus (L.)). Sylvia 11/12:
37–51. [In Czech with English summary]
Koskimies J. 1950. The life of the Swift, Micropus
apus (L.), in relation to the weather. Annales
Academiae Scientiarum Fennicae, Series A. IV
Biologica 15: 1–151.
Lack D. & Lack E. 1951. The breeding biology of
Lack D. 1958. The return and departure of Swifts
Leidgren A. 1985. [Notes on the Swifts of Lapland].
Fåglar i Norrbotten 2: 10–15. [In Swedish]
Leshem Y. & Bahat O. 1996. [Flying with the
birds]. Yedioth Ahronoth & Chmed Books Ltd.,
Tel Aviv. [In Hebrew]
Vestnik zoologii (Zoological Record) 3: 88–89. [In
Russian with English summary]
Mathey-Dupraz A. 1921. Notes ornithologiques de
la région du Bosphore [Ornithological notes from
the Bosphorus region]. Ornithol. Beob. 18: 101–
104. [In French]
Die Vogel der Schweiz [The Birds of Switzerland].
Schweizerische Vogelwarte, Sempach. [In German]
McGregor P.J.C. 1917. Notes on Birds observed at
Meisner F. & Schinz H.R. 1815. Die Vögel der
Schweiz [The Birds of Switzerland]. Orell, Füßli
und Comp., Zürich. [In German]
Moskvichev A.N. 2005. Arrival and departure of
Common Swift in Ulyanovsk, Russia, in 1999–
Nikolaev V.I. 1998. [Birds of the march landscapes
of National Park "Zavidovo" and Upper Volga
River area]. 214 pp. [In Russian]. Accessible
under Shergalin [2005a].
Novak V.O. 2002. [Materials on the phenology of
bird migrations in Podolia.1. Non-Passeriformes].
Berkut, Supplement: Avifauna of Ukraine 2: 73–
86. [In Ukrainian]. Accessible under Fefelov
[2005].
Ocheretny D.G. 1998. [Materials on the phenology of
bird migrations in the Tulchin District of the
Vinnitsa Region]. Berkut, Supplement: Avifauna
of Ukraine 1: 74–82. [In Ukrainian]. Accessible
under Fefelov [2005].
Paris P. 1910. Arrivée et départ des Hirondelles et
des Martinets aux environs de Dijon [Arrival and
departure of Swallows and Swifts in the Dijon
area]. Revue française d'Ornithologie 8: 255. [In
French]
Poljushkevich I.M. 1998. [Materials on the
phenology of bird migrations in the Koristyushiv
District of the Zhitomir Region]. Berkut,
Supplement: Avifauna of Ukraine 3: 104. [In
Ukrainian]. Accessible under Fefelov [2005b].
Asia: The Ripley Guide, 2 vols. Lynx Editions,
Smithsonian Institution, Barcelona-Washington.
Savchenko A.P., Sudorkin V.N. & Belyakov A.V.
Amphibians, reptiles, birds]. Krasnoyarsk State
University Publ., 264 pp. [In Russian]. Accessible
under Fefelov [2004b].
National Park "Zavidovo" and Upper Volga River.
Tver. APUSlife 3114 at http://www.commonswift.org/3114Shergalin.html
Shergalin J. 2005b. Report on the Birds of the
Ivanovo Region. APUSlife 3115 at http://www.commonswift.org/3115Shergalin.html
Shergalin J. 2005c. Report on the Common Swift in
St. Petersburg. APUSlife 3118 at http://www.commonswift.org/3118Shergalin.html
Shirihai H. 1996. The Birds of Israel. Academic
Press Ltd., London.
Skovygaard P. 1924. [New dates from the migration
of the Common Swift (Cypselus apus)]. Danske-
Fugle 61–64. [In Danish]
Taczanowski L. 1888. Liste des oiseaux observés
depuis cinquante ans dans le Royaume de Pologne
[List of birds observed in the Kingdom of Poland
over fifty years]. Ornis 4: 452. [In French]
Tait W.C. 1924. The birds of Portugal. H.F. & G.
Witherby, London.
Tigges U. 2000a Mauersegler in Berlin und
Brandenburg [Common Swifts in Berlin and
Brandenburg]. APUSlife 2405,
The phenology of the Common Swift *Apus apus* in Eurasia — U. Tigges

http://www.commonswift.org/2405Tigges.html [in German with English summary]


Warga K. 1929. Die Mauerseglerkolonie in Solymosvár. *Aquila* 35: 380–381. [In Hungarian with German translation]

