British Birds

VOLUME 69 NUMBER 4 APRIL 1976

Identification of European treecreepers

C. J. Mead and D. I. M. Wallace

INTRODUCTION

Although its arrival as a British bird was widely announced in January 1972, the Short-toed Treecreeper *Certhia brachydactyla* was not admitted to the British and Irish list until 1975, on the basis of a vagrant trapped at Dungeness on 27th September 1969 (British Ornithologists' Union, in prep). Fifteen other reports of coastal vagrants, breeding birds and inland singletons have not yet been fully reviewed but it is likely that there are several other acceptable records. Research into such records prompted a growing loss of confidence in the criteria of treecreeper identification extant in 1974 and the resulting need to review the entire subject. The outcome is far from pleasing.

Before 1820, nobody had suggested the presence of more than one *Certhia* species in Europe. In 1907, Dresser was still lumping them. Modern systematists have, however, successfully separated them and demonstrated marked subspecific radiation in both (e.g. Vaurie 1959). Research, both in the field and in captivity, continues (e.g. Thielcke 1972, Purroy 1973, Mead 1975, Osieck 1975). The product of our separate reviews of characters in the field (DIMW) and in the hand (CJM) does not confirm statements in the current literature dealing with identification. It shows them to be not inherently false but certainly facile. We are forced to express serious caveats on the differences in voice and bill/hindclaw ratios, hitherto supposedly safe bases for separating the two species. If further advances are to be made in treecreeper identification, the studies will need to be long and complex. The odds are very much against observers suddenly faced with just one strange bird.

IDENTIFICATION IN THE FIELD

A Short-toed Treecreeper in Britain is most likely to have originated from the seaboard of western Europe. It needs to be distinguished from the two races of the Treecreeper *C. familiaris* that occur in Britain. These are the partially migratory nominate race (so-called Northern Treecreeper), which is an occasional vagrant to North Sea coasts and isles, and the indigenous *britannica* which is a widespread resident in mainland woods in Britain and Ireland, reaches Stornoway in the Western Isles and undertakes occasional autumn movements (British Ornithologists' Union 1972). No differences in the shape, actions and general behaviour of *brachydactyla* and *familiaris* are known and both exhibit very similar, remarkably disruptive plumage patterns. Attention has previously been drawn to visible differences in both bare part lengths and plumage marks and these are now discussed.

Bill and hindclaw length

Typically, the bill of *brachydactyla* does look longer and more decurved or bent downwards than that of *familiaris*. As demonstrated later, however, there is no real difference between the mean adult bill lengths of the closest European populations of *brachydactyla* and the British population of *familiaris* and both show marked growth variation in bill length. Thus, while a long, bent bill may be a clue to *brachydactyla* it is not proof.

Although the hindclaws of treecreepers are surprisingly easy to see, visual judgement of their length is hardly practicable. Since the curve of the hindclaw varies in both species, the clearer dichotomy in structure is likely to be masked in the field.

Plumage

Compared with typical British and most Northern *familiaris*, west European *brachydactyla* have duller, greyer upperparts (with white spotting less obvious and distinctly less rufous or not at all rufous rumps) and dirtier, less contrasting underparts (often with throats only pure white, the rest sullied grey and flanks and vent usually buff or brown). They also have shorter, more indistinct supercilia. These differences, very evident in the vast majority of skins in drawers, support the practicability of field identification in well-marked birds, but it must be stressed that many *familiaris* in southern England are themselves dull birds with reduced spotting on the mantle, little rufous on the rump and obvious buff on the flank edges. When such birds are also sullied on the belly and vent (as loose plumaged juveniles often are), the danger of confusion is high. Photographs illustrating the two species have been published in Avon and Tilford (1975) (in colour) and in Osieck (1975).

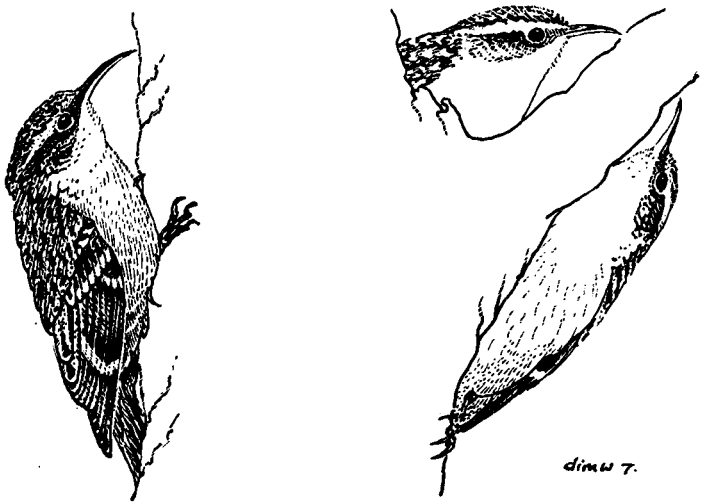

Fig. 1. European treecreepers *Certhia spp.* Compare typically dull Short-toed *C. brachydactyla* (left), with indistinct supercilium and dirty underparts, with typically clean Treecreeper *C. familiaris* (right), with obvious pale spotting and strong face pattern in Northern race (upper); beware southern British form (lower), which often has buff wash on rear flanks

It follows that only the combination of very dull plumage with an indistinct supercilium gives worthwhile cause to suspect *brachydactyla*. The complement of an obviously long, bent bill will further indicate that species (but the absence of such does not rule it out). Fig. 1 visualises some of the above points.

VOICE

Until 1972, the separation of *brachydactyla* from *familiaris* on differences in voice was thought to be a relatively simple and certain exercise. Then, however, Thielcke (1972) demonstrated that both species may learn at least part of the other's song pattern and that *familiaris* singing mixed patterns held territories against *brachydactyla*. It is clear that *familiaris* has less vocal rigidity than *brachydactyla* and thus there is the danger of the most infuriating plagiarism by the former (since, to make an odd call, it must presumably have heard something like the real thing from the latter somewhere). Remembering this, the essential differences and similarities in voice are now summarised.

Song

In full song, *familiaris* sings a phrase that is high-pitched (about 7 khz dropping to about 5 khz) and quite long, lasting nearly three

seconds on average. It is a silvery cadence, very thin and tremulous to begin with but sounding increasingly fuller and confident towards the end and with a noticeably accelerating pulse in the middle. As *The Handbook* (Witherby *et al.* 1938-41) states, the song suggests a loud Goldcrest *Regulus regulus* or, as E. D. H. Johnson has perceptively said (*in litt.*), a Chaffinch *Fringilla coelebs* raised a couple of octaves (and with basically the same rhythm and timbre). In addition *familiaris* has a sub-song which is shorter, more halting and less plaintive in quality. In distinct contrast, *brachydactyla* sings a phrase that is lower pitched (about 5 khz rising to 6 khz) and short, lasting just over one second. Importantly, its full song is much louder and has a more emphatic rhythm. It does not suggest any other species. Fig. 2 portrays the essential difference in song phrase. (The mixed songsters studied by Thielcke 1972 occasionally

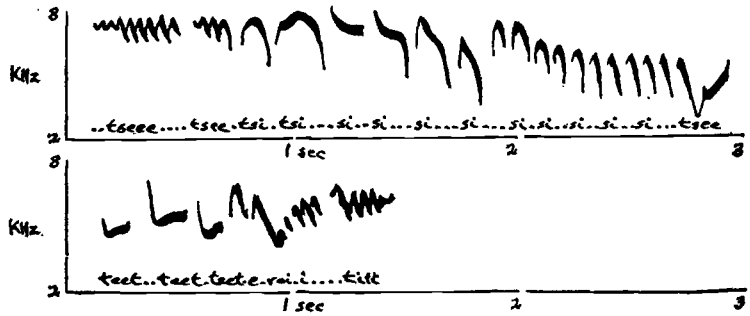

Fig. 2. Normal song phrases of (upper) Treecreeper *Certhia familiaris* and (lower) Short-toed Treecreeper *C. brachydactyla* (after Thielcke 1972)

amended the structure of notes but mostly they reassembled the two basic phrases in a wide variety of combinations.) It should also be noted that *brachydactyla* may sing less than *familiaris* during interspecific competition (Schnebel 1972).

Calls

The *Field Guide* (Peterson *et al.* 1974) gives 'a thin high-pitched "*tsee*" or "*tsit*" ' for *familiaris* and 'a high, shrill "*srrieh*" or "*zeet*" ' for *brachydactyla*. If only it were that simple. Listened to carefully, treecreepers have many more calls than these. In special studies in 1972 and 1973, H. P. Medhurst and DIMW distinguished at least seven in the case of *familiaris* in Epping Forest, Essex, and K. E. Vinicombe at least six in the case of *brachydactyla* in southern France. There can be no doubt that the two species share calls that sound identical to human ears. Table 1 attempts to compare the two vocabularies, demonstrating in particular that calls like those of a

Table 1. Analysis of calls of Treecreeper *Certhia familiaris* **and Short-toed Treecreeper** *C. brachydactyla*

Commonest transcription	Character in Treecreeper	Character in Short-toed
'tsee'	Very thin, tremulous, barely audible, often trilled or uttered in series; also 'sie', 'zii', 'see-tee-see'	Thin, plaintive; also 'seee'
'tsit'	Thin, soft, not tremulous, repeated but rarely in series; also 'sit', 'tit', 'sit-tit'	Thin, high-pitched, repeated; also 'sit', 'tsup'
'tsreee' or 'srrieh'	(i) Vibrant, medium-pitched, singly or in series, also 'sriiiii'	
	(ii) Shrill, piercing, tremulous, loud, very audible, often in series and with 'tsee' and 'tsew' interjected, with or without abrupt ending	Clear, explosive, loud, penetrating, singly or in series; also 'sree'
'tsiew'	Plaintive, medium pitch, singly or in series; also 'tsew', lower pitched	
'tsut'	Plaintive, loud, recalling Coal Tit *Parus ater*; also 'tsu' and 'tsuit' as precursor to song or in series	Clear, high-pitched, explosive, loud, also recalling Coal Tit, singly or in series of three or four (with descending pitch); also 'tsoot'
'zeet'		Shrill, piping, explosive, loud, recalling Dunnock *Prunella modularis*; also 'seek', 'peep', 'sreet' and 'tseep'
'chink'		Penetrating, quite loud, slightly recalling Chaffinch *Fringilla coelebs* but just disyllabic; also 'chip'

Coal Tit *Parus ater* are given by *familiaris*, that the first *Field Guide* transcription for *brachydactyla* is relevant to both species and that only two note types are unique to *brachydactyla*.

Happily, nobody has so far suggested that the 'zeet' note which recalls the penetrating monosyllables of several other species in a way that no call of *familiaris* does is anything but specific to *brachydactyla*. This is true also of the 'chink' call. It is worth stressing the fact that British observers do hear the voice of known Continental *brachydactyla* as immediately distinctive. They all comment on the loudness and clear emphasis of its calls compared with the sibilance

of most sounds uttered by *familiaris*. All in all, *brachydactyla* has a louder voice than *familiaris* and its less sibilant calls, particularly the 'zeet', are recognisable to the experienced ear.

HABITAT AND BEHAVIOUR

Recent research into the ecology of the two treecreepers in Lower Saxony, West Germany, by Schnebel (1972) has suggested that *familiaris* is the dominant sibling in areas where the two species cohabit. Furthermore it inhabits more species of trees, particularly broadleaved ones with slippery bark. Only the branches of the latter are readily climbed by *brachydactyla*, which shows a marked preference for oak *Quercus*. Schnebel stated that the difference in climbing ability is obvious and it seems that details of precise habitat and ecological behaviour will help identification. Schnebel never saw *brachydactyla* as any but the loser in clashes with *familiaris*. This suggests that *brachydactyla* may find it difficult to gain more than a few footholds in Britain.

Unfortunately, there is clear evidence from the Pyrenees that Schnebel's observations do not provide rules for the whole of Europe. Purroy (1973), in a full study of treecreeper distribution in various habitats from 750 metres to 1,900 metres in altitude, found that *brachydactyla* was favoured by human disturbance of natural habitats and an earlier start to its breeding cycle. In the Pyrenees, *brachydactyla* exhibited a wider habitat tolerance than *familiaris* and was the dominant species in the highest and lowest levels. It was certainly not 'the treecreeper of gardens' only. Clearly, there is much to be learnt of treecreeper biology.

Isolating vagrant *brachydactyla* from British *familiaris* in the field will be no easy task. The plumage overlap with southern English or atypical *familiaris* is wide and the difficulty (to untrained observers) of certain voice distinction creates formidable barriers to field identification. Separation of the two species is clearly practicable in Europe where both are present, but it has yet to be proven possible in Britain.

IDENTIFICATION IN THE HAND

Specific diagnosis of skins or live birds in the hand of very similar species is sometimes possible using the size of readily measured features. Just such a technique, involving bill and hindclaw lengths, has been published by Svensson (1970) for the two European treecreepers. Knowing that *brachydactyla* was supposed to have been discovered breeding in England CJM started to measure the bills and claws of all the treecreepers he handled from January 1970. The measurements of live birds came from a wooded area near Tring, Hertfordshire, and the calls, song and plumage of the birds

trapped and seen in the area conformed with *familiaris* in all particulars.

Since such fine differences in measurements are involved and they are not easy to reproduce between different observers, only those measured by CJM have been included. Metal vernier callipers were used and the results recorded to 0.1 mm. Fig. 3 shows precisely how they were taken. It soon became apparent that the measurements for the Tring population did not wholly conform with those given for either species by Svensson (1970). Since the explanation could lie in differences in measuring techniques, through shrinkage of the museum specimens measured by Svensson or because the Tring birds actually had longer bills, the study was extended to museum specimens.

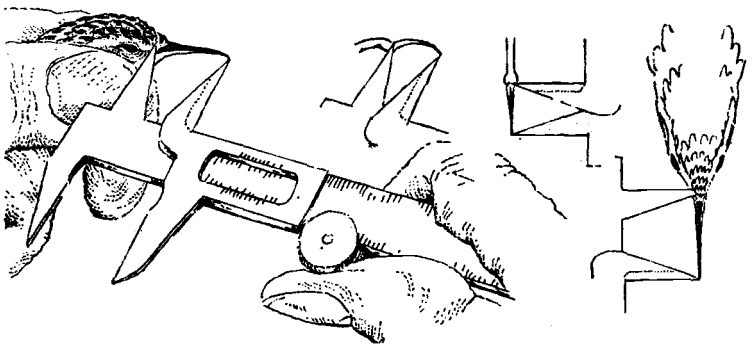

Fig. 3. The technique used in measuring bill and hindclaw lengths of treecreepers *Certhia spp.* The bill is measured from the tip to the angle formed above the bill by it and the skull, one arm of the callipers being tucked into this notch and the other screwed out until it reaches the bill tip. The hindclaw measurement is taken on the upper part from the tip to the edge of the skin sheath at the base

All the Palearctic *Certhia* specimens in the British and Liverpool Museum collections were measured during 1974. Although several races of each species have been described, the variations in measurements within named subspecies was wide and the skins were grouped on a geographical basis to provide samples from relatively compact areas. The results of this study have already been published (Mead 1975), but the information from populations within and close to Britain and Ireland will be used later. The conclusions of this analysis, relevant to the European populations, were as follows:

1. *Certhia brachydactyla* is a good species with a very significantly shorter hindclaw than *familiaris*. European population means for the former range from 7.49 mm to 7.87 mm compared with 8.91 mm to 9.28 mm for the latter. Unfortunately the theoretical and actual

ranges of these measurements overlap considerably in the region of 8 mm.

2. Unlike claw lengths, which show little geographical variation within Europe, bill lengths vary considerably. This variation, mainly in *brachydactyla* populations, means that, although the average European treecreeper of that species has a longer bill than a *familiaris*, some French populations have mean bill lengths very similar to those found in both British and European *familiaris*. Indeed the *brachydactyla* population (north-east France, the Channel Islands and the Netherlands) nearest to the sites in southern England where that species has been claimed has a mean bill length of 17.63 mm, only 0.01 mm longer than the mean for all British and Irish *familiaris*. Within Europe as a whole, only about 10% of the bill measurements for each species lie outside the range observed for the other.

3. Wing lengths of *familiaris* populations were, on average, longer than those of *brachydactyla*, but most measurements lay within the area of overlap. Unfortunately British *familiaris* have shorter wings than other European populations and are thus even closer to the European mean for *brachydactyla*. Irish birds have slightly shorter wings than those from mainland Britain (62.31 mm compared with 63.24 mm, $P < 0.05$) but, otherwise, in none of the features measured did any of the three populations from Great Britain and Ireland, which were treated separately, differ.

4. Bill width, at the nostril, was also measured but there was little variation within European populations and the difference between British *familiaris* and close populations of *brachydactyla* was negligible.

5. The feature advocated by Harrison (1935), who suggested that the outer web of the largest alula feather had a complete pale margin in *brachydactyla* which was lacking in *familiaris*, was also tested. Although more often right than wrong, up to 40% of the birds from European populations of *brachydactyla* and 17% of *familiaris* would have been wrongly assigned using this character alone. In any case it was often difficult to decide whether the margin was present or not.

6. Since many of the museum specimens being measured were sexed by their collectors it was possible to compare measurements within some populations by sex. The results showed a markedly greater sexual dimorphism in bill length than claw length. This means that the simple discriminant advocated by Svensson (1970) of $hindclaw = 0.456 \times bill$ will necessarily include a sexual bias.

The search for a means of specific identification was, of course, complicated by the results from live birds. The ideal was to find a discriminant function, involving as few measurements as possible, which would determine the species of any individual. The informa-

tion provided by Svensson (1970), in the first edition of his invaluable guide, gave *hindclaw greater than 0.456 × bill* for *familiaris* and *hindclaw less than* 0.456 × *bill* for *brachydactyla*. These formulae mean that, if bill is plotted on the y- and claw on the x-axis, all *brachydactyla* would be above and left of the line x = 0.456y and all *familiaris* below and right of it. Fig. 4 shows that this was not so.

THE SEARCH FOR A NEW DIAGNOSIS

Fully-grown birds

Since measurements were now available, taken by the same person with the same equipment, for skins of both species and from live *familiaris*, plots could be constructed for fully-grown birds. In the first, fig. 4, skins from the two closest populations of *brachydactyla* (two regions including Belgium, the Netherlands, Channel Islands and north and mid-France) (Mead 1975) are plotted as stars, skins of *familiaris* from south and east England as solid dots and live birds from Tring as open circles with triangles. Where birds were retrapped and remeasured a mean measurement is plotted. The thicker, more vertical, line is the best discriminant on these data alone. The heavily circled symbols are the birds (nine out of 143 = 6.3%) which fall on this line or on the wrong side of it. Many more are within 0.5 mm of it (combining the two measurements): almost 50% of *brachydactyla*, 20% of live *familiaris* and 8% of *familiaris* skins. This line is *hindclaw* = *0.14* × *bill* + *5.4* and the other is Svensson's ratio, which would give 15 wrong identifications (10.5%).

Fig. 4 shows only birds from a very restricted area but, in dealing with the possibility of identifying a vagrant, other populations must be investigated. Fig. 5 shows, on the left, *brachydactyla* and, on the right, *familiaris* plots from a wider area. On each plot the thicker, left-hand line is *hindclaw* = *0.14* × *bill* + *5.4*, but the thinner, right-hand line proved to be the best discriminant on these more extensive data; it is *hindclaw* = *0.14* × *bill* + *5.6*. Table 2 summarises the performance of both discriminants and shows that the best efficiency is about 95%. This is on data provided by measurements made by one person and takes no account of individual systematic differences in technique which are very likely to exist. A comparison of the live bird measurements from Tring with those from British skins suggests that shrinkage in skins may account for a loss of almost 1 mm in bill measurement but that claw measurements are unaffected. Further problems may arise since both bill and claw, on full-grown birds, grow continuously. The data were analysed by three-month periods to see whether there were seasonal differences. The three-month means for both bill and claw are different, but not significantly so, and therefore date of capture does not seem to have a systematic effect on these measurements.

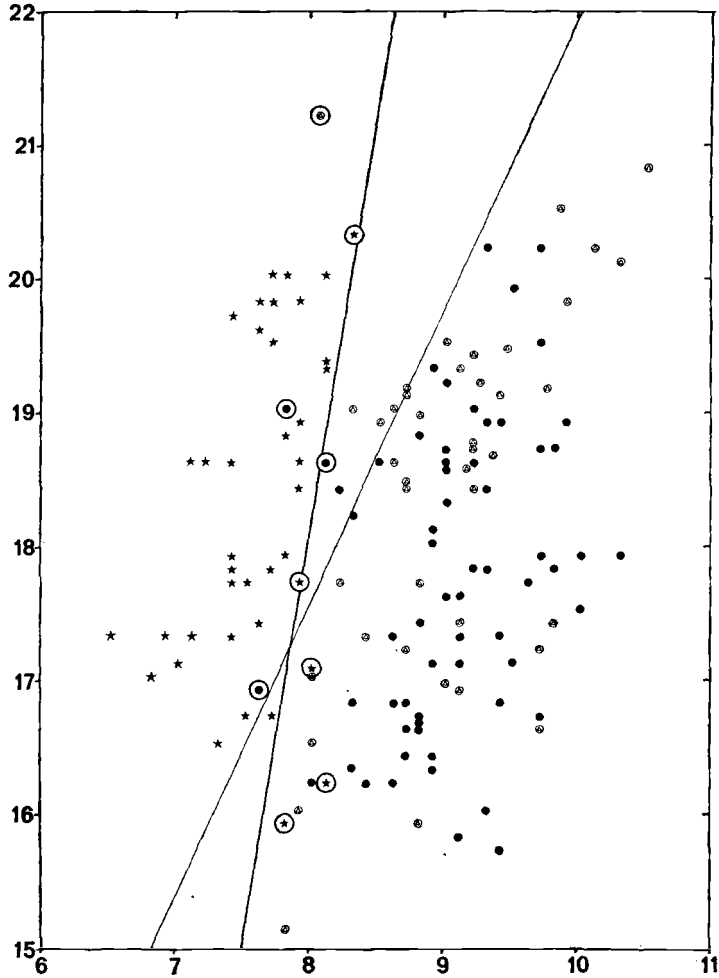

Fig. 4. Bill/hindclaw plotted for one population of Short-toed Treecreepers *Certhia brachydactyla* and two of Treecreepers *C. familiaris*. Stars mark *brachydactyla* skins from Belgium, the Netherlands, the Channel Islands and north and mid-France, dots *familiaris* skins from southern England, and triangles in circles live *familiaris* from near Tring. The thick line is the best linear discriminant between the species, though heavily circled records would have been incorrectly diagnosed; the thin line is Svensson's (1970) discriminant ratio

Young birds

The previous section was restricted to fully-grown birds. Most juvenile treecreepers may be aged through the summer and early autumn (sometimes to October) by their characteristically loose and fluffy undertail-coverts. Table 3 compares the measurements of

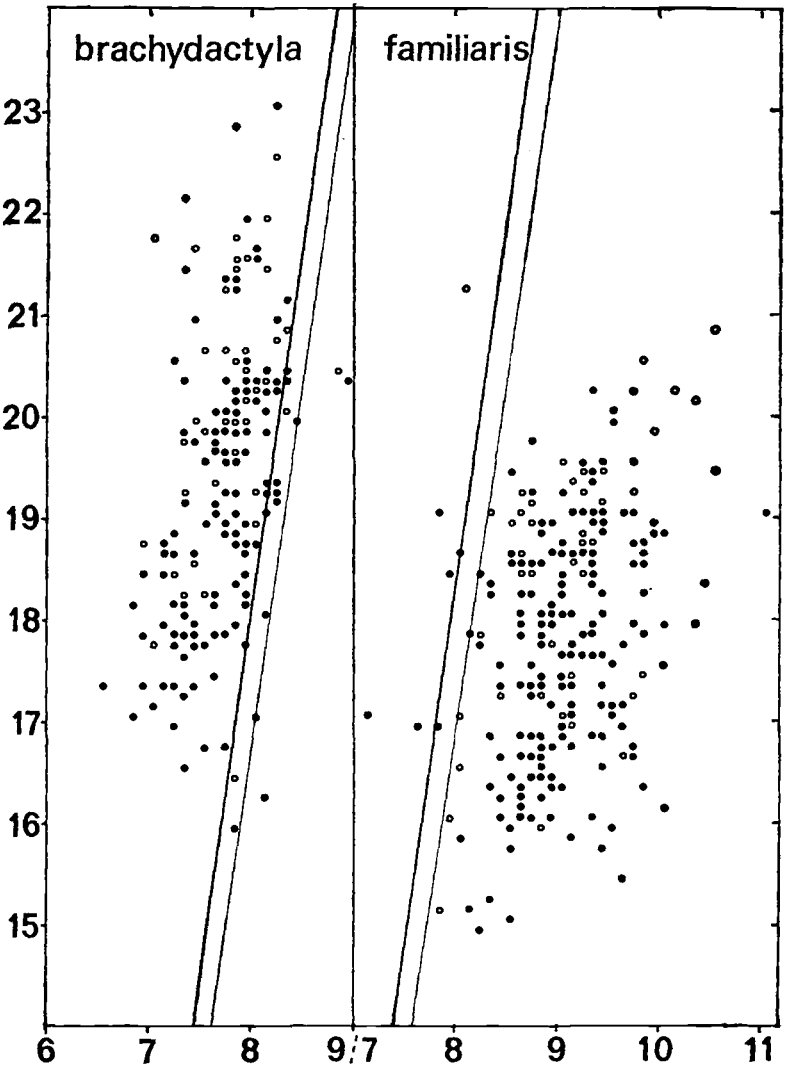

Fig. 5. Bill/hindclaw plotted for two populations of Short-toed Treecreeper *Certhia brachydactyla* (left) and two of Treecreeper *C. familiaris* (right). On the left, solid dots mark *brachydactyla* skins from mainland Europe and open circles those from Cyprus and North Africa. On the right, solid dots mark *familiaris* skins from Britain and Europe and open circles live *familiaris* near Tring. The thicker line (same on each plot) is the discriminant fitted to fig. 4 but a better function would be the thinner line to the right for these more extensive data

Table 2. Efficiency of two discriminant functions for specific identification of Treecreepers *Certhia familiaris* and Short-toed Treecreepers *C. brachydactyla* from the bill and hindclaw measurements plotted in fig. 5

'North Europe' includes Britain, Scandinavia, Germany, Poland and the Baltic States, and 'Mediterranean' covers Cyprus and North Africa. The Tring measurements are of live birds caught for ringing, while all others are of museum specimens

	TREECREEPER		SHORT-TOED TREECREEPER	
	North Europe	Tring	Europe	Mediterranean
Function: *hindclaw* = 0.14 *bill* + 5.4				
Correct	159	41	103	37
Wrong	6	1	15	3
Function: *hindclaw* = 0.14 *bill* + 5.6				
Correct	157	39	112	39
Wrong	8	3	6	1
TOTALS	165	42	118	40

juvenile and fully-grown birds: the former are between 8% and 12% shorter than the latter, which can cause additional confusion. In all four cases where juveniles were later retrapped as fully-grown birds, both measurements had increased, bills by between 1.8 mm and 4.0 mm and hindclaws by between 0.5 mm and 1.9 mm. This means that measurements can be of rather little help on young birds during June, July and August and may be open to some doubt for the next month or two. The inclusion of some young birds in his measured sample may partly explain the discrepancy of more than 1 mm between the mean bill length of some of Svensson's samples and those measured by CJM. Hindclaw measurements are in much closer agreement however: for the four paired geographical samples

Table 3. Mean measurements of bill and hindclaw for juvenile and older treecreepers *Certhia familiaris* from two sources

For each measurement the mean ±2 s.e. and the sample size (in brackets) are given. Only the accurately dated museum specimens have been used here

	Juveniles	Older birds
Live birds: near Tring		
Bill	16.69 ± 0.57 (26)	18.55 ± 0.35 (58)
Claw	8.21 ± 0.27 (26)	9.03 ± 0.19 (58)
Museum specimens: Britain		
Bill	15.75 ± 0.63 (8)	17.63 ± 0.21 (122)
Claw	8.33 ± 0.40 (8)	9.00 ± 0.10 (125)

the difference in means was never more than 0.25 mm. Recently Osieck (1975) has published a bill/hindclaw plot demonstrating the area of overlap on Svensson's earlier criteria. On his data, the best discriminant is very near *hindclaw* = *0.14* × *bill* + *5.6*. This is that proposed on the data presented in fig. 4 and it is very encouraging that the results from two completely independent investigations should be so similar.

SUMMARY AND CONCLUSIONS

The problems of identification of Treecreepers *Certhia familiaris* and Short-toed Treecreepers *C. brachydactyla* in the field and in the hand are discussed. In the field length of bill and hindclaw are thought to be impracticable criteria; separation on plumage is possible with well-marked birds, *brachydactyla* being generally duller and greyer above, and dirtier below, with a less distinctive supercilium, than typical *familiaris*; many southern English *familiaris* are, however, dull and easily confused with *brachydactyla*. Voices are compared: the full song of *brachydactyla* is normally much louder and with a more emphatic rhythm; table 1 compares calls, many of which appear to be common to both species; generally *brachydactyla* has a louder voice and less sibilant calls. Where the two species exist together *familiaris* appears dominant (Schnebel 1972), though Purroy (1973) found *brachydactyla* to have a wider habitat tolerance and to be the dominant species at highest and lowest levels in the Pyrenees. Separation of the two species in the field in Britain has yet to be proven possible.

Bills and claws of live *familiaris* from near Tring, Hertfordshire, and of museum specimens of both species from various parts of their ranges were measured. Bill lengths varied considerably, though the average *brachydactyla* had a longer bill. *Brachydactyla* has a shorter hindclaw than *familiaris*, but a considerable overlap in the theoretical and actual ranges was apparent in the region of 8 mm. Wing lengths of *familiaris* were on the whole the longer but again a great area of overlap was evident. Sexual dimorphism was greater in bill length than in hindclaw length.

Svensson's (1970) criteria of *hindclaw greater than 0.456* × *bill* for *familiaris* and *hindclaw less than 0.456* × *bill* for *brachydactyla* were shown to be unsound. Measurements from a wider area of Europe, and North Africa, showed the best discriminant to be *hindclaw* = *0.14* × *bill* + *5.6*. The rate of growth of young birds means that measurements taken in June, July and August can be of little help. A bill/claw plot by Osieck (1975) showed *hindclaw* = *0.14* × *bill* + *5.6* again to be a good discriminant.

Both in the field and in the hand the identification of the two species is difficult. While differences do exist (and no doubt attach

to their speciation), the observation of such may be impracticable in many circumstances, and particularly in those likely to surround the chance record of a single vagrant *brachydactyla* in Britain. Recent research has shown that previous statements on field identification are dangerously facile, while an extensive review of the measurements of both preserved and live specimens has upset the original criteria set by Svensson (1970) for the separation of birds in the hand. A much wider overlap has been demonstrated in all characters and the risks to bird identification from varying human perception have become nowhere more apparent than in this subject.

This said, we do not doubt that some *brachydactyla* are safely separable from even atypical *familiaris* and that it is worth while to concentrate on every suspect bird. Where a bird is caught, reference to this paper or to Svensson's revised statement (1975) should guide observers through the morass of previous comments and reviewing committees through the confused criteria. Finally, we must stress again the need for disciplined, precise measurements. Anybody wishing to tackle this problem properly must be prepared to measure all the treecreepers he catches in order to determine a firm basis for comparison. Only with this will the discriminants evaluated here help to support certain identification.

ACKNOWLEDGEMENTS

We have received much assistance from British and European observers. CJM thanks Dr D. W. Snow and P. J. Morgan respectively for allowing him access to the treecreeper specimens in the collections of the British Museum (Natural History) and Liverpool Museum. Lars Svensson kindly lent him the raw data of his measurements from museums. David Sales and Brian Watmough helped with the data analysis. Other colleagues at the BTO and several ringers contributed to helpful discussion. DIMW thanks many correspondents, notably P. F. Bonham, I. J. Ferguson-Lees, P. J. Grant, R. E. Scott, Dr J. T. R. Sharrock and Dr G. Thielcke. For expert assistance on the vocabulary of the two species he is particularly indebted to Mrs E. M. Allsopp, D. G. Bell, J. Burton, D. A. Christie, R. J. Johns, E. D. H. Johnson, H. P. Medhurst and K. E. Vinicombe.

REFERENCES

Avon, D., and Tilford, T. 1975. *Birds of Britain and Europe.* Poole.

British Ornithologists' Union. 1971. *The Status of Birds in Britain and Ireland.* Oxford.

—— (in prep) 'Records Committee: Ninth Report'. *Ibis.*

Harrison, J. M. 1935. 'A note on *Certhia familiaris* and *C. brachydactyla*'. *Ibis,* 77: 437-438.

Mead, C. J. 1975. 'Variation in some characters of three Palearctic *Certhia spp.*'. *Bull. B. O. C.,* 95: 30-39.

Osieck, E. R. 1975. 'Identification of treecreepers *Certhia* in the Netherlands'. *Limosa,* 48: 176-187.

Peterson, R., Mountfort, G., and Hollom, P. A. D. 1974. *A Field Guide to the Birds of Britain and Europe.* London. Third edition.

Purroy, F. J. 1973. 'La répartition des deux grimpereaux dans les Pyrénées'. *L'Oiseau,* 43 (3): 205-211.

SCHNEBEL, G. 1972. 'Die Ökologie der Baumläufer (*Certhia brachydactyla* und *Certhia familiaris*) in Ostniedersachsen'. *Vogelwelt*, 93 (6): 201-215.

SVENSSON, L. 1970. *Identification Guide to European Passerines*. Naturhistoriska Riksmuseet, Stockholm.

—— 1975. *Identification Guide to European Passerines*. Second, revised edition. Stockholm.

THIELCKE, G. 1972. 'Waldbaumläufer (*Certhia familiaris*) ahmen artfremdes Signal nach und reagieren darauf'. *J. Orn.*, 113: 287-296.

VAURIE, C. 1959. *The Birds of the Palaearctic Fauna: Passeriformes*. London.

WITHERBY, H. F., JOURDAIN, F. C. R., TICEHURST, N. F., and TUCKER, B. W. 1938-41. *The Handbook of British Birds*. London. vol. 1.

C. J. Mead, British Trust for Ornithology, Beech Grove, Tring, Hertfordshire HP23 5NR

D. I. M. Wallace, 9 *Woodhill Rise, Heads Lane, Hessle, Hull, North Humberside* HU13 OHZ