Identification of Arabian Warbler

The Arabian Warbler *Sylvia leucomelaena* was originally placed in the genus *Parisoma*. Meinertzhagen (1949), Williamson (1960) and others placed it in the genus *Sylvia* owing to its morphological similarities to this genus. Afik (1984) was convinced that this was incorrect, however, as its biological characteristics and nesting range differed from other *Sylvia* species. In the British Museum (Natural History), Tring, I compared the genera *Parisoma* and *Sylvia*. I believe that the Arabian Warbler represents a link between these two genera. Morphologically it resembles *Parisoma* in wing shape, tail-to-wing ratio, and tail pattern; the bill shape, however, is more similar to that of Orphean Warbler *S. hortensis*.

The Arabian Warbler occurs on both sides of the Red Sea—in Arabia, Somalia and Sudan—between the genus *Parisoma* in Africa and the genus *Sylvia* in the Palearctic. In the 1960s, it was found to breed in the Arava Valley, Israel (Zahavi & Dudai 1974; Inbar 1977); this is the northernmost limit of its world range. The population in Israel is resident, making only short-distance movements.

Three subspecies have been described: *S. l. blanfordi* in Sudan, *S. l. leucomelaena* in Arabia and *S. l. somaliensis* in Somalia. A comparison between specimens from Israel and those in the British Museum shows the Israeli birds to differ both in plumage and, to a lesser extent, in size from these three races. They are most similar to the Arabian *S. l. leucomelaena*, but may be isolated from that race and thus may require recognition as a separate subspecies, *S. l. negevensis* (Shirihai 1988).

In the field, the bird most likely to be confused with the Arabian Warbler is the Orphean Warbler *S. hortensis*, but plumage, structure and behaviour distinguish the two species.

The biological characteristics and general habits are hardly described in the literature and the present paper includes a short summary of these.
Field identification

The most likely confusion is between Arabian Warbler of the nominate subspecies *S. l. leucomelaena* and Orphean Warbler of the nominate southwest European subspecies: they are similar in general plumage patterns, upperparts colour and size. The Arabian Warblers in Arava, Israel, are most similar to the southeast European race of the Orphean Warbler *S. h. crassirostris*, because the upperparts are a cleaner grey (table 1). The Arabian Warbler of the subspecies *S. l. blanfordii* is less likely to be misidentified because of its more distinctive appearance (cleaner, slightly sandier upperparts and more clear-cut and darker brown 'hood') and smaller size.

Table 1. Comparison between Israeli Arabian Warbler *Sylvia leucomelaena* and Orphean Warbler *S. hortensis crassirostris*

<table>
<thead>
<tr>
<th>Description</th>
<th>Arabian Warbler (Israel type)</th>
<th>Orphean Warbler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head colour</td>
<td>On adults, rather uniformly dark with less contrastingly dark ear-coverts, pattern at distance recalling Sardinian Warbler <em>S. melanocephala</em></td>
<td>Except on adult male, generally paler, with obviously darker ear-coverts, pattern recalling Lesser Whitethroat <em>S. curruca</em>. Male similar to Arabian from second-summer plumage</td>
</tr>
<tr>
<td>Upperparts</td>
<td>Clean greyish, with slight brownish tone. Tertials with broad white fringes</td>
<td>As Arabian, but tertials either uniform or with diffuse, narrow greyish edges</td>
</tr>
<tr>
<td>Eye-ring</td>
<td>Usually obvious, complete or broken white on adults</td>
<td>None, or very faint greyish</td>
</tr>
<tr>
<td>Wing shape</td>
<td>Short and rounded; primary projection one-third or less that of tertials (5-12 mm)</td>
<td>Longer and pointed; primary projection about half that of exposed tertials (16-20 mm)</td>
</tr>
<tr>
<td>Tail</td>
<td>Longer; blackish, contrasting with upperparts. On adults, white tips to outer two pairs of feathers (visible from below) and thin white fringe to outermost pair. Juvenile lacks white tips. Much downward tail flopping</td>
<td>Shorter; greyish-brown, contrasting less with upperparts. At all ages, white tips to outer three feather-pairs (visible from below), and prominent white outermost web. No tail movement</td>
</tr>
<tr>
<td>Bill</td>
<td>Rather short and slender</td>
<td>Longer, deeper-based and tapering evenly to tip, giving strikingly long, heavy, dagger-shaped appearance</td>
</tr>
<tr>
<td>Iris</td>
<td>Always dark-looking</td>
<td>Distinctive whitish or grey on all adults from at least third calendar-year, otherwise dark</td>
</tr>
</tbody>
</table>

Description

For European ornithologists wishing to see Arabian Warbler, those in Israel are the most accessible. The descriptions are based mainly on those birds, but the characteristics below hold good for all races.

Structure and behaviour

Arabian Warbler averages about 14.5 cm in length (between Sardinian Warbler *S. melanocephala* and Orphean Warbler in size). Its movements are
Identification of Arabian Warbler

Fig. 1. Arabian Warblers *Sylvia leucomelaena* of nominate race (*Alan Harris*)

[The inclusion of the illustrations and photographs on pages 99-104 in colour has been subsidised by a donation from ZEISS West Germany]
57. Juvenile Arabian Warbler *Sylvia leucomelaena*, Israel, March 1986 (H. Shirihai)

58. Adult male Arabian Warbler *Sylvia leucomelaena*, Israel, December 1986 (H. Shirihai)

59. Adult female Arabian Warbler *Sylvia leucomelaena*, Israel, November 1986 (H. Shirihai)
Identification of Arabian Warbler

60. Juvenile Orphean Warbler *Sylvia hortensis*, Israel, September 1985 (H. Shirihai)

61. Adult male Orphean Warbler *Sylvia hortensis*, Israel, April 1986 (H. Shirihai)

62. First-summer female Orphean Warbler *Sylvia hortensis*, Israel, April 1987 (H. Shirihai)
63. First-winter female Arabian Warbler *Sylvia leucomelelena*, Israel, October 1986 (P. Doherty)

slow and heavy, recalling Orphean or Barred Warbler *S. nisoria* (but actually freer, with more deliberate and less frequent jumps from perch to perch), lacking the quick, sprightly, tail-cocking habits of the smaller *Sylvia*
Identification of Arabian Warbler

65. Adult male Arabian Warbler *Sylvia leucomelaena*, Israel, October 1986 (P. Doherty)

66. Adult male Arabian Warbler *Sylvia leucomelaena*, Israel, March 1988 (David M. Cottridge)

...warblers. The tail is held in line with the body, or hanging slightly down, and Arabian Warbler has the distinctive habit (diagnostic among *Sylvia* warblers) of flopping its tail downwards several times after each movement (recalling the similar, but faster action of Olivaceous Warbler *Hippolais pallida*). The short, rounded wing, combined with the proportionately longer tail, gives Arabian Warbler a much longer-tailed look than...
Identification of Arabian Warbler

67. Adult female Orphean Warbler *Sylvia hortensis*, Israel, April 1987 (H. Shirihai)

68. First-summer male Orphean Warbler *Sylvia hortensis*, Israel, April 1987 (H. Shirihai)

69. Adult male Arabian Warbler *Sylvia leucomealaena*, Israel, December 1986 (H. Shirihai)
Identification of Arabian Warbler

Orphean. Singing males choose a prominent, exposed perch, unlike Orphean Warbler, and sit rather upright, in a posture recalling that of a bulbul *Pycnonotus*. The bill is shorter and more slender than those of other large *Sylvia* warblers, and the head profile is rounded. It is longer-legged (and looks more 'leggy') than other *Sylvia* warblers because of its generally less crouching postures. The primary projection is very short, about one-third or less of the length of the exposed tertials.

Plumage and bare parts

ADULT MALE The upperparts (mantle, scapulars, back, rump and uppertail-coverts) of Israeli Arabian Warblers are pale brownish-grey or clean grey with a very slight brownish tinge, merging gradually on the nape to the brownish-black crown. (Typical *S. I. leucomeleana* is similar to those from Israel, but differs in having a browner cap, and upperparts more brownish than grey. On typical *S. I. blanfordi*, the upperparts are pale greyish-sandy, contrasting more sharply with the blackish nape and crown.) Primaries, secondaries and tertials are brown, contrasting with the paler upperparts; wing-coverts and tertials are fringed pale grey. The blackish-brown on the head contrasts sharply with the white throat, and the general head pattern recalls that of adult male Sardinian Warbler. Breast and flanks are slightly grey-washed, adding contrast to the white throat. Vent and undertail-coverts are washed with darker grey. Tail black, with white tips on the outer two feathers and a thin white edge to the web of the outermost pair. Iris and orbital ring look all-dark in the field (iris actually brown), and the white eye-ring is usually obvious, either complete or broken depending on individual variation and moult. Bill dark, with basal half of lower mandible lighter, bluish-grey. Legs dark, sooty-grey or bluish-grey.

ADULT FEMALE Like adult male, except upperparts slightly browner, and head generally browner, with slightly more contrasting brown ear-coverts than on adult male. Eye-ring is normally less prominent and always broken.

JUVENILE Like adult female, except nape and crown grey-brown, contrasting with darker ear-coverts, and with age-diagnostic whitish area above lores (which is variable in extent, but usually prominent), and no white eye-ring. Upperparts generally browner, and tertials and wing-coverts browner-toned, with distinctive rusty fringes. Tail black, with very fine pale fringe to the outer web and tip of the outer pair of feathers (lacks obvious white tips on outer two pairs of feathers of adult).

Calls and song

The Arabian Warbler is a rather silent species. On the breeding grounds, the calls are a quiet, soft 'chack, chack', usually repeated one to three times with pauses. The male's song is loud and far-carrying, with a great deal of individual variation. It resembles the song of Upcher's Warbler *Hippolais languida* and is different from that of Orphean Warbler. Bursts of
song last between five and 15 seconds (fig. 2). Only the male sings, and the song is repeated frequently. The main song period is from January to June (especially February to April), though short bursts of song can be heard at other times of the year.

Identification in the hand
In the hand, Arabian Warbler is easy to distinguish from other *Sylvia* species (table 2 and fig. 3).

Table 2. Measurements (in mm) of Arabian Warbler *Sylvia leucomelaena* and Orphean Warbler *S. hortensis*

<table>
<thead>
<tr>
<th></th>
<th>Arabian Warbler</th>
<th>Orphean Warbler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sources of data</td>
<td>Williamson 1960; H. Shirihai 1985-87</td>
<td>Svensson 1984; Williamson 1960; H. Shirihai 1985-87</td>
</tr>
<tr>
<td>No. examined</td>
<td>&gt;100</td>
<td>&gt;100</td>
</tr>
<tr>
<td>Wing</td>
<td>61-75</td>
<td>70-86</td>
</tr>
<tr>
<td>Tail</td>
<td>58-78</td>
<td>58-76</td>
</tr>
<tr>
<td>Tail/wing ratio</td>
<td>91-112</td>
<td>75-91</td>
</tr>
<tr>
<td>Tail graduation (1-6)</td>
<td>6.0-10.7</td>
<td>2.5-8.5</td>
</tr>
<tr>
<td>Bill to skull</td>
<td>11.5-17.1</td>
<td>14.0-22.5</td>
</tr>
<tr>
<td>Bill width</td>
<td>4.3-5.0</td>
<td>4.7-5.8</td>
</tr>
<tr>
<td>Bill depth</td>
<td>3.8-4.4</td>
<td>4.2-5.3</td>
</tr>
<tr>
<td>Tarsus</td>
<td>20-23.5</td>
<td>22-25</td>
</tr>
</tbody>
</table>

Fig. 2. Sonagram of song of Arabian Warbler *Sylvia leucomelaena*, Israel, March 1986 (recorded by Hadoram Shirihai, sonagram production by Dr. Joan Hall-Craggs and W. T. C. Seale at the Department of Animal Behaviour, Madingley, Cambridge, with the co-operation of Dr. E. K. Dunn of 'Birds of the Western Palearctic')
Identification of Arabian Warbler

**Orphean**  
*S. hortensis*

- Long primary projection
- Wingpoint 4(3) primary
- 2nd primary = 5th-7th primary
- Emargination on 3, 4, 5 primaries

**Arabian**  
*S. leucomelaena*

- Short primary projection
- Wingpoint (6) 5 4 (3) primary
- 2nd primary = 8th primary to secondaries
- Emargination on 3, 4, 5, 6 (7) primaries

First primary 8.5-12.4 (10.2) mm (male) or 9.5-16.0 (11.9) mm (female) longer than primary coverts. Second primary 21.0-25.0 (22.9) mm longer than first, and 5.2-10.0 (7.5) mm shorter than longest primary. Emargination 69% third to sixth; 25% third to seventh; 6% third to fifth. Outermost tail feather 6.0-10.7 (8.0) mm shorter than innermost.

Fig. 3. Wing structure and tail-feather patterns of Orphean Warbler *Sylvia hortensis* and Arabian Warbler *S. leucomelaena* (Alan Harris)
World distribution and identification of subspecies

The Arabian Warbler occurs in the dry subtropical zone, in deserts or semi-deserts, favouring acacia trees or large bushes near acacia trees. It is found along the borders of the Red Sea (Archer & Godman 1961; Hall & Moreau 1970; Jennings 1981; Harrison 1982), and there are three distinct subspecies:

**S. l. leucomelaena**

Distributed in southern and western Arabia north to 26°N (although the species was described from Midian) and also possibly in Somalia to the west of the Red Sea (see also page 97). Upperparts greyish-brown, darkest of the races, head blackish-brown, fading into paler mantle. Largest race, see table 3.

**S. l. blanfordi**

Distributed along western Red Sea border from Sudan to Eritrea. Upperparts sandier greyish-brown. Head very dark brown, sharp division with mantle. Noticeably smaller than leucomelaena.

**S. l. somaliensis**

Distributed in the dry subtropical zone, in deserts or semi-deserts, favouring acacia trees or large bushes near acacia trees. It is found along the borders of the Red Sea (Archer & Godman 1961; Hall & Moreau 1970; Jennings 1981; Harrison 1982), and there are three distinct subspecies:

**Table 3. Measurements (in mm) and wing formulae of the three subspecies of Arabian Warbler Sylvia leucomelaena in British Museum (Natural History)**

<table>
<thead>
<tr>
<th></th>
<th>S. l. leucomelaena</th>
<th>S. l. blanfordi</th>
<th>S. l. somaliensis</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. examined</td>
<td>20</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Wing</td>
<td>65-73</td>
<td>59-69</td>
<td>64-72</td>
</tr>
<tr>
<td></td>
<td>(1 bird 75)</td>
<td>(1 bird 71)</td>
<td></td>
</tr>
<tr>
<td>Tail</td>
<td>63-74</td>
<td>57-67</td>
<td>59-69</td>
</tr>
<tr>
<td>Bill to skull</td>
<td>12.0-16.7</td>
<td>11.5-16.7</td>
<td>13.0-17.0</td>
</tr>
<tr>
<td>Tarsus</td>
<td>20.0-22.8</td>
<td>19.5-23.5</td>
<td>20.0-23.2</td>
</tr>
<tr>
<td>1p&gt;pc</td>
<td>7-13</td>
<td>7-10.5</td>
<td>6-10</td>
</tr>
<tr>
<td>2p</td>
<td>usually 9p/10p,</td>
<td>usually 9p or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10p, 10p/ss</td>
<td>usually 10p or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(7p/8p, 8p, 8p/9p,</td>
<td>10p/ss or ss or &lt;ss</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ss, ss&gt;)</td>
<td>(8p/9p, 9p, 9p/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10p)</td>
<td></td>
</tr>
<tr>
<td>2p&gt;1p</td>
<td>23-26</td>
<td>21.5-25.0</td>
<td>20-25</td>
</tr>
</tbody>
</table>

**S. l. blanfordi**

Distributed along western Red Sea border from Sudan to Eritrea. Upperparts sandier greyish-brown. Head very dark brown, sharp division with mantle. Noticeably smaller than leucomelaena.
Identification of Arabian Warbler

*S. l. somaliensis*

Found only in Somalia. Upperparts and measurements intermediate between *leucomelaena* and *blanfordi*, closest to *leucomelaena*. More extensive white on tip and outer web of outermost tail feather.

**Distribution in Israel**

Within Israel, the Arabian Warbler is found from 15 km north of Eilat along the Wadi Arava to the south of the Dead Sea, and in particular at Hatzeva, the Shizaf Reserve and Yotvata. It is mainly resident, with first-winter birds moving to Eilat and East Sinai.

Madge & Parr (1981) considered the Israeli race to be *blanfordi*, from field comparisons with individuals they had seen in Yemen. I have seen several hundred and caught 40 Arabian Warblers in Israel and have compared them with the British Museum collection. From measurements of both skins and live birds, the Israeli birds appear to be similar to, or possibly slightly larger than, *leucomelaena*. The upperparts are paler and greyer even than *blanfordi*, and the head is blacker, with no sharp boundary between the head and mantle. There is more white in the outer web of the outermost pair of tail feathers than on *leucomelaena*, but not to the extent of *somaliensis*. As Arabian Warblers from Israel are both an isolated population and at least as distinctive as each of the other three races, they should perhaps be regarded as a fourth, separate race (Shirihai 1988). I believe there is a greater difference between the Israeli birds and the nominate race than between the nominate race and *S. l. somaliensis*.

**Ageing and sexing**

The birds studied in the Arava Valley, Israel, show sexual dimorphism mainly in their tail and wing measurements (table 4). On birds that I studied in the British Museum (Natural History), Tring, I could find only slight sexual differences in plumage and measurements. Williamson (1960) stated the same about measurements, but noted no differences in plumage. In Israel, I checked skull ossification of juvenile and first-winter individuals: some were not completely ossified in September, but two were almost completely ossified in mid October.

**Table 4. Measurements (in mm) of Arabian Warblers *Sylvia leucomelaena* from Arava, Israel**

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Juveniles</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. measured</td>
<td>16</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Wing</td>
<td>70.5-75.0 (72.2)</td>
<td>68.0-72.5 (69.9)</td>
<td>67.0-70.5 (69.2)</td>
</tr>
<tr>
<td>Tail</td>
<td>67.0-73.0 (69.8)</td>
<td>62.0-72.0 (67.2)</td>
<td>62.0-73.0 (67.0)</td>
</tr>
<tr>
<td>Bill to skull</td>
<td>15.4-17.1 (16.9)</td>
<td>15.7-18.0 (16.5)</td>
<td>15.5-16.2 (15.8)</td>
</tr>
<tr>
<td>Width of bill</td>
<td>4.6-5.0 (4.8)</td>
<td>4.8-5.0 (4.9)</td>
<td>4.3-4.9 (4.6)</td>
</tr>
<tr>
<td>Depth of bill</td>
<td>3.8-4.1 (3.9)</td>
<td>3.8-4.4 (4.2)</td>
<td>3.8-4.2 (4.0)</td>
</tr>
<tr>
<td>Tarsus</td>
<td>20.2-22.7 (21.5)</td>
<td>20.3-22.3 (20.9)</td>
<td>21.5-22.0 (21.8)</td>
</tr>
</tbody>
</table>
Identification of Arabian Warbler

Adult (distinctions from second-winter plumage)

**AUTUMN** Iris brown with greyish-white dots which have a green tone. Most of the feathers of the eye-ring are white. The difference between second calendar-year and third calendar-year is seen in differing moult and iris colour (see fig. 5).

**SPRING** As in autumn, but the condition of the feathers is different (see fig. 5 for moult).

**MALE** Wing more than 73.0 mm, tail more than 73.0 mm (in *S. I. leucomelaena* and Israeli birds) (Shirihai 1988). The head is blackish-brown or very dark brown and contrasts with the back, mantle and scapulars. Usually, the adult male has a larger, lighter area in the iris compared with the female, and the white eye-ring is wider and generally complete. On some adult males, it is also possible to find white tips to the fourth tail feather (counted ascendantly), and even very narrow white tips to the third.

**FEMALE** Wing shorter than 68.0 mm, tail shorter than 66.0 mm (in *S. I. leucomelaena* and Israeli birds) (Shirihai 1988). Female similar to male, but less contrast between dark brown/blackish tail and head and rest of upperparts; back and mantle are browner. The light area in the iris is smaller, and the light dots are also smaller compared with those of adult males; white eye-ring is incomplete.

**Juvenile and first-winter**

**SPRING AND AUTUMN** For description of juvenile, see section on identification in the field. There is no difference between juvenile male and female. First-winter plumage is very similar to that of adult, differing in the pattern of the unmoulted, juvenile tail feathers (see fig. 5) and usually showing some moult contrast on the inner secondaries and tertials. The iris is completely dark brown; and there are usually no white feathers in the eye-ring. On some first-winters, one to ten white feathers are mixed with the brown feathers of the eye-ring.

**Moult**

The moult of Arabian Warblers *S. l. leucomelaena* caught in the Arava Valley is shown in fig. 5. Adult Arabian Warblers have a complete moult at the end of the breeding season, in late summer. The post-juvenile moult partial, involving the head and body, and perhaps some remiges. Orphean Warbler has a similar moult strategy. The start and duration of moult of the Arabian Warblers in Israel are highly variable and lengthy, probably because the population is mainly resident.

The juvenile begins to moult most body feathers about one month after fledging. It will also moult most wing-coverts (often leaving a few outer greater coverts unmoulted), some or all tertials, and some inner secondaries. The resulting first-winter plumage resembles that of the adult, but can be identified in the hand (see above). The moult to first-summer plumage follows in January/February, involving some body feathers, the remaining, unmoulted (juvenile) tertials and secondaries,
Identification of Arabian Warbler

Post-juvenile moult.
Most body feathers, some inner secondaries; by September appearance close to adult.

1st pre-breeding moult of some body, tail, remainder of old secondaries, some inner primaries.

1st post-breeding moult. All body, remainder of tail and primaries. Most birds moult all secondaries not replaced in spring. Some retain innermost secondary from first autumn moult (above). Thus, some carry three generations of feathers through second winter.

2nd pre-breeding moult. Body moult.

Post-breeding moult.
2nd summer and thereafter, complete moult May-September.

some inner primaries and a few tail feathers. Thus, throughout the first summer, the wing has outer primaries retained from the juvenile plumage, inner secondaries from the post-juvenile moult to first-winter plumage, and outer secondaries and inner primaries from the pre-breeding moult to first-summer plumage: three generations of feathers.

Fig. 5. Sequence of plumages, moults and ages of Arabian Warbler Sylvia leucomelaena; from 40 individuals, Arava Valley, Israel

shortly after the first breeding season, the first post-breeding moult takes place: all body feathers and the remainder of the juvenile tail and primaries are replaced. In addition, most individuals moult all the secondaries and tertials that were not replaced in the pre-breeding moult. There are two generations of feathers in the wing throughout the second winter, but some individuals retain the innermost secondary from the first autumn moult and so carry three generations of feathers—post-juvenile (first-winter), pre-breeding (first-summer), and post-breeding (second-winter)—throughout the second winter (fig. 5).
Identification of Arabian Warbler

A careful study of feather condition and moult, together with iris colour and tail pattern, will enable Arabian Warblers to be aged until the end of their second breeding season.

General biology
In Israel, there have been two studies of the nesting behaviour of this species (Inbar 1977; Afik 1984). The Arabian Warblers breeding in Israel nest only in acacia trees (*Acacia tortilis* and *A. raddiana*). The breeding season starts early compared with other *Sylvia* species, in about the third week of February, and lasts until mid July. Most pairs are double-brooded, and, not infrequently, there may be a third brood. The nest is built 1-3 m above the ground. It is deep and basket-shaped, with an average external diameter of 85 mm and an average internal diameter of 55 mm. The height of the nest averages 70 mm, and the internal depth averages 30 mm. All clutches consist of two to three whitish eggs, spotted grey and brown. Both parents share in the incubation, which lasts for 15 or 16 days. Similarly, both parents are involved in feeding the young, which fledge after 14 or 15 days. The Arabian Warbler feeds on seeds, fruits and invertebrates.

Acknowledgments
First, I want to thank the International Birdwatching Center and the Nature Reserves Authority for supporting part of the project. I also thank Lars Svensson and Lasse Laine for supervising this research, and for their comments on this paper; Peter Grant, who acted as identification adviser and helped with editing and translating the first draft on identification; and Per Alström and Dr J. T. R. Sharrock for critical comments on a first draft of this paper. Translation from Hebrew to English was carried out by Mrs F. E. Warr, Alan Harris, Dr Mark Boyd and Paul Doherty. Paul Doherty also devoted time to obtaining a series of field photographs of this species, to assist this project. Particular thanks go to Alan Harris for his excellent paintings which accompany this paper; and to Shmuel Vinkeler, Director of Kodak Colour in Israel, for sponsoring the photographing of *Sylvia* warblers. The British Museum (Natural History), Tring, allowed me to refer to their skin collection in 1985 and 1987; and thanks are due to Zila Shiriv from Tel Aviv University for access to the skin collection at Tel Aviv University Museum. Merav Gellert has worked with me for several years, and Oranit Itzhaki accompanied me on several field trips to study the species.

Summary
The Arabian Warbler *Sylvia leucomelaena* has at times been placed in the genus *Parisoma*. Meinertzhagen (1949) and others preferred to include it in the genus *Sylvia* because of its morphological characteristics. Afik (1984) argued that it was not a *Sylvia* because its biological characteristics and nesting range differed from the other members of this genus, and he felt that it should revert back to the genus *Parisoma*. The present author prefers to keep it in *Sylvia*.

The Arabian Warbler is resident on either side of the Red Sea, and the northernmost point of its range is the southern Dead Sea area in Israel. Three subspecies have been described; that in Israel is either *S. l. leucomelaena*, or a hitherto undescribed subspecies. In the field, the only confusion species is Orphean Warbler *S. hortensis*, but Arabian Warbler differs in various ways, particularly its long black tail, having narrow white edges on the outer tail feathers only, and its short and rounded wing, with relatively short primary projection. The head is a uniform blackish-brown, whilst the head pattern of Orphean Warbler is more like that of Lesser Whitethroat *S. curruca*. Arabian Warbler wags its tail downwards frequently, which is not a habit of Orphean Warbler. In Israel, there is little sexual dimorphism in plumage and measurements. The moult is similar to Orphean and Barred Warblers *S. nisoria*, the adult
having a complete summer moult. It is a mainly resident species with some short-distance movements. It breeds between February and July, rearing two or even three broods.

References

Inbar, R. 1977. Birds of Israel. Tel Aviv [In Hebrew].

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