

## **IDENTIFYING WARBLERS IN THE HAND**



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**BY**

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Cover photograph: African Marsh Warbler at nest. Photograph by Shonie Raijmakers.  
All other photographs by Kobie rajmakers.

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## IDENTIFYING WARBLERS IN THE HAND.

### Introduction.

Warblers belong to the order passeriformes and to the family Sylviidae or old world warblers. This family contains nearly 400 species and is distributed over North America (except the extreme north) South America to central Brazil and eastern Peru and the old world which includes Europe, Africa and Asia.

Warblers are mostly solitary living species except in breeding time when pair bonds are formed, only a few species are gregarious. Warblers are also mostly arboreal (tree living) or frequently reed or brush living. These species are in general weak flyers and have mostly well developed song.

Because of their small size, dull colours, closed habitat and skulking habits, many warblers present identification difficulties to most people.

### South African Warblers.

In South Africa warblers are generally considered to be a group of birds that look alike and are sombre coloured and referred to as LBJ's. This however is a generalisation of a large family of birds which includes species like cisticolas, apalis's, crombec's, eremomala's, prinias, etc.

The group of birds that we are going to look at are the South African warblers that are traditionally referred to as LBJ's. We will be looking at 14 species of warblers with respect to identification in the hand.

These species are divided into 6 genera and are:

	Phylloscopus	one species			
	Hippolais	two species		Willow Warbler.	
				Icterine Warbler.	
				Olive Tree Warbler.	
				River Warbler.	
				Common Whitethroat	
				Garden Warbler.	
				African Sedge Warbler.	
				Cape Reed Warbler.	
				Great Reed Warbler.	
				Basra Reed Warbler.	
				European Sedge Warbler.	
				African Marsh Warbler.	
				European Marsh Warbler.	
				European Reed Warbler.	

### Obstacles.

When identifying warblers there are a few potholes that one must be aware of. Handle it like an obstacle course one step at a time.

1. Never assume that a warbler is this or that species, always confirm it.
2. Colour descriptions in the books are very subjective.
3. Colours of most warblers change drastically after moult, be aware of this.
4. Wing lengths can change quite considerably from before to after moult, take care when sexing on size.
5. There are always exceptions to the rule.
6. Make use of wing formulae when necessary.
7. Young birds can be confusing.
8. Cape Reed Warbler and African Marsh Warbler can be sexed on breeding patch.

## WING FORMULA.

The wing formula of a bird consists of the measurement of the primary feather lengths in millimetres in relation to the length of the longest primary feather ( see figure). The wing formula can be used for identification purposes; specifically so for some of the more difficult species, e.g. Palearctic warblers, where some of these species can only be positively identified by using this technique. Little work has been done on the wing formulae of the passerine species in southern Africa. Most passerines have ten primaries of which the outermost is very often reduced or in many cases it is vestigial. It is important to note that in wing formula studies the primaries are, by tradition, numbered in the opposite direction than in moult studies, from the outermost, number one, to the innermost number ten. Secondaries are always numbered inwards towards the body.

The first step is to determine whether there is any accidental loss of feathers, this is done by counting the number of primaries. The next step is to determine whether there is any moult in the wing, this is done by looking at the base of the critical feathers for signs of the glossy, grey or greyish-white waxy feather sheaths. When satisfied that the wing is complete, gently put the tips of the feathers in order, these may become disarrayed when the bird is kept in a bag or a box. When determining the wing formula the wing must not be extended, all that is necessary is to splay the feathers slightly so that the tips of all the primaries are visible. If the first primary is very short then the length is given as so many millimetres longer or shorter than the primary coverts measured along the edge of the wing. This measurement is taken between the point of the first primary and the point of the longest primary covert. The length of the other primaries are all expressed as so many millimetres shorter than the longest primary or wing point. Place a transparent rule on top of the naturally folded wing with the scale visible right against the tips and measure the difference in length between each primary and the longest primary (see figure 2). For completeness the distance between the longest primary and the outside secondary can also be measured this is known as the wing point (see figure 3).

Where emargination of the outer web of the primaries occur, these are feathers that have a visible narrowing of the outer web, the specific primaries should be recorded. In many cases the emargination is not very distinct and therefore it is not possible to take accurate measurements. Emargination can in some cases be very slight and difficult to see, with heavily worn and abraded feathers it is possible that the emargination can not be seen at all (see figure 1)

In some bird species there is an abrupt narrowing of the inner web of the primaries, known as the notch, this is normally distinct and can thus be measured. The notch is considered to be from the point of the primary to where the inner web starts to widen. This measurement is taken between these points and not along the shaft of the feather. The length of the notch in relation to the tips of the other primaries can be diagnostic in the identification of some species. It must be stressed that this method is not foolproof and should only be used in conjunction with all the normal methods of identification namely measurements, plumage colour and structure. False measurements will also be obtained if there is wing moult or when feathers are heavily worn. In such cases this method should not be used for identification purposes. Whenever this technique is used to identify a species the measurements should be taken in both wings.

Where the symbols > and < are used the open end of the > is against the longer feather e.g. P2 >P6 means primary 2 is longer than primary 6.

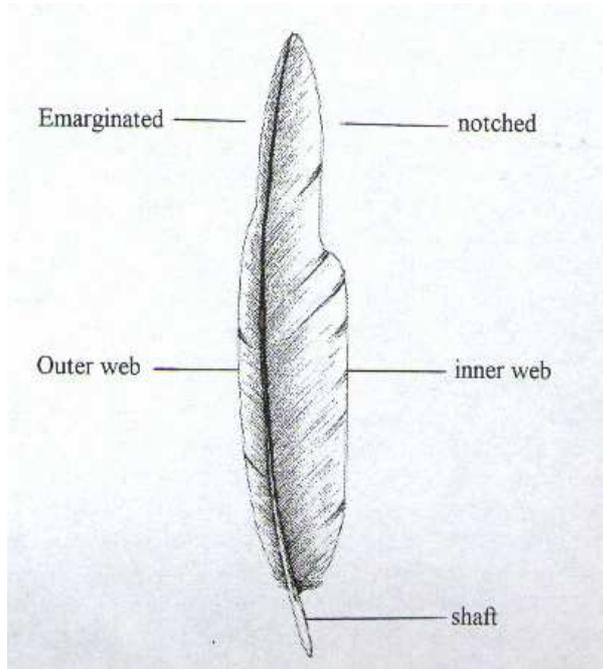


Figure 1.

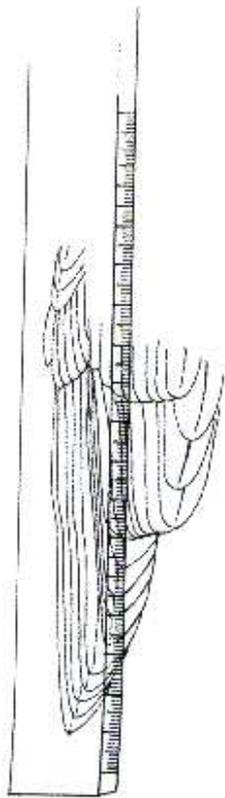


Figure 2

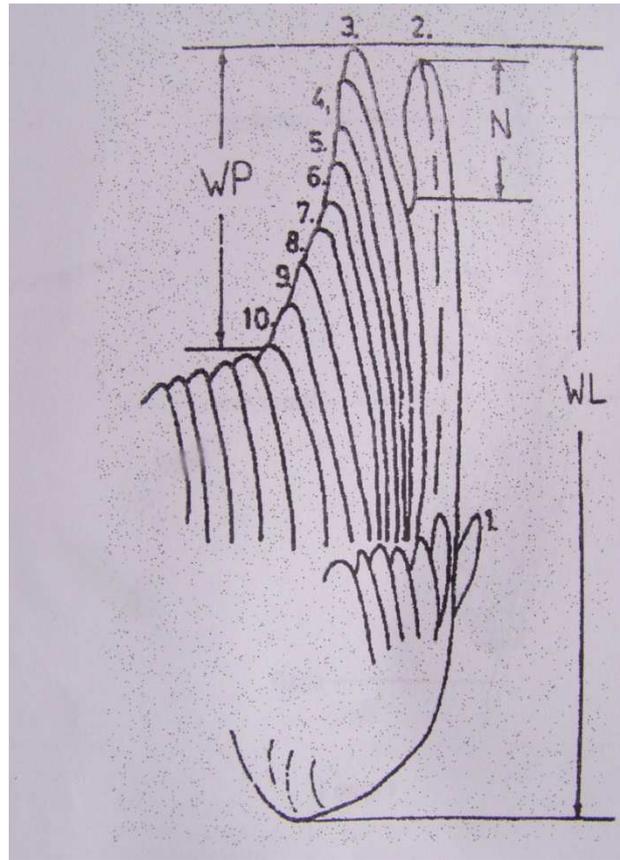


Figure 3

**WILLOW WARBLER****Phylloscopus trochilus.  
Hofsanger.**General.

The Willow Warbler is a common bird with a very wide distribution in southern Africa. It is a very small bird, approximately the size of a Cape White Eye but more slender. It is present in South Africa from September until the beginning of May. Sexes alike. The Willow Warbler has two complete moults per year. A bird of well-wooded areas and urban gardens. In the hand it usually is more yellow than shown in field guides.

Upperparts.

Olive to grey-brown with a yellowish-green wash. Tail feathers dark brown edged olive-green. The tail is quite long and square tipped, sometimes slightly notched.

Wing.

The long and pointed wings are brown with yellowish-olive fringes. The bend of the wing, axillaries and underwing coverts are usually a brighter yellow.

Head.

Olive brown usually with a distinct pale yellow or whitish eyebrow and an indistinct brown line through the eye. The bill is thin and weak.

Underparts.

Throat and breast white or off-white with a varying amount of yellow streaks or yellow washing. Flanks buffish sometimes with a yellowish wash. Undertail coverts yellowish-white.

Measurements.

	Min	Max	Ave
Wing (mm)	60	73	65.9
Tail (mm)	44	57	49.7
Tarsus (mm)	18.0	21.7	19.3
Culmen (mm)	10.0	14.5	12.2
Head (mm)	26.0	29.1	27.6
Mass (g)	5.0	11.5	8.3

Soft parts colouration.

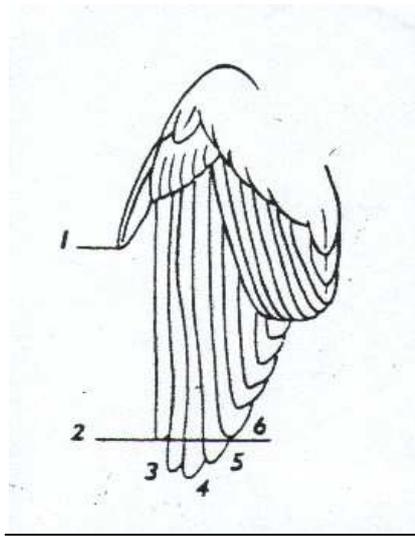
Iris: Brown.  
 Legs and feet: Pale or pinkish-brown to blackish-brown.  
 Bill: Horn-brown with paler cutting edge.  
 Lower mandible: Brown with yellowish base.

1<sup>st</sup> year birds usually have more yellowish and buff on throat, breast and flanks.

Some subspecies have less yellow and olive-green and are thus more brownish.

Wing formula.

Primary		Notch	Emarginate
P1	small 1 - 8 longer PC		
P2	4.5 - 7		
P3	= L		*****
P4	= P3 or 0.5		*****
P5	1 - 3.5		*****
P6	5 - 8		
P7	8 - 12		
P8	10 - 14		
P9			
P10	13.5 - 18		

Quick identification.

1. Small slender bird with a thin and weak bill.
2. Distinct pale yellow or whitish eyebrow.
3. Yellow on chest appears as stripes.

Moult.

Moult starts between the first week of December and the third week of January. The bulk of the birds complete moult between the first week in February and the third week in March. Moult duration was determined to be approximately 62 days.

Wing moult.

Wing moult starts with the inner primary and is sequentially descendant towards the wing tip. Moult is rapid with two to four primaries growing simultaneously. The first secondary is dropped at a P-score between 10 and 25 and is normally S8 however S9 is sometimes dropped first. The normal secondary sequence is S8, S9, S1, S7 and S2 to S6.

Moult of secondaries is completed just after completion of primary moult. Greater coverts start moulting simultaneously with the primaries and are completed at a primary score of 15 to 20. The greater coverts are usually all at the same stage of growth.

Rectrice moult.

Rectrice moult usually starts when the P-score is between 2 and 15 and is usually rapid with all or nearly all the rectrices at the same stage of growth. In 25% of the birds rectrice moult is centrifugal. Completion of rectrice moult is between P-score 30 and 40.

Body moult.

Body and head moult starts before primary moult and ends after primary moult.



**ICTERINE WARBLER****Hippolais icterina  
Spotvoël**General.

The Icterine Warbler is a small warbler, but larger than the Willow warbler. It is a fairly common summer visitor and is present from beginning of November till beginning of April. Sexes are alike. Occurs in well-wooded areas.

Upperparts.

Upperparts greenish-brown. Tail long and almost square sometimes slightly rounded. Tail dark brown with the outer feathers narrowly edged yellowish.

Wing.

Flight feathers and primary coverts blackish-brown, primaries and primary coverts narrowly edged olive, secondaries and tertials edged golden-yellow, greater and median coverts dark brown with yellow fringes, lesser coverts olive-brown. Yellow edging to secondaries, tertials and greater coverts form a distinct wing panel on closed wing. Axillaries, underwing-coverts and bend of wing are pale yellow.

Head.

Head olive with a pale yellow eyebrow which contrasts with olive crown and ear-coverts. The lores are yellowish and the ear-coverts are yellow-olive. The eyering is yellow. The bill is rather wide and long. Crown flat.

Underparts.

The underparts are completely lemon-yellow with the sides of breast and flanks tinged with brown. Underparts may sometimes be practically without yellow, being pale buffish-white or dusky-white with a faint yellow hue only, these birds have generally more brown or grey-brown upperparts.

Measurements.

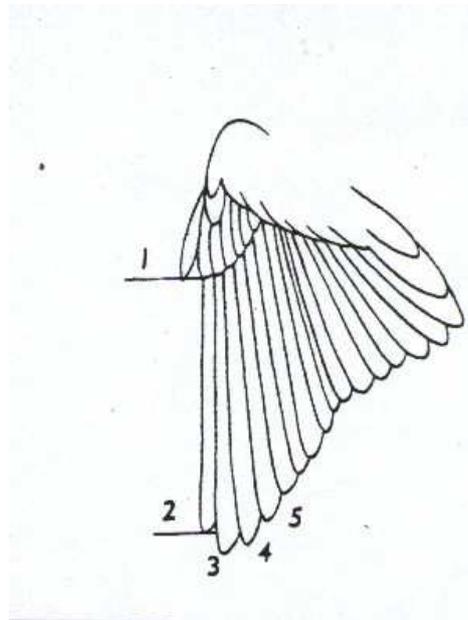
	Min	Max	Ave
Wing (mm)	72	82	78.4
Tail (mm)	51	57	53.0
Tarsus (mm)	19.0	23.5	20.8
Culmen (mm)	14.9	17.4	16.1
Head (mm)			
Mass (g)	12.0	18.6	14.3

Soft parts colouration.

Iris:	Dark brown or olive-brown.
Legs and feet:	Bluish-grey.
Bill:	Dark brown, cutting edge yellow.
Lower mandible:	Yellowish-flesh, cutting edge yellow.
Mouth:	Bright orange.

Wing formula.

Primary		Notch	Emarginate
P1	Minute; -3 to +3 PC		
P2	1.5 - 5; between P4 & P5	18 - 19; P9 - P10	
P3	= L		*****
P4	= P3 or 0 - 3		*****
P5	3 - 6		Sometimes near tip.
P6	7 - 11		
P7	12 - 15		
P8			
P9			
P10	20 - 25		

Quick identification.

1. Large dark brown bill with yellow cutting edge and yellowish-flesh coloured lower mandible.
2. Lemon-yellow underparts.
3. Greenish-brown upperparts.
4. Distinct pale wing panel.
5. From Willow Warbler in much larger size and much shorter P1.

Moult

The Icterine Warbler has 10 primaries, 6 secondaries and 3 tertials with the outer primary being minute and not taken into account. Rectrices number 12.

Although moult data is limited it seems that moult starts in early November and the last birds are completed towards the middle of March. Moult duration was not established.

Wing moult.

Primary moult starts with the innermost primary and is sequential descendant towards the wing tip. Secondary moult starts either with S1 or S8. Greater covert moult starts just after P1 has dropped and is very rapid with all the greater coverts dropping simultaneously.

Rectrice moult.

It seems that rectrice moult is centrifugal.

Body moult.

Body moult seems to start just before or simultaneously with primary moult.



**OLIVE TREE WARBLER****Hippolais olivetorum.  
Olyfboomsanger.**General.

The Olive Tree Warbler is an uncommon and localised nonbreeding migrant, it is present from December till March. This is a medium to large dull coloured warbler. Sexes alike. Occurs in acacia veld and in thorn thickets.

Upperparts.

The upperparts are grey to brownish-grey with the squarish tail dark grey-brown to almost black in some with both webs of innerpair and outer webs of other feathers narrowly fringed white. The outer web of the outer tail feathers (T6) white and the tips to the outermost pairs (T5 & T6) white. In fresh plumage the rump and uppertail-coverts will have a buffish-olive colour.

Wing.

Flight feathers dark brown, secondaries and tertials edged whitish producing a distinct white wing panel. The upperwing -coverts are brown with the greater coverts edged and tipped white. The underwing-coverts and axillaries are creamy-white.

Head.

The crown and nape are brownish-grey with a white eyebrow from the bill to the eye and a narrow white eyering. The crown is flat or sloping and it has a large dagger-like two-coloured bill. The lores and ear-coverts are brownish -grey

Underparts.

Underparts white, with a slight cream or yellow tinge and the side of neck and breast grey, sometimes forming a complete breast band. Flanks, thighs and undertail-coverts washed grey, with the latter having dark grey feather centres.

Measurements.

	Min	Max	Ave
Wing (mm)	79	93	85.7
Tail (mm)	59	76	67.55
Tarsus (mm)	21.5	27	24.08
Culmen (mm)	18	21.5	20.2
Head (mm)			
Mass (g)	13	23	

Soft parts colouration.

Iris:	Dark brown.
Legs and feet:	Dull pale bluish-grey.
Bill:	Culmen is pale horn-brown with a light cutting edge.
Lower mandible:	Yellowish at base and around cutting edges.

Wing formula.

Primary		Notch	Emarginate
P1	Minute; 3 - 8 shorter PC		
P2	1.5 - 4; =4; between 4 & 5	17 - 18; between 8 & 10	
P3	= L	between 6 - 7	*****
P4	= L or 0 - 3		*****
P5	5 - 7		
P6	7 - 11		
P7	11 - 14		
P8			
P9			
P10	20 - 24		

Quick identification.

1. A distinctive large greyish warbler with a rather sloping forehead.
2. Long strong two coloured bill.
3. Distinct white wing panel.
4. Distinct whitish edges to outer tail feathers.
5. Short dull white eyebrow and white eyering.

**RIVER WARBLER*****Locustella fluviatilis.*  
Springkaansanger .**General.

The River Warbler is a rare visitor to south Africa from December to April. It is however thought to be more common than the records indicate due to the fact that it is very inconspicuous and most probably widely overlooked. Dense riverine vegetation and gardens.

Upperparts.

Upperparts unstreaked dark olive-brown tinged greenish. The broad graduated tail is dark brown. Female slightly more greyish and less greenish.

Wing.

Primaries and secondaries dark brown, narrowly edged pale olive, tertials and upperwing-coverts dark olive-brown tinged greenish. Axillaries and underwing-coverts olive-brown and whitish. The wings are long and pointed. The outer web of the long outermost primary is white.

Head.

Dark olive-brown tinged greenish lores and ear-coverts olive-brown streaked with yellowish-buff. The indistinct eyebrow is yellowish-buff. In the female the eyebrow is almost absent.

Underparts.

Chin throat and centre of breast washed yellowish-buff, chin and upper throat finely spotted becoming broadly streaked dark brown on lower throat and breast. Sides of breast and flanks olive-brown and belly whitish. Undertail coverts are long, buff-brown and broadly tipped white. The breast streaking is less extensive in the female.

Measurements.

	Min	Max	Ave
Wing (mm)	69	80	74.3
Tail (mm)	49	66	58.5
Tarsus (mm)	18.5	25	21.9
Culmen (mm)	14.5	17	15.8
Head (mm)			
Mass (g)	13.6	21.2	16.8

Tail rounded 8 - 15 mm.

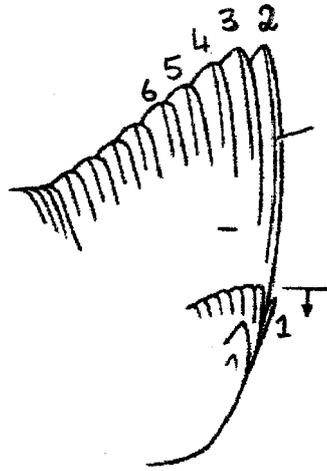
End of undertail-coverts to tip of tail 10 - 15 mm.

Soft parts colouration.

Iris: Light brown to dark brown  
 Legs and feet: Pale flesh to pink, paler behind.  
 Bill: Horn colour  
 Lower mandible: Pale flesh darker towards point.

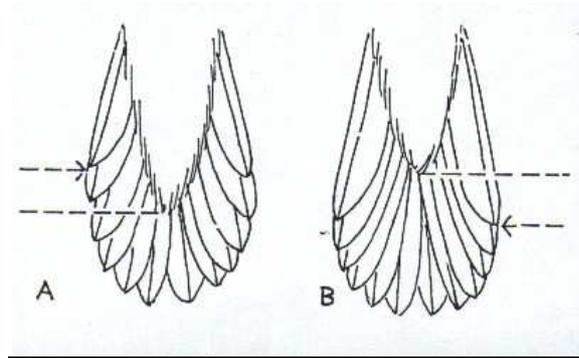
Wing formula.

Primary		Notch	Emarginate
P1	Minute; 0 - 7 shorter PC		
P2	= L		
P3	= P2 or 0 - 2		
P4	3 - 5		
P5	6 - 8		
P6	9 - 11		
P7			
P8			
P9			
P10	18 - 21		




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Undertail-coverts to show the broad white tips.



Bottom view of tail of (A) *Locustella* warblers and (B) *Acrocephalus* warblers, to show the length of the undertail-coverts in relation to the length of the outermost rectrix.

Quick identification.

1. Olive-brown upperparts.
2. Long pointed wing, no emarginations on primaries.
3. Tail graduated with undertail-coverts broadly tipped white.  
Spotted and streaked chin, throat and breast.

**COMMON WHITETHROAT****Sylvia communis .  
Gewone Witkeelsanger.**General.

The Whitethroat is a fairly common slim medium sized warbler with a longish tail which is present in South Africa from middle November till the end of March. Occurs in wooded areas, gardens and areas with tall weeds and sedges.

Upperparts.

Brown to grey-brown with the upper tail coverts more grey. The is very dark brown to black with paler fringes. In the male the outer pair of rectrices have the outer webs and much of the inner webs coloured white and the penultimate pair also has a white tip, in the female this is buffish to brownish white.

Wing.

Wing dark brown with a distinct rufous-brown wing panel this is due to the secondaries, tertials and greater coverts being edged rufous-brown. In males the lesser coverts are tipped grey.

Head.

Crown and nape grey with feathers tipped brown in male and brown in female. White eye ring.

Underparts.

The underparts are whitish with the throat pure white, the breast especially in males suffused with pink or buffish-pink. The flanks are deeper buff. Females lack pinkish on breast and are more creamy-buff.

Measurements.

	Min	Max	Ave
Wing (mm)	67	77	72.2
Tail (mm)	58	68	63.6
Tarsus (mm)	19.4	24.1	21.4
Culmen (mm)	12.4	15.6	13.9
Head (mm)	30.8	32.6	31.5
Mass (g)	13.0	21.0	15.2

Soft parts colouration.

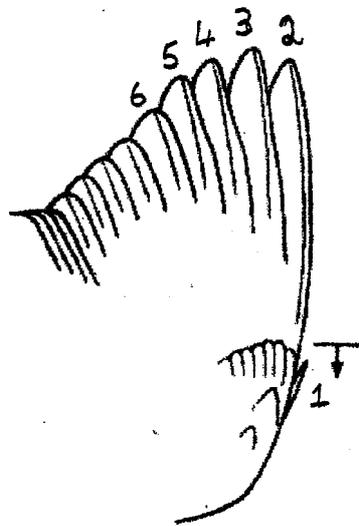
Iris male: Yellowish-brown to reddish-brown.  
female: Clear olive-green to olive-brown.  
Legs and feet : Pale brown to flesh-brown.  
Upper mandible: Dark horn to greyish-horn  
Lower mandible: Bluish-flesh base with greyish-horn tip.

Juvenile.

Has a muddy brown eye, creamy-white throat and outer rectrices uniform pale buffish-brown.

Wing formula.

Primary		Notch	Emarginate
P1	minute: 0.5-6 shorter PC		
P2	0.5-3		
P3	= L		*****
P4	= P3 or 1		*****
P5	1-3		*****
P6	3-7		
P7	6-8		
P8	7.5-10		
P9			
P10	12-15		

Quick identification:

1. Outer pair of rectrices white or buffish white and the penultimate pair tipped white.
2. The dark brown wing has a distinct rufous wing panel.
3. Underparts whitish with the throat pure white, the male's breast suffused with pink.

Moult.

The Whitethroat starts moulting between the first week of November and the end of December with the first birds completing moult in the first half of February. Most birds have completed moult from early March onward. Moult duration was estimated to be approximately 69 days.

Wing moult.

Primary moult starts with the innermost primary and is sequential descendant towards the wing tip. Primary moult is rapid with 3 or 4 primary feathers in moult simultaneously. Secondary moult is not in sequence and somewhat irregular. The first secondary dropped is S8 which is followed by S9 and S7. S1 is only dropped after S7 is completely moulted. The sequence for the other secondaries are S1, S2, S6, S5, S3 and S4. Secondary moult is rapid and S1 to S6 can all be in moult simultaneously. The greater coverts also moult rapidly starting at a P-score between 20 and 30.

Rectrice moult.

Rectrice moult is centrifugal and starts at a P-score between 10 and 15 and is complete at a P-score between 35 and 45. Moult of the rectrices is rapid with often all feathers in some stage of moult.

Body moult.

Body and head moult starts just before primary moult and is completed after primary moult.



**GARDEN WARBLER****Sylvia borin .  
Tuinsanger.**General.

A fairly common summer visitor. A small plain coloured bird without any distinct markings. It is a plump bird with a rounded head and a relative short bill a long wing and a short tail. This can be a confusing species because of the lack of distinctive characteristics. Occurs from early October till the end of March. Occurs in wooded areas, gardens and areas covered with weeds.

Upperparts.

Plain dull brown to greyish-brown. Tail dark brown to grey-brown with olive-brown edges to outer webs, sometimes with white narrow margins to tips.

Wing.

Wings dark greyish-brown with the primaries, secondaries and primary coverts edged olive-brown, tertials and upperwing coverts olive-brown.

Head.

Head dull brown with a olive tinge. The eye is dark and is emphasized by a slight eyebrow in front of the eye and a buffish-white eye ring.

Underparts.

Chin and throat pale buffish white. Upper breast and flanks brownish-buff and the belly white. Under tail coverts pale brown with white fringes.

Measurements.

	Min	Max	Ave
Wing (mm)	75	86	80.1
Tail (mm)	52	63	57.8
Tarsus (mm)	18.6	23.1	20.8
Culmen (mm)	12.1	16.8	14.5
Head (mm)	31.3	34.2	32.8
Mass (g)	15.4	27.7	19.7

Soft parts colouration.

Iris : Dull brown to greyish-brown.  
 Legs and feet : Blue-grey to greyish-brown.  
 Bill: Dark brownish-horn to grey-black.  
 Lower mandible: Base yellowish to pinkish-brown.  
 Inside of mouth : Inside of upper mandible light grey and inside of mouth pink. This is the only migrant warbler that has a pink mouth and is thus characteristic for positive identification.

Wing formula.

Primary	Notch	Emarginate
P1	minute: 2-6 shorter PC	
P2	0-2	between P6&P8
P3	=L	*****
P4	3-5	*****
P5	5-9	
P6	8-13.5	
P7	12-16	
P8	14.5-18	
P9		
P10	17-23	

Quick identification.

1. Lack of any distinct characteristics.
2. Inside of mouth pinkish.
3. More plump than other warblers, especially just before migration.

Moult.

The Garden Warbler starts moulting between the middle of November and the middle of January. The first birds complete their moult towards the end of January and the late starters complete towards the end of March. From the middle of February onwards most birds have completed moult. Moult duration was estimated at approximately 72 days.

Wing moult.

Primary moult starts with the innermost primary and is descendant towards the wing tip. Primaries moult in sequence and is rapid with 3 to 4 primaries at various stages of growth simultaneously. Secondary moult normally starts with S8 at a P-score between 5 and 18, in 25% of the cases S7 was dropped before S8. S1 is dropped soon after S8 or S7 and secondary moult is in sequence and rapid with up to 5 feathers in moult simultaneously. Secondary moult is completed after P9 is completed. The greater wing coverts start moulting at a P-score between 5 and 10 and is very rapid with all dropping simultaneously. Greater covert moult is complete at a P-score of 18 to 20.

Rectrice moult.

Rectrice moult starts at a P-score of 20 to 25 and is completed at a P-score of 35 to 40. Rectrice moult is centrifugal and very rapid, often with all feathers in moult with individual scores between 1 and 3.

Body moult.

Body and head moult starts just after primary moult and is completed after primary moult is completed.



**AFRICAN SEDGE WARBLER**  
( Little Rush Warbler )

**Bradypterus baboecala.**  
**Kaapse vleisanger.**

General.

The Sedge Warbler is a localised fairly common to common resident, it is a secretive bird of dense reedbeds. It has a distinctive call and display flight. Sexes alike. Occurs in reedbeds and swamp vegetation in vlei areas,

Upperparts.

Back dark chocolate-brown with a lighter rufous overlay on rump and uppertail coverts. Tail dark brown, outer tail feathers narrowly barred black with the tips pale brown. Tail broad and rounded.

Wing.

Primaries and secondaries dark brown, upperwing-coverts dark brown edged with buff. Underwing-coverts buff.

Head.

Forehead, crown and neck dark brown, lores and cheeks light greyish-brown to buff. Eyebrow buff-white.

Underparts.

Chin, throat and belly off-white with the breast being buffish with darker grey-brown to black streaking. Streaking sometimes faint or absent. Flanks and under tail coverts buffish-brown to rufous-brown.

Measurements.

	Min	Max	Ave
Wing (mm)	51	63	59.3
Tail (mm)	62	75	67.3
Tarsus (mm)	19.5	23.8	21.9
Culmen (mm)	14.3	17.4	15.8
Head (mm)	31.7	34.8	32.8
Mass (g)	11.0	15.3	13.3

Tail rounded: 16.3 - 19.6 mm.

Soft parts colouration.

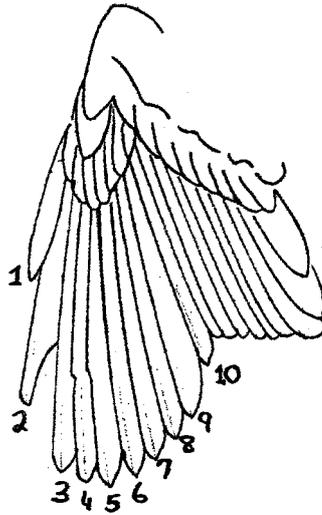
Iris: Brown.  
Legs and feet: Flesh colour, brownish or greyish .  
Bill: Blackish-horn  
Lower mandible: Flesh to yellowish at base.

Wing formula.

Primary		Notch	Emarginate
P1	24 - 25		
P2	9 - 12	11 - 15	
P3	3 - 5	11 - 15	Sometimes
P4	0 - 2	11 - 13	Faint
P5	= L	Sometimes	Faint
P6	=P5 or 0 - 1		
P7	0.5 - 3		
P8	2 - 6		
P9	4 - 9		

P10

7 - 11



Quick identification.

1. Very dark upperparts, darker than any other "reed warbler".
2. The only reedbed warbler where the tail is substantially longer than the wing. Tail to wing ratio >1.
3. Broad graduated tail with faint barring. Tail rounding 16.3-19.6 mm.
4. Spotted or streaked breast.
5. Buffish white eyebrow.



**CAPE REED WARBLER**  
Lesser Swamp Warbler

**Acrocephalus gracilirostris**  
**Kaapse Rietsanger.**

General.

The Cape Reed Warbler is a fairly large and locally very common breeding resident in suitable habitat. These birds are always associated with reedbeds and vegetation in standing water. On plumage sexes are alike but there is a size difference.

Upperparts.

Upperparts dark brown with rufous on fringes of feathers, the rump being dark brown with a richer rufous overlay. The tail feathers are dark chocolate brown edged rufous.

Wing.

The primaries are dark brown the secondaries are dark brown often edged buffish or rufous. The coverts vary from light to dark brown with lighter edges. Underwing coverts buffish.

Head.

Head and neck greyish-brown or olive-brown, ear coverts light greyish-brown. Eyebrow distinct whitish or light cream. The mouth is bright orange.

Underparts.

Chin, throat, breast and belly white, sometimes with a slight greyish or buffish tinge on breast and belly. Flanks buffish to light rufous with the undertail-coverts buffish.

Measurements.

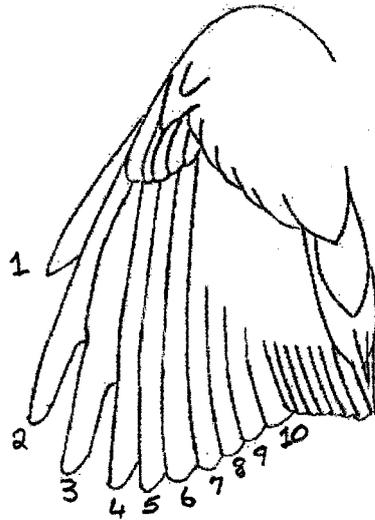
	Min	Max	Ave
Wing (mm)	66	82	73.3
Tail (mm)	56	78	67.9
Tarsus (mm)	23.3	31.1	27.4
Culmen (mm)	17.0	23.2	20.4
Head (mm)	35.7	41.6	38.7
Mass (g)	12.5	24.4	18.1

Soft parts colouration.

Iris:	Light brown.
Legs and feet:	Bluish-horn to dark grey, soles pale yellow to straw.
Bill:	Dark brown to horn with a light edge.
Lower mandible:	Light horn to pinkish or sometimes yellowish with a dark edge and point.

Wing formula.

Primary		Notch	Emarginate
P1	33 - 38		
P2	8 - 13	16 - 21	
P3	2 - 3	15 - 19	*****
P4	= L or 0.5 - 1	13 - 16 ( $\pm$ 50%)	*****
P5	= L		*****
P6	0.5 - 2		In $\pm$ 50%
P7	2 - 6		
P8	4 - 7		
P9	7 - 10		



#### Quick identificaton.

1. Distinct whitish to cream eyebrow.
2. The fairly large size and robust appearance.
3. Appears more white underneath than the other species of "reed" warblers.
4. Usually has darker legs than the other "reed" warblers.

#### Moult.

The Cape Reed Warbler has 10 primaries, 6 secondaries and 3 tertials with the outermost primary reduced. Rectrices number 12. Moulting starts after the breeding season with head and body moult with primary moult somewhat later. In South Africa there is a well defined moulting period from middle January to the end of April, however a few birds had just started moult in May and some were completing towards the end of August. Moulting duration was calculated to be approximately 65 days.

#### Wing moult.

Moult in the wing starts with the innermost primary and is sequentially descendant towards the wing tip. The first three primaries are dropped very quickly in succession with all three often with the same moult score, these then grow to a score of 3 or 4 before the next primary is dropped. Moult is rapid with sometimes 7 primaries in different stages of growth. Primary ten is dropped last but fully renewed before P9 is fully grown. The first secondary dropped is usually S8 and starts just after or simultaneous with P1 but always with a P-score of less than 10. S9 is dropped second and S7 third, in approximately 20% of the cases S7 was dropped before S9. S1 is dropped together with S7 or just after at a P-score between 15 and 25. Moult of the secondaries is ascendant from S1 to S4 with S6 being dropped simultaneous with S3 or S4 and S5 following soon after. Secondary moult is usually completed after primary moult with a few exceptions. A few birds were recorded replacing the secondaries twice. The greater coverts are dropped in quick succession often with all having the same score, this starts when P1 is dropped and is completed at a P-score of 16 to 25.

#### Rectrices moult.

Rectrice moult is random and highly irregular, sometimes with 2 or 3 feathers in moult and sometimes with all 12 feathers having the same moult score. The start of rectrice moult is also irregular and can start with a P-score between 5 and 35, normally rectrice moult is completed just before or simultaneous with primary moult.

#### Body Moulting.

Head and body moult starts 2 to 4 weeks before primary moult and is completed simultaneously with primary moult.



**GREAT REED WARBLER****Acrocephalus arundinaceus.  
Grootrietsanger.**General.

The Great Reed Warbler is a fairly common summer visitor to the northern parts of the RSA and it is present from October to April. It is a large robust warbler with a long bill and a slow harsh warble as a song. It is found mainly in reedbeds and adjoining vegetation but also in well wooded areas and suburban gardens. Sexes are alike. It seems that some of the Great Reed Warblers have already completed moult when they arrive here whilst others moult here.

Upperparts.

Upperparts olive-brown with rufous on rump and uppertail-coverts. The tail-feathers are brown with pale tips.

Wing.

Flight feathers dark grey-brown with narrow pale edges and outer webs with olive-brown edges. Upperwing-coverts the same colour as upperparts.

Head.

Head olive-brown, ear-coverts and cheeks brown, A well defined buffish-yellow to creamy-white eyebrow and a creamy-white eyering, a dark grey-brown eyestripe is also present.

Underparts.

Chin, throat, breast and belly creamy white to white, lower throat and upper breast often with faint pale brown streaking. Sides of breast, flanks and undertail-coverts a warm buff. Underwing-coverts buff.

Measurements.

	Min	Max	Ave
Wing (mm)	82	102	94.5
Tail (mm)	61	87	75.4
Tarsus (mm)	25.6	33.8	29.2
Culmen (mm)	18.3	25.8	23.0
Head (mm)	41.2	47.0	43.9
Mass (g)	19.8	39.0	29.9

Soft parts colouration.

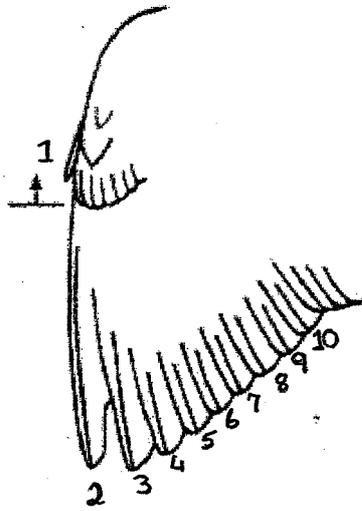
Iris:	Light brown to olive-brown.
Legs and feet	Greyish-brown, greenish-brown, pale brown or yellowish-brown.
Bill:	Dark brown to blackish-brown.
Lower mandible:	Pinkish-flesh with dark point.
Mouth:	Orange.

Wing formula.

Primary	Notch	Emarginate
P1	Minute; 2 - 9 shorter PC	
P2	1 - 2.5	9; P6- P9
P3	= L	*****
P4	2 - 4	Sometimes
P5	5 - 8	
P6	8 - 13	
P7	12 - 16	
P8		

P9  
P10

21 - 26



Quick identification.

1. Large size, robust built and long bill are characteristic.
2. Distinct buffish-yellow to creamy-white eyebrow and creamy-white eyering.

Moult.

It seems that in the Great Reed Warbler there are two groups of birds as far as moult is concerned namely those that have completed or nearly completed moult when they arrive in South Africa and those that only start moult after arrival. The group that only start their moult after arrival start moulting towards the middle of January. Moult duration was established to be approximately 55 days.

Wing moult.

Primary moult is descendant towards the wingtip and is very rapid as some birds had 5 or 6 primaries simultaneously in various stages of moult. The first secondary dropped is either S8 or S9 with S1 soon afterwards.

Rectrice moult.

It seems that rectrices are lost in very quick succession with all the feathers having the same individual moult score.

Body moult.

Body moult starts before primary moult and is completed some time after primary moult is completed.



**BASRA REED WARBLER****Acrocephalus griseldes.  
Basrarietsanger.**General.

The Basra Reed Warbler is a medium large warbler that is rare in southern Africa. All ringing records up to now were for the period January and February.

Upperparts.

Upperparts cold olivaceous grey-brown slightly tinged with rufous when plumage is fresh, tail blackish-brown with tips and outer web of outer tail feathers often fringed greyish-white.

Wing.

Primaries and secondaries blackish-brown with tips narrowly fringed off-white and outer webs fringed olive-brown, the wing coverts olive-brown, underwing-coverts pale buff.

Head.

Head olive brown with a distinct whitish eyebrow and a narrow whitish eyering.

Underparts.

Underparts white with the sides of breast and flanks tinged olive-buff.

Measurements.

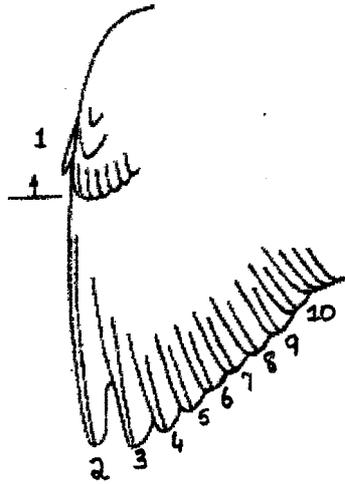
	Min	Max	Ave
Wing (mm)	77	88	80.6
Tail (mm)	58	67	63.7
Tarsus (mm)	22.5	28.0	25.22
Culmen (mm)	19.5	24.0	22.4
Head (mm)			
Mass (g)	15.0	25.5	18.5

Soft parts colouration.

Iris:	Olive-brown to reddish-brown.
Legs and feet	Dark grey to brownish-grey.
Bill:	Dark brown
Lower mandible:	Pinkish.

Wing formula.

Primary		Notch	Emarginate
P1	Minute; ½ PC		
P2	0.5 - 1.5; = P3- P4	= P7 - P9	
P3	= L		*****
P4	1.5 - 2		
P5	4.5 - 5.5		
P6	7.5 - 9		
P7	9.5 - 11.5		
P8			
P9			
P10	17 - 20		



Quick identification.

1. Differs from Great Reed Warbler on the following:
  - Much smaller wing size 77 - 88 mm.
  - Bill - long slender bill is distinctive.
  - Lacks fine streaks on breast.
  - Legs and feet greyish compared with more brownish of Great Reed Warbler
2. White eyebrow.
3. Looks more like a large African Marsh Warbler than a small Great Reed Warbler.

**EUROPEAN SEDGE WARBLER      *Acrocephalus schoenobaenus.***  
**Europese Vleisanger.**

General.

A common to very common summer visitor in suitable habitat, it occurs in reedbeds, tall weeds and herbaceous plants growing in and around water. It is exclusively a waterside bird and is not often recorded in other habitats. It is present from November until the end of April. The size is small and sexes are alike.

Upperparts.

Mantle and back olive-brown streaked with blackish-brown, rump and uppertail-coverts rufous. The tail is dark brown with pale edging.

Wing.

Primaries and secondaries blackish-brown, edged pale brown and broadly so on tertiaries. Primary coverts blackish with narrow pale edging, the rest of the upperwing-coverts are the same but with broad pale brown edges and tips. Underwing-coverts whitish with buffish centres.

Head.

Head olive-brown with broad blackish-brown streaking. Eyestripe broad and creamy, lores dusky and cheeks and ear-coverts yellowish-brown.

Underparts.

The underparts are creamy-white to buff with rufous flanks.

Measurements.

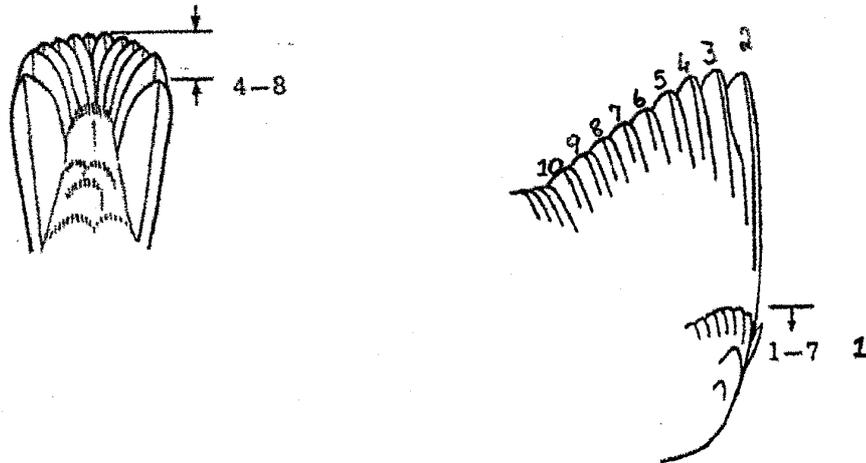
	Min	Max	Ave
Wing (mm)	60	72	66.9
Tail (mm)	42	60	50.1
Tarsus (mm)	18.6	24.3	21.5
Culmen (mm)	13.1	17.9	15.6
Head (mm)	29.2	33.4	31.6
Mass (g)	7.2	16.0	11.6
Tail rounded (mm)	4	8	

Soft parts colouration.

Iris:	Brown.
Legs and feet	Greyish-brown.
Bill:	Blackish-brown.
Lower mandible:	Base yellowish-flesh.

Wing formula.

Primary		Notch	Emarginate
P1	Minute; 1 - 7 shorter PC		
P2	0 - 2; = P3 - P4	<u>Indistinct</u>	
P3	= L		*****
P4	1.5 - 4		
P5	4 - 6		
P6	7 - 9		
P7	10 - 11		
P8			
P9			
P10	14 - 17		



Quick identification.

1. The only streaked acrocephalus warbler in the region.
2. Conspicuous creamy eyebrow.
3. No notch on second primary and third primary emarginated.
4. Tail slightly rounded.

Moult.

In the European Sedge Warbler moult starts between early December and mid February whilst completion of moult is between mid February and mid April. Most birds however have completed moult by the end of March. Moult duration was calculated to be between 65 and 75 days.

Wing moult.

Wing moult starts with primary 1 and is descendant in sequence towards the wingtip. Moult is fairly rapid with 3 to 5 primaries growing simultaneously. Normally the first secondary dropped is S8 at a P-score of 3 to 5. In 20% of the cases S7 was dropped before S8. The normal secondary sequence is S8, S7, S9 and then S1 to S6. Secondary moult is completed just before primary moult is completed. Greater covert moult starts simultaneous with primary moult and is rapid with all coverts usually at the same stage of moult.

Rectrice moult.

Rectrice moult usually starts at a P-score between 5 and 20 and is normally completed just before the primary moult is completed. All rectrices moult simultaneously and normally are in the same stage of growth.

Body moult.

Body and head moult starts two to three weeks before primary moult begins and is completed two to three weeks after primary moult is completed.



**AFRICAN MARSH WARBLER**  
African Reed Warbler

**Acrocephalus baeticatus.**  
**Kleinrietsanger.**

General.

The African Marsh Warbler is a very common breeding intra-African summer migrant. It is a small warbler that is present from September to May and can be found wherever suitable habitat exists. It prefers reedbeds and vlei areas covered with sedge and weeds, it also occurs in gardens and wooded areas. Some birds do overwinter in South Africa. This is the smallest of the “reed” warblers. Sexes are alike on plumage

Upperparts.

Upperparts warm light medium brown with rufous on rump and uppertail-coverts. Tail dark brown sometimes with a buffish tip.

Wing.

Primaries and secondaries dark brown with pale brown fringes. Upperwing-coverts warm brown, underwing-coverts buff.

Head.

Crown, neck, lores and ear-coverts brown, ear-coverts however sometimes buffish, has an indistinct eyebrow.

Underparts.

Underparts buffish-white faintly washed with cinnamon buff on breast and undertail-coverts, flanks cinnamon buff to rufous.

Colours are very warm and rich when plumage is fresh.

Measurements.

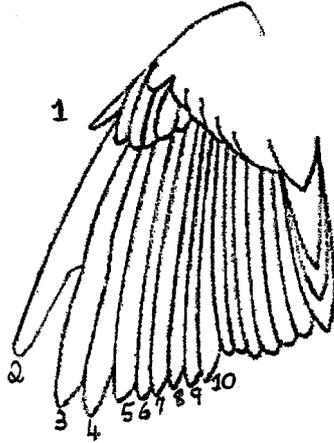
	Min	Max	Ave
Wing (mm)	49	65	59.0
Tail (mm)	42	58	51.1
Tarsus (mm)	19.6	25.8	22.3
Culmen (mm)	14.6	18.8	16.8
Head (mm)	29.9	35.9	32.6
Mass (g)	7.0	14.8	10.1

Soft parts colouration.

Iris:	Light brown.
Legs and feet:	Olive-green to olive-brown or yellowish-grey to flesh-brown, soles of feet yellow.
Bill:	Blackish-horn to brown sometimes with a yellowish edge.
Lower mandible:	Pinkish-flesh base with yellow.

Wing formula.

Primary		Notch	Emarginate
P1	Minute; +2 to -3 PC		
P2	3 - 6	10 - 15; below sec	
P3	Sometimes = L; or = P4 - 1		*****
P4	= L		*****
P5	0 - 1		
P6	1 - 4		
P7	3 - 6		
P8	4 - 8		
P9	6 - 9		
P10	7 - 11		



Quick identification.

1. Smallest of the reed warblers, with a rounded wing, wing size 49 - 65 mm.
2. Second primary significantly shorter than third primary.
3. Folded wing does not extend beyond the rump.
4. Notch on second primary <<< secondaries.

Additional notes.

Sexing is possible in the breeding season by making use of the brood patch and cloacal shape.  
 Young birds show good tongue spots for sometime after leaving the nest.  
 Gape flange in immatures pale yellow, adults a brighter yellow to yellow-orange gape flange.



**EUROPEAN MARSH WARBLER    *Acrocephalus palustris.***  
**Europese Rietsanger.**

General.

A fairly common small warbler that occurs in a variety of habitats like gardens, bushy and wooded areas, tall weeds, herbaceous plants and waterside vegetation it is present from November to April. It differs from the African Marsh - and European Reed Warblers in that the latter two are mainly warblers of reedbeds and waterside vegetation. Sexes are alike.

Upperparts.

Upperparts plain olive-brown including the rump which is tinged yellowish- brown and never rufous as in the European Reed - and African Marsh Warbler. Tail blackish-brown.

Wing.

Primaries and secondaries blackish-brown with olive or greenish-olive fringes, tertials broader fringed. The wing-coverts dark brown broadly fringed and tipped olive-brown. Underwing-coverts yellowish-buff.

Head.

Head greyish-brown in early summer due to wear, changing to brown with a conspicuous olive-green tinge after moult. The slight, short eyebrow and thin eyering are creamy. Lores, cheeks and ear-coverts olive-brown. Weak and short greyish or brownish-olive eyestripe.

Underparts.

The underparts buffy-white washed yellowish and the flanks are somewhat darker, the chin, throat and centre of belly white to creamy-white.

Beware!!

First year birds have a warmer brown coloration and may even have a rufous tinge on the rump and resembles first year European Reed Warblers. European Marsh Warblers in worn plumage may resemble the European Reed Warbler especially the fuscus subspecies.

Measurements.

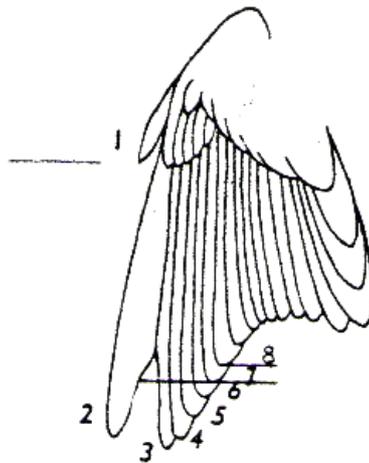
	Min	Max	Ave
Wing (mm)	60	76	66.9
Tail (mm)	47	59	52.9
Tarsus (mm)	19.9	24.7	22.4
Culmen (mm)	14.0	17.9	16.5
Head (mm)	31.4	35.5	33.3
Mass (g)	9.5	16.0	12.0

Soft parts colouration.

Iris:	Olive or olive-brown.
Legs and feet:	Flesh with yellowish or brownish tinge, toes with a greenish tinge. Soles dull yellow.
Bill:	Dark brown.
Lower mandible:	Pale yellowish-horn or flesh.
Claw:	Light grey-brown (dry grass), with only a slight contrast to yellowish underside.

Wing formula.

Primary		Notch	Emarginate
P1	Minute; 0.5 long - 5 short.		
P2	0.5 - 2; P3 - P5	8.5 - 12; P6 - P8 (P9)	
P3	= L		*****
P4	1 - 3		
P5	3.5 - 5.5		
P6	6.5 - 8		
P7	8.5 - 10		
P8			
P9			
P10	14 - 17		

Quick identification.

Apart from the fact that this species is normally found in wooded or bushy areas there is no quick fix as far as identification is concerned in separating it from the European Reed Warbler. Make use of the identification aid at the end of this paper.

Moult.

The European Marsh Warbler starts moult between mid December and mid January, moult is completed between the end of February and the end of March. Moult duration is approximately 85 days.

Wing moult.

Wing moult starts with the inner primary and is descendant towards the wingtip in sequence. Moult is fairly rapid with 3 to 5 primaries in various stages of moult. The first secondary dropped is S8 at a P-score between 1 and 5. The secondary sequence is S8, S9, S7 and then S1 to S6. S1 is dropped with a P-score of 15 to 20. Secondary moult is normally completed just before primary moult is completed. Greater covert moult starts just before or simultaneous with P1 and is very rapid with all feathers dropping at the same time. The greater covert moult is complete at a P-score between 10 and 20.

Rectrice moult.

The rectrices all moult simultaneously and all feathers are normally at the same stage of moult. Rectrice moult starts at a P-score between 5 and 15 and is completed just before primary moult is completed.

Body moult.

Body and head moult start just before primary moult and is completed together with primary moult.



**EUROPEAN REED WARBLER    *Acrocephalus scirpaceus*.**  
**Hermanse Rietsanger.**

General.

The European Reed Warbler is a rare summer visitor to South Africa, although it may be more common than records indicate. It has been recorded in Botswana and Namibia in increasing numbers over the last few years. It is a small warbler that is always associated with reedbeds and water. Is present from November till March.

Upperparts.

Upperparts warm olive-brown to brownish-grey, depending on wear, with rufous on rump and uppertail-coverts. The tail is dark brown fringed olive-brown on outer webs.

Wing.

Primaries and secondaries dark brown with paler fringes, broader on tertials. Upperwing-coverts olive-brown and underwing-coverts buffish-white.

Head.

Head olive-brown with a poorly defined short and narrow whitish eyebrow and a thin broken creamy-white eyering. Lores and ear-coverts brown.

Underparts.

Underparts white suffused with yellowish-buff on sides of breast becoming darker rusty-buff on flanks. Undertail-coverts creamy buff.

Beware!!

First year European Marsh Warblers have a warmer brown coloration and may even have a rufous tinge on the rump and resemble first year European Reed Warblers. European Marsh Warblers in worn plumage may resemble the European Reed Warbler, especially the fuscus subspecies.

Measurements.

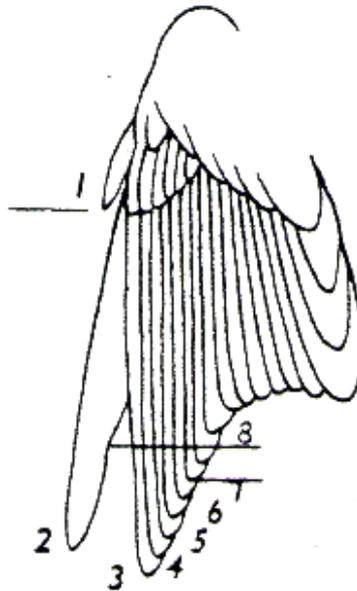
	Min	Max	Ave
Wing (mm)	61	76	64.8
Tail (mm)	45	59	52.3
Tarsus (mm)	20.5	26.0	23.4
Culmen (mm)	14.5	18.5	16.7
Head (mm)			
Mass (g)	8.0	16.6	11.2

Soft parts colouration.

Iris:	Pale brown to reddish-brown.
Legs and feet:	Dark grey-brown, bluish-grey or flesh-colour with a greyish or bluish tinge. Toes greenish. Yellow soles to feet.
Bill:	Dark brown to greyish-horn.
Lower mandible:	Mainly yellowish or flesh.
Mouth:	Orange.

Wing formula.

Primary		Notch	Emarginate
P1	Minute; 2 longer - 4 shorter		
P2	1 - 3; between P3&P5	11 - 15; at or below P8	
P3	= L	Sometimes slight.	*****
P4	1 - 3		exceptionally
P5	3 - 6		
P6	6 - 8		
P7	8 - 11.5		
P8			
P9			
P10	13 - 16		

Quick identification.

Although the European Reed Warbler is a bird of wet marshy habitat it does wander into waterside vegetation and the European Marsh Warbler does occur in marshy areas, therefore habitat preference cannot be used for definite identification between Euro Reed - and Euro Marsh Warblers. Use the identification guide at the end of this paper.





**Identification guide for European Marsh- and European Reed Warbler.**

Migrants wintering in southern Africa often have heavily worn plumage on arrival. Heavily worn plumage is usually abraded and duller than normal colours and it also gives an impression that feathers have light fringes. This will complicate the identification of birds that look alike and are similarly coloured, like the European Marsh- and European Reed Warbler even more.

The following identification aids should make a positive identification between European Marsh Warbler and European Reed Warbler possible. When it becomes necessary to identify a bird by making use of these aids always measure both wings and legs if a second person is present also ask him to take a set of measurements. Take care when making measurements because accuracy is of great importance when making calculated derivatives. Make use of as many of the different characteristics as possible for a positive identification.

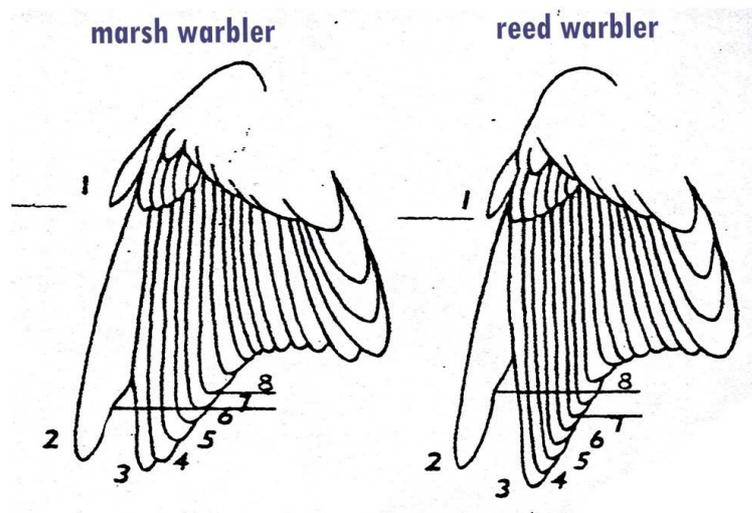
Wing length.

A large overlap occurs in wing length of the two species and a positive ID cannot be made.

European Marsh Warbler: 64 - 76 mm

European Reed Warbler: 61 - 73 mm

Wing formula.



P2-notch:

The measurement of the P2-notch, from notch to tip, can be used for ID purposes.

European Marsh Warbler: adult 8.5 - 12.0 mm ; first year 7.5 - 11.0 mm.

European Reed Warbler: adult 11.0 - 15.0 mm ; first year 9.5 - 13.5 mm

The length of the P2-notch is measured relative to the tips of the other primaries and gives one of the best ID's although some overlap occurs.

European Marsh Warbler: notch on the inner web of P2 mostly = 6 - 8/9.

European Reed Warbler: notch on the inner web of P2 mostly = 8/9 - 10/ss.

Wing tip.

The length of the wing tip, distance from longest primary to the first secondary.

European Marsh Warbler: 17.5 - 22 mm.

European Reed Warbler: 15 - 19 mm.

Alternatively the tenth primary shortfall can be measured, distance from P10 to tip.

European Marsh Warbler: 15 - 18 mm.

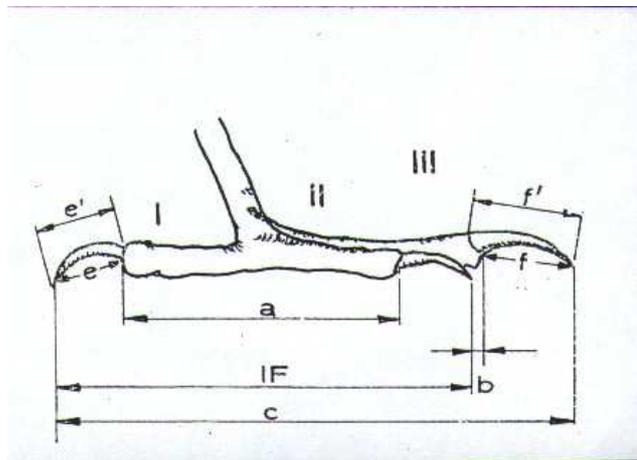
European Reed Warbler: 12 - 17 mm.

Notch/wing ratio.

The notch length on P2 is divided by the maximum wing length.

European Marsh Warbler: adult = 0.12 - 0.16; first year = 0.11 - 0.16.

European Reed Warbler: adult = 0.17 - 0.23; first year = 0.14 - 0.20.

Feet and claws.Footspan.

I. Hind toe.

II. Inner toe.

III. Middle toe

a. Inner footspan

c. Footspan including claws

b. Distance between point of claw of inner toe and end of cushion of middle toe.

IF. Inner footspan including claws.

The inner footspan with claws (IF) should be measured precise to 0.5 mm. The easiest way to measure the inner footspan is to put the foot on a flat laying ruler. Stretch the hind claw fully and with the fingers of the free hand put the claw on the zero line, by using the middlefinger or forefinger of the hand that is holding the bird stretch the claw of the inner toe and determine the distance between the claws. The front claw will turn somewhat sideways during this procedure. Correct measuring with this procedure requires some practice.

European Marsh Warbler: below 25 mm.

European Reed Warbler: above 27.5 mm.

European Marsh Warbler: Inner footspan: 16 - 18.5 mm.

European Reed Warbler: Inner footspan: 17.5 - 21 mm.

European Marsh Warbler: Total footspan: 30.3 - 33.2 mm

European Reed Warbler: Total footspan: 32.0 - 37.0 mm.

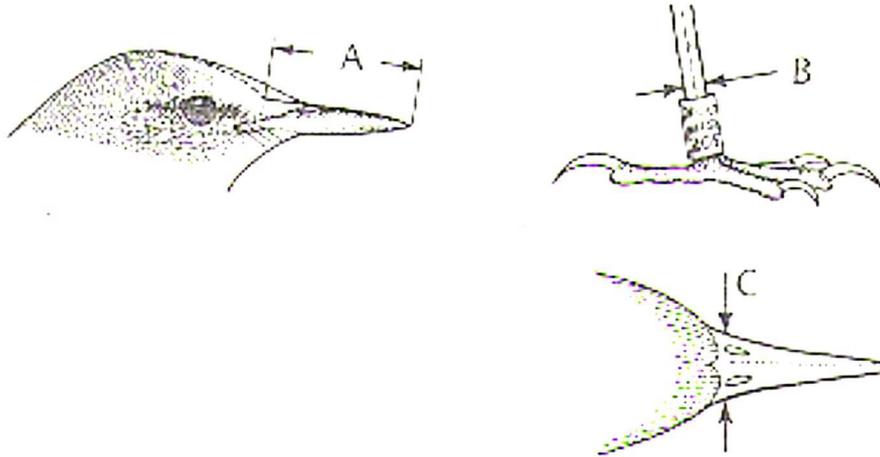
Forehead profile.

European Marsh Warbler: has a steeper forehead and shorter stronger bill.

European Reed Warbler: has a more sloping forehead and longer slimmer bill.

Acknowledgement.

This identification guide for the European Marsh Warbler and European Reed Warbler is a short summary of data that was published by H. Bub and H. Dorsch through A. Ziemsen Verlag. Bub, H. & Dorsch, H. 1988. Kennzeichen und Mauser Europäischer Singvögel, Teil 4, Cisternsänger, Seidensänger, Schwirle und Rohrsänger. Wittenberg Lutherstadt: A. Ziemsen Verlag.

Walinder score.

The European Marsh- and European Reed Warbler can be separated reliably by using the Walinder score. Measurements are taken as shown above.

From the length of bill to skull (A) is subtracted the product of the width of tarsus (B) multiplied by the width of the bill at the distal end of the nares (C).

Walinder score =  $A - (B \times C)$ . If the final product is: 4.5 - 8 European Marsh Warbler.  
8.5 - 12.5 European Reed Warbler.

Abstract from: Svensson, L. 1992. Identification guide to European Passerines. Stockholm: BTO.

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