

Ringling & Migration 9: 55-62, June 1988

## A new method for separating Marsh Warblers *Acrocephalus palustris* from Reed Warblers *A. scirpaceus*

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Walinder, G., Karlsson, L. & Persson, K. 1988. A new method for separating Marsh Warblers *Acrocephalus palustris* from Reed Warblers *A. scirpaceus*. *Ring. & Migr.* 9: 55-62.

Maximum chord wing length and the length of the notch on the inner web of the second primary, were measured on adult and first-year Marsh and Reed Warblers. The relationship between the two measurements produced a good method to separate the two species. Two distinct groups were formed, with no overlap for adult birds and only one per cent for first-year birds. This provided considerably better species separation than the more usual method (notch relative to length of remiges), which in our study gave an overlap of 5% for adult birds and 40% for first-years. The possibility of errors caused by wrong identification of species, by growing feathers in recently-fledged juveniles and by measuring techniques are briefly discussed.

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Received 3 June 1987; revised and accepted 30 September 1987.

### INTRODUCTION

The separation of Marsh Warblers from Reed Warblers is a classical problem, in the hand as well as in the field. Accurate field identification can only be made on singing birds. For identification in the hand, the most common method is to check where the inner end of the notch of the second primary (primaries numbered ascendantly) falls in relation to the inner primaries or outer or secondaries on the folded wing. This method is described by Williamson (1963) and Svensson (1984), but both authors issue the warning that there are some intermediates, which are impossible to separate using this method. Unfortunately, no information is given on the size of this proportion.

Other papers discuss the use of various measurements on the wing (Jensen 1971) or on the foot (Leisler 1972), as methods of species identification. Finally, Leisler & Winkler (1979) statistically tested seven different groups of measurements, in order to reach an acceptable way of separating the two species. Their results, however, are not very practical for use in field work.

Our ambition was to find an easy and

satisfactory method of separating the two species. For that purpose, several measurements were collected from birds trapped for ringing. It was apparent early in the study, that the length of the notch of the second primary, in combination with wing length, showed the best results.

Whilst working on this manuscript, we became aware of an earlier study in the Netherlands, using the same technique (van Swelm & de Kniff 1984). This was, however, made on a rather small sample. The authors' wish for others to evaluate the method on a larger sample will hopefully be fulfilled here.

### MATERIAL AND METHODS

The measurements used in this paper were mainly collected between 21 July and 15 September 1980-1986 at Falsterbo Bird Observatory (55°24'N, 12°50'E), south Sweden. Each year about 150 Marsh Warblers and 2000 Reed Warblers are trapped in a reed bed area (Flommen) as a part of the standardized scheme at the Bird Observatory (Roos & Karlsson 1981). In all, measurements were taken on 87 adult and 556 first-year Marsh Warblers, and on 428 adult and 1362 first-year Reed Warblers.

All measurements were taken by the same person (G. Walinder) in order to avoid inter-observer variations. The length of the notch on the

second primary (from now on only named "the notch") was measured as shown by Svensson (1984). The notch was measured to the nearest 0.5 mm. Wing length was measured to the nearest one mm according to Method III, maximum chord (Svensson 1984).

The birds were always handled in the same way. Species and age were determined and then the measurements were taken. Finally, for comparison, the position of the notch in relation to the primaries was checked in most birds.

The species was identified on the basis of general appearance (colour of plumage and soft parts, and silhouette) only. After handling more than 2000 Marsh Warblers, and over 25 000 Reed Warblers, we are confident that we can tell the two species apart without any errors.

Age determination was made on plumage characters as described by Svensson (1984).

## RESULTS

The relationship between notch length and wing length is shown in Figs 1A and 1B for adults and first-year birds respectively. Marsh Warblers have shorter notches than Reed Warblers for the same wing length. In most cases, the difference is clear-cut, and only a few extremes approach each other, or overlap.

Our results for the "usual" method, i.e. the position of the inner end of the notch compared to the length of the inner primaries and to wing length are shown in Fig. 2A for adults, and in Fig. 2B for first-year birds. It is apparent, that the notch length/wing length method gives a far better separation than the notch position method. For adults there was no overlap at all using the former method (Fig. 1A), whilst using the notch position method (Fig. 2A), 13% of the Marsh and 3% of the Reed Warblers fell in the overlap area (notch = 8th primary or between 8th and 9th primaries). In combination with wing length, however, this method also gave a good separation: 1% overlap.

The greatest difficulties usually occur in first-year birds. Our method, however, gives a considerably lower degree of overlap, at only 1% (Fig. 1B), than the usually practised notch position method. As many as 67% of the Marsh and 30% of the Reed Warblers fell in the overlap area (notch = 7th-8th

primaries, Fig. 2B). The latter method in combination with wing length gave a degree of overlap around 25%.

The mean increase of notch length relative to wing length was about 0.15 to 0.20 mm/mm in both species and age groups. The regression lines of mean notch length and wing length are shown in Figs 3A and 3B.

## DISCUSSION

As mentioned earlier, the identification of the two species was made on general appearance, based on our experience of handling several thousands of birds. Even if we had not known which species the birds belonged to, the measurements would have formed two groups in Fig. 1. The only overlap area, i.e. notch/wing length = 10.0/68, 10.5/69 and 11.0/70, consists of 4, 7 and 9 birds respectively, indicating the line of demarcation between the two species. It is known that Marsh Warblers are larger than Reed Warblers and have longer wings, (e.g. Williamson 1963, Svensson 1984), so that it is possible to name the upper left (short-winged) group as Reed Warblers, and the lower right (long-winged) group as Marsh Warblers.

The notch/wing length method is particularly useful if trapping migrants. During the breeding season, when newly fledged nestlings may be trapped, careful attention should be paid to the growth of the primaries. The method should not be used for young birds with remiges still growing (check for blood sheaths at the base of the longer primaries). For these birds we recommend a method, eliminating errors caused by growing feathers, but involving more complex measurements of bill length (to skull), bill width and tarsus width (worked out by G. W. and described in Svensson 1984).

For birds with fully grown primaries we recommend the notch length/wing length method, since it only consists of two measurements, relatively easy to take.

In all methods involving measurements there is a risk of errors caused by different

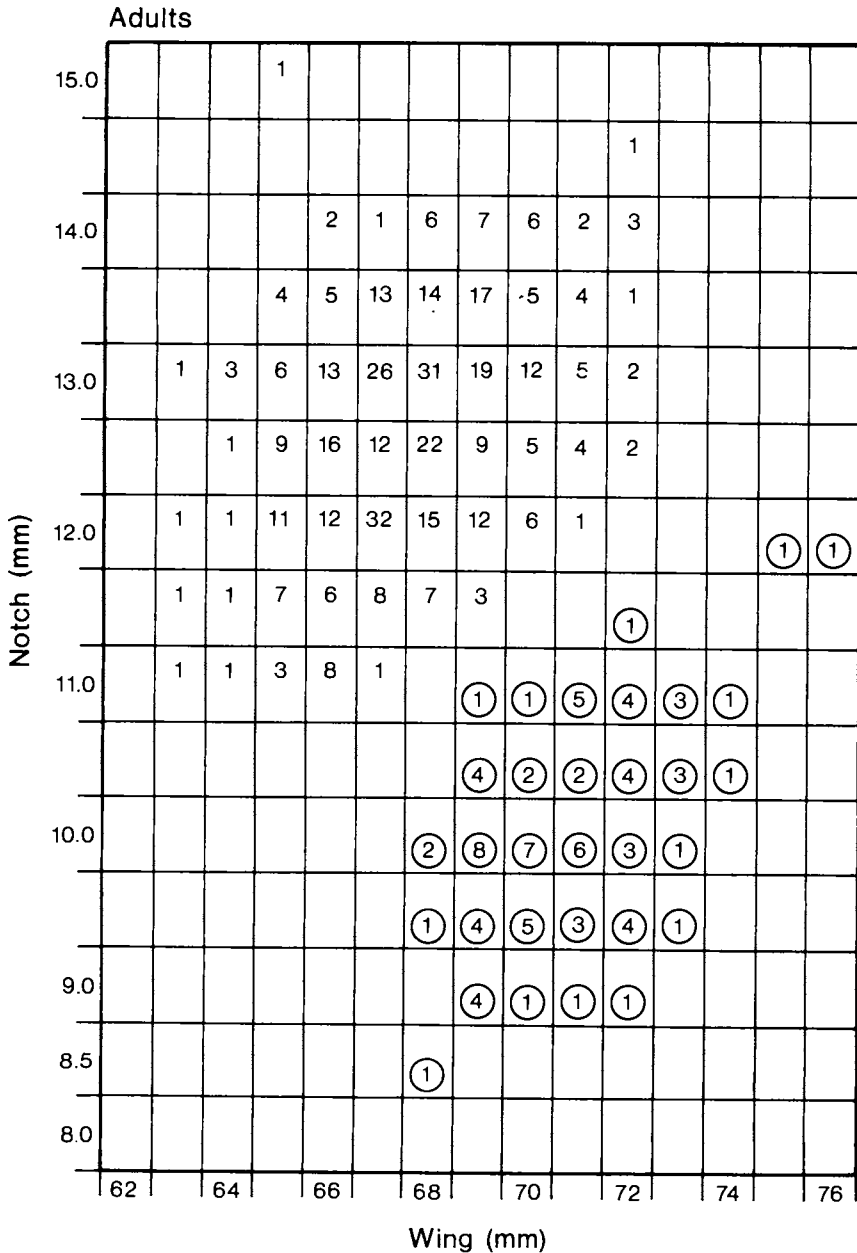


Figure 1. The relation between notch length and wing length in adult (A) and first-year (B) Reed Warblers and Marsh Warblers (in circles), according to the measurements taken at Falsterbo. Sample sizes: Reed Warbler: adult: 428, first-year: 1362. Marsh Warbler: adult 87, first-year 556.

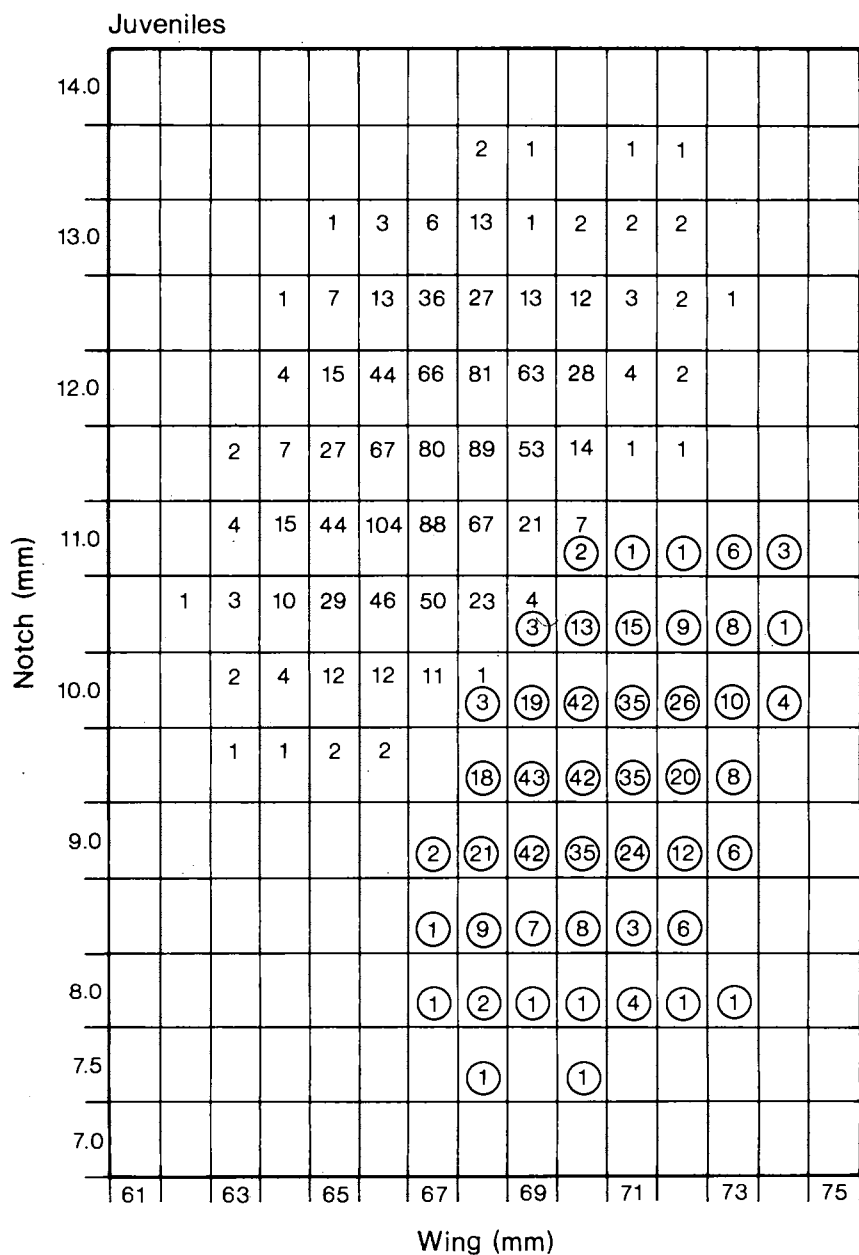


Figure 1 B. see caption on previous page.

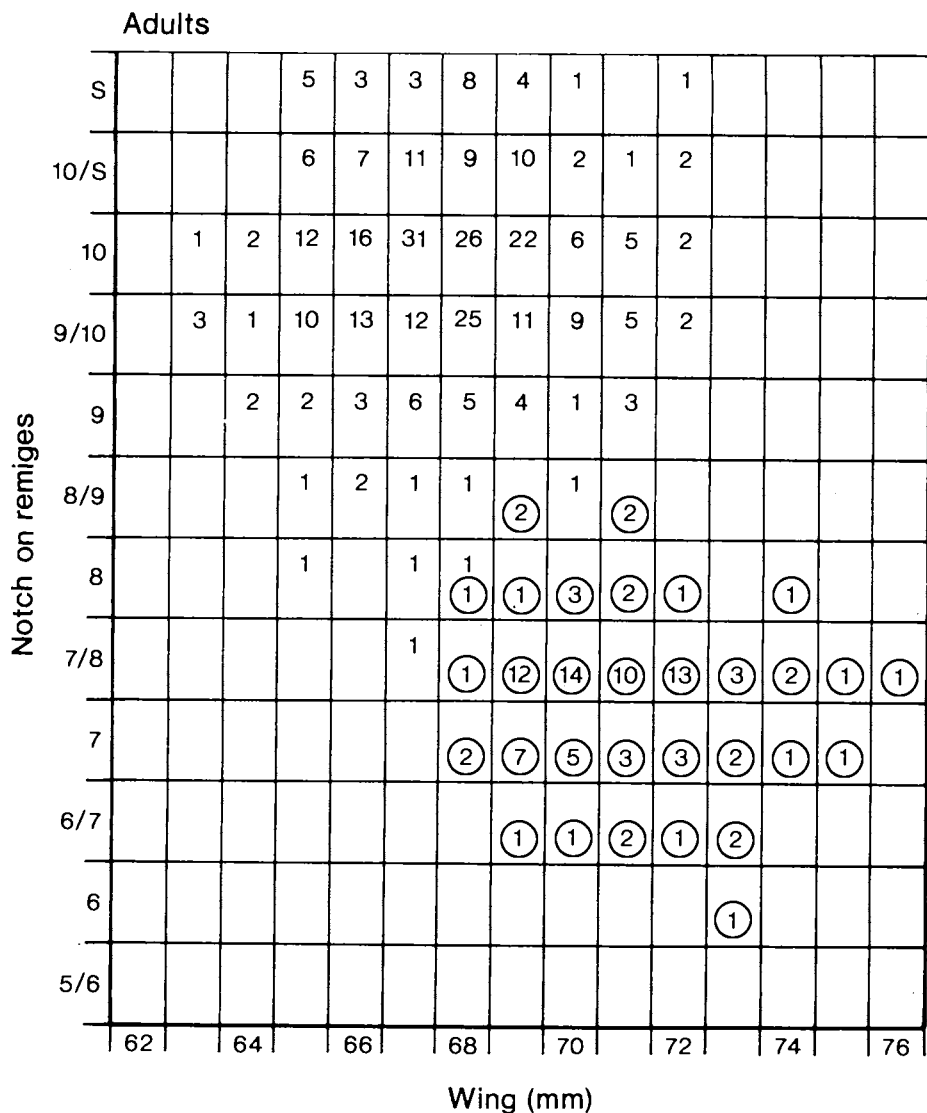


Figure 2. The relation between the inner end of the notch in comparison with remiges and wing length in adult (A) and first-year (B) Reed Warblers and Marsh Warblers (in circles), according to the measurements taken at Falsterbo. (S = secondaries). Sample sizes: Reed Warbler: adult: 323, first-year: 1321. Marsh Warbler: adult: 102, first-year: 506.

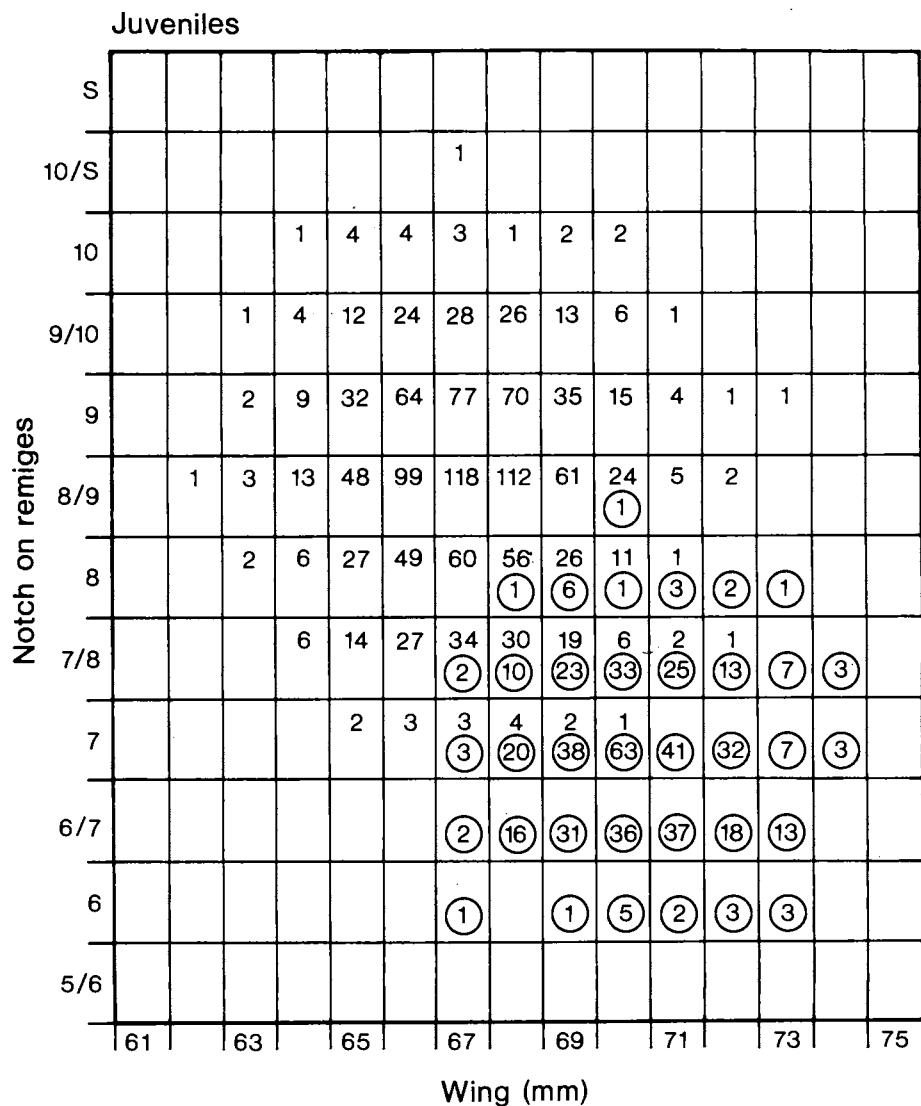


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measuring techniques between observers (Nisbet et al. 1970, Lindell 1978). Therefore, we would like to stress the importance of correct measuring. Anyone using our method should make sure that the wing is properly straightened before measuring. It is also advisable to check the mean wing length of one's own samples for at least one of the two species, if possible. In our material the mean wing length for Marsh Warblers was 70.8 mm (adults) and 70.3 mm (first-years). For Reed Warblers the mean wing length was 67.6 mm (adults) and 67.1 mm (first-years).

Provided that the length of the notch is measured with care, we consider it rather unlikely that any significant variation should occur between observers.

#### ACKNOWLEDGEMENTS

We would like to thank Drs. T. Alerstam and J. Karlsson for comments on an earlier draft of the manuscript and E. Karlsson for drawing the Figures. This is Report No. 124 from Falsterbo Bird Observatory. This study was financed by the O.E. and Edla Johanssons Scientific Foundation.

#### REFERENCES

JENSEN, H. 1971. Separation of Reed- and Marsh Warbler, particularly the young birds. *Danske Fugle* 23: 22-28. (In Danish with English summary).

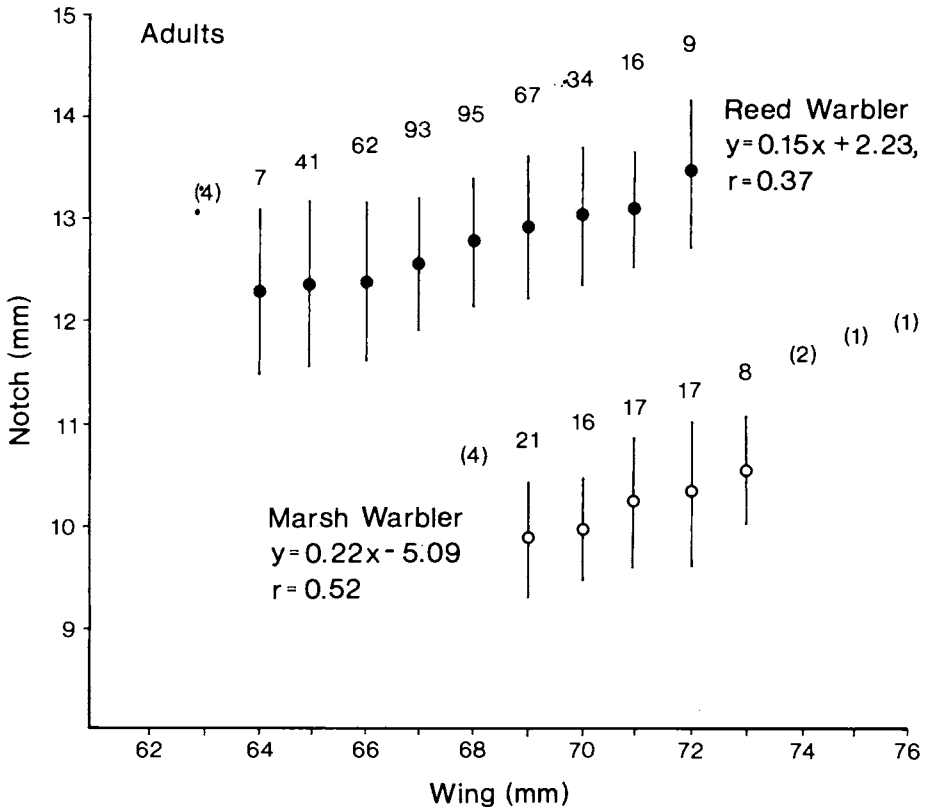


Figure 3. Mean increase of notch length relative to wing length in adult (A) and first-year (B) Reed Warblers (filled circles) and Marsh Warblers (open circles). Mean notch length, standard deviation and sample size for each wing length are given.

- LEISLER, B. 1972. Species specific characters on the feet of adult Reed and Marsh Warblers. *J. Orn.* 113: 366-373. (In German with English summary).
- LEISLER, B. and WINKLER, H. 1979. On the identification of Reed Warbler and Marsh Warbler. *Vogelwarte* 30: 44-48. (In German with English summary).
- LINDELL, L. 1978. Methods when measuring wing lengths. *Colidris* 7: 64-69. (In Swedish with English summary).
- NISBET, I. C. T., BAIRD, J., HOWARD, D. V. and ANDERSON, K. S. 1970. Statistical comparison of wing lengths measured by four observers. *Bird-Banding* 41: 307-308.

- ROOS, G. and KARLSSON, L. 1981. The ringing activity at Falsterbo Bird Station in 1980. *Anser* 20: 99-108. (In Swedish with English summary).
- VAN SWELM, N. and DE KNIFF, P. 1984. A new method for identifying *A. palustris*, *A. scirpaceus* and *A. dumetorum* in the hand. *Ostvorne Ringing Report* 1983: 23-26. (In Dutch with English summary).
- SVENSSON, L. 1984. *Identification Guide to European Passerines* (3 ed.). Stockholm.
- WILLIAMSON, K. 1963. *Identification for Ringers* 1 (2 ed.). BTO guide No. 7. Oxford.

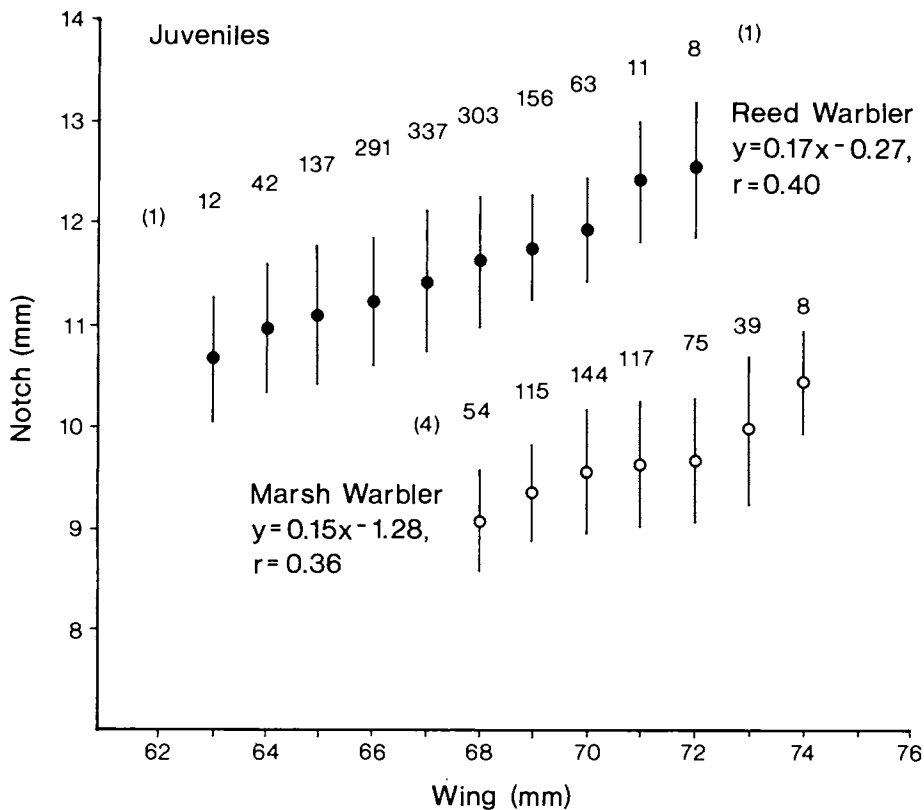


Figure 3 B. see caption on previous page.