

# Ageing and Sexing Series\*

## Part 7: Ageing and sexing the Ringed Plover *Charadrius hiaticula*

WŁODZIMIERZ MEISSNER<sup>1</sup>, PRZEMYSŁAW CHYLARECKI<sup>3</sup> & MICHAŁ SKAKUJ<sup>2</sup>

<sup>1</sup>Avian Ecophysiology Unit, <sup>2</sup>Vertebrate Zoology Unit, Department of Vertebrate Ecology & Zoology, University of Gdańsk, Al. Legionów 9, 80-441 Gdańsk, Poland. w.meissner@univ.gda.pl

<sup>3</sup>Museum and Institute of Zoology, Polish Academy of Sciences, Wilcza 64, 00-679 Warsaw, Poland

Meissner, W., Chylarecki, P. & Skakuj, M. 2010. Ageing and sexing the Ringed Plover *Charadrius hiaticula*. *Wader Study Group Bull.* 117(2): 99–102.

Keywords: Ringed Plover *Charadrius hiaticula*, ageing, sexing

### INTRODUCTION

Within Ringed Plover three subspecies are recognized: *Charadrius hiaticula hiaticula* breeds in S Scandinavia, the Baltic countries, Britain, Ireland, France and south to Central and Western European. *C. h. tundrae* nests from N Scandinavia to the easternmost parts of N Russia. *C. h. psammodroma* has breeding grounds in NE Canada, Greenland, Iceland and the Faeroes. The main wintering grounds of the species extend from the British Isles south to Africa and to the east to the Red Sea and Persian Gulf (Cramp & Simmons 1983, Glutz von Blotzheim *et al.* 1975, Hayman *et al.* 1987). The Ringed Plover has one of the classic examples of leap-frog migration in which birds from more southerly populations winter close to the breeding grounds and those from northernmost parts of the breeding range make long flights to more distant wintering grounds (Salomonsen 1955). The *tundrae* subspecies migrates in autumn across the continental land masses of Eurasia and Africa, whereas *hiaticula* moves towards W European and N African wintering grounds mainly along the coasts (Cramp & Simmons 1983, Glutz von Blotzheim *et al.* 1975). However, a proportion of *hiaticula* birds breeding inland in Poland also migrates SW to S across the continent (P. Chylarecki unpub. data). In Central Europe, *hiaticula* migrate earlier, with many local breeders usually leaving the breeding grounds in mid July, and the vast majority of

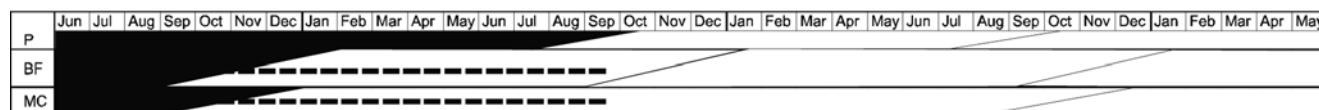
adults observed from the beginning of August belong to the *tundrae* subspecies. In the case of juveniles, the proportion of these two subspecies change more gradually in August (Meissner 2007). *C. h. hiaticula* is generally larger and paler than *C. h. tundrae*, but this division is unsatisfactory, because the variation in distinguishing features, i.e. size and the colour of the upperparts (*tundrae* being smaller and darker) is rather clinal (Hayman *et al.* 1987, Prater *et al.* 1977). Furthermore, *tundrae* from Central Siberia are again larger, approaching *hiaticula* in size (P. Chylarecki unpub. data).

Data presented here are based on the literature (Glutz von Blotzheim 1972, Glutz von Blotzheim *et al.* 1975, Hayman *et al.* 1987, Holz 1987, Kozlova 1961, Prater *et al.* 1977) and the authors' own experience with Ringed Plovers breeding and migrating through Europe. Therefore the ageing and sexing criteria we describe should be applied to other Ringed Plover populations with caution.

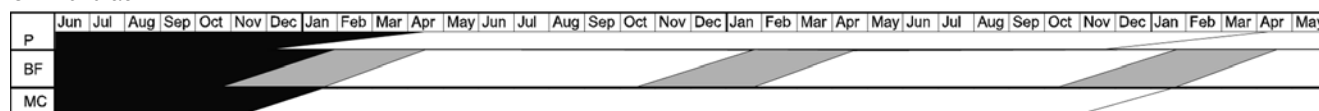
### MOULT SCHEDULE

The sequence of moult is similar to other small plovers breeding in the northern hemisphere. However *hiaticula* and *tundrae* differ in the timing of their moult (Fig. 1). In *hiaticula*, juvenile plumage is replaced by first winter plumage from August (at the earliest) until January. Only a few juvenile inner median coverts remain after this post-juvenile moult.

#### *C. h. hiaticula*



#### *C. h. tundrae*



**Fig. 1.** Moult schedule of Ringed Plover in the subspecies *hiaticula* and *tundrae*. P = primaries; BF = body feathers; MC = median wing coverts; Black = juvenile feathers; grey = non-breeding plumage; white = breeding plumage; black broken line = presence of retained juvenile inner median coverts (but not in all individuals).

\*This series summarising current knowledge on ageing and sexing waders is co-ordinated by Włodzimierz Meissner (address above). See *Wader Study Group Bulletin* Vol. 113 p. 28 for the Introduction to the series.

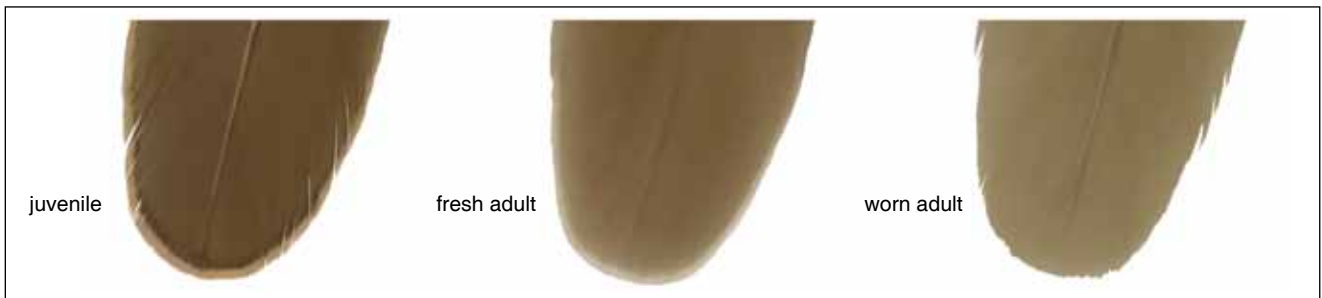


Fig. 2. Inner median coverts of Ringed Plovers: juvenile, adult in fresh and adult in worn plumage. (Drawings by Michał Skakuj.)

These may be retained until the following summer, but later in the season they become very worn and difficult to recognize. Juvenile primaries are replaced in the autumn of the second calendar year of life. In *tundrae*, juveniles carry out a complete moult of body plumage and coverts which usually starts on the wintering grounds. A few juvenile feathers may be recorded until January. Juvenile primaries are moulted during the first winter and spring.

In *tundrae*, breeding plumage is attained in February and March in a partial pre-breeding moult, but in *hiaticula* only a few feathers are replaced in this moult. Hence, winter and breeding plumages look similar in *hiaticula*. The timing of the post-breeding moult varies between different populations. In most *hiaticula*, moult starts on the breeding grounds, where it involves the inner primaries and some body feathers. The primaries are replaced between late June and October, but mostly starting in July (Walters 1984). Single mantle feathers and tertiaries are often replaced starting from May. In *tundrae*, primary moult starts in November on the wintering grounds. Thus, birds caught during autumn migration with moulting primaries are *hiaticula*.

## AGEING

### Juvenile plumage

Juveniles lack the black and white head and breast pattern of adults. The feathers of the upperparts are brown with pale buffish fringes and a faint darker sub-terminal band which is parallel to the feather edge (Fig. 2). This pattern is more distinct on the scapulars than on the wing coverts. The bill is dark with yellowish at the base of lower mandible (Fig. 3).

### First winter non-breeding plumage

Differs from adult non-breeding by presence of retained juvenile inner median coverts and scapulars which have a buffish fringe and dark, thin sub-terminal band. An additional feature in *hiaticula* is primary wear. Primaries are more worn in juveniles than in adults in non-breeding plumage (but see below). In *tundrae*, the primaries and wing coverts are moulted during winter and these birds become impossible to age by January.

### First breeding plumage

Some individuals of *hiaticula* may retain juvenile inner medians and this is the only reliable feature indicating age. The majority of these birds have very worn primaries and a clear contrast between pale and faded tips and feather centres, which is clearly visible on the 7th and 8th primaries (Holz 1987). However, a proportion of first-year *hiaticula* renew their outermost primaries, and these birds can be recognized

as such because of the contrast between 3–5 fresh outer and worn inner primaries (and sometimes a few unmoulted juvenile median coverts). In *tundrae*, birds in their first breeding plumage cannot be distinguished, as they undergo a complete moult (including primaries and inner medians) during their first winter.

### Adult breeding plumage

Characteristic head pattern with black or blackish-brown markings (Fig. 3). The bill is orange with a black tip. In fresh plumage, the median coverts have very narrow, whitish fringes (Fig. 2), but – in contrast to retained juvenile feathers in first breeding plumage – no dark sub-terminal band. When these fringes are worn (Fig. 2), the upperparts look uniformly brown. This plumage is attained in *hiaticula* in late autumn, whereas in *tundrae* it is attained in spring, during the pre-breeding moult.

### Adult non-breeding plumage

In *hiaticula*, there is no distinct non-breeding plumage and adults have similar plumage year round. In *tundrae*, the black feathers within the dark head and breast bands are replaced by brown or blackish-brown feathers. The basal part of the bill becomes duller than during the breeding season (Fig. 3).

Distinctive juvenile inner medians are retained in all first year birds until December so ageing them in early autumn should straightforward (*EURING ringing code: 3*). The only certain means of identifying birds in their first winter or first breeding plumage is the presence of retained juvenile inner median coverts or heavily worn primaries (including birds in which only the inner primaries are worn, the outer primaries having been renewed) (*EURING ringing codes: up to 31 December: 3, after 31 December: 5*). Ringed Plovers of the *tundrae* subspecies do a complete moult of all juvenile coverts and primaries in late autumn and early winter. Therefore birds with no juvenile inner medians cannot be aged reliably in winter, i.e. they could be either adult or first-year (*EURING ringing codes: up to 31 December: 2, after 31 December: 4*). Among birds in breeding plumage, attention should be paid to the presence of juvenile inner median coverts indicating a bird in its first breeding plumage (*EURING ringing code: 5*); such birds should also have very worn primaries – usually all primaries, but sometimes only the inner ones. However, it should be borne in mind that distinguishing birds in first breeding plumage is possible in only some *hiaticula*. Other birds in breeding plumage, with no sign of juvenile feathers have to be aged as ‘older than 1 year’ (*EURING ringing code: 4*), although the majority of *hiaticula* with uniformly and moderately worn primaries are probably (but not certainly) older than 2 years (*EURING ringing code: 6*).

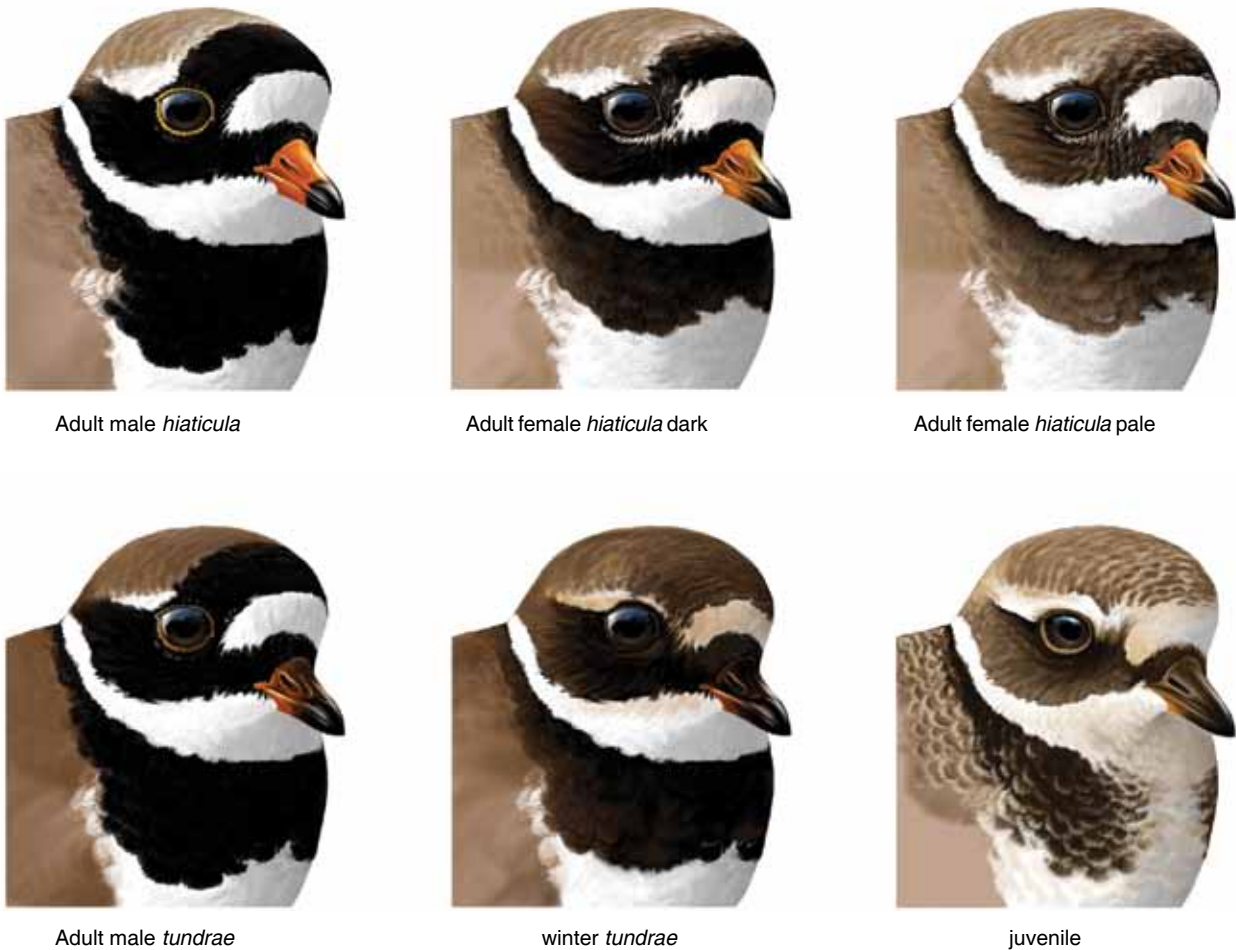


Fig. 3. Head and breast pattern of Ringed Plovers. Two types of adult females are shown: typical and extremely pale. (Drawings by Michał Skakuj.)

### SEXING OF ADULTS IN BREEDING PLUMAGE

Linear measurements of male and female Ringed Plovers have a large overlap in all subspecies, so biometrics cannot be used to sex birds, even within breeding pairs. The head markings and a breast band of adult males are deeply black or with only a few brown feathers at the sides of the band and in the ear coverts. Females typically have narrower bands across the breast and crown and browner ear coverts than males. According to Taylor (1974), in May, June and July the mean percent of brown feathers in the sides of the breast band in males is <4%, whereas in females it is at least 20%. Data from the Polish breeding population are consistent with this in that black feathers comprised 90–100% of the breast band in 93% of males but in <30% of females. The percentage of black feathers in the ear coverts is an even better guide: almost all (99%) males had 90–100% black feathers, compared to 18% of females. Additionally, the black band across the crown is narrower in females (average 6.7 mm) than in males (8.0 mm), but the overlap is quite extensive. However, 75% of females have this band not wider than 7.3 mm, while 75% of males show a black band of at least 7.4 mm width. Therefore, generally birds with noticeable amount of brown feathers in the ear coverts and breast band can be safely classified as females, but the converse is not true – a (small) fraction of individuals scored as having 90–100% black feathers on the

breast and ear coverts are females (P. Chylarecki unpub. data).

In the breeding season, the orbital ring of the eye in males is yellow to yellow-orange, whereas in most females it is grey, though some have a small yellow patch in the corner of the eye. Also, the black tip of the bill is sharply defined in males, but the border between the black and orange is somewhat diffuse in most females (Fig. 3).

Some breeding females can show a continuous, white supercilium running above the eye and joining the white frontal patch with a white line above the ear coverts. However, late in the breeding season (July), some males can also show some single white feathers above the eye, probably a result of advanced feather wear.

Generally, sexing is quite straightforward, but only in breeding plumage. Within a pair, the differences in head markings (especially in the amount of black on the ear coverts) and the orbital ring colour are easy to recognize (Fig. 3). Single birds caught during the breeding season or at the beginning of autumn migration (i.e. in Jul–Aug) should be sexed with caution, but individuals with <90% black in the ear coverts and breast band and lacking a bright orbital ring may be sexed as females with confidence. Positive identification of males is less safe as some “very black” birds can be females (although they form a small percentage of this group). There are no known characteristics for sexing Ringed Plovers in non-breeding plumage.

## ACKNOWLEDGEMENTS

Studies on the Polish breeding population of Ringed Plover were supported by grants 4-1637-91-01, 6-P04F-043-12, 6-P04G-098-21, PBZ-KBN-087-P04-2003 from the Ministry of Science Research and Information Technology to P. Chylarecki. We thank Bob Swann for comments on a draft.

## REFERENCES

- Cramp, S. & Simmons, K.E.L.** (eds.) 1986. *The Birds of the Western Palearctic*. Vol. 3. Oxford University Press, Oxford.
- Glutz von Blotzheim, U.N.** 1972. Zur Mauser von *Charadrius hiaticula*, *dubius* und *alexandrinus*. *J. Orn.* 113: 323–333.
- Glutz von Blotzheim, U.N., Bauer, K.M. & Bezzel, E.** 1975. *Handbuch der Vögel Mitteleuropas*. 6. Akademische Verlagsgesellschaft, Wiesbaden.
- Hayman, P., Marchant, J. & Prater, T.** 1987. *Shorebirds. An identification guide to the waders of the world*. Christopher Helm, London.
- Holz, R.** 1987. Altersmerkmale von Sandregenpfeifern (*Charadrius hiaticula*) an der südwestlichen Ostseeküste. *Beitr. Vogelkd.* 33: 233–243.
- Kozlova, E.W.** 1961. [Fauna of the USSR. Birds. 2] Academy of Sciences of USSR Press, Moscow. [In Russian.]
- Meissner, W.** 2007. Different timing of autumn migration of two Ringed Plover *Charadrius hiaticula* subspecies through the southern Baltic revealed by biometric analysis. *Ringing & Migration* 23: 129–133.
- Prater, A.J., Marchant, J.H. & Vuorinen, J.** 1977. *Guide to the identification and ageing of Holarctic waders*. BTO Tring.
- Salomonsen, F.** 1955. The evolutionary significance of bird-migration. *Biologiske Meddelelser* 22: 1–62.
- Taylor, R.C.** 1974. A method for sexing adult Ringed Plover *Charadrius hiaticula* L., in summer plumage. *Wader Study Group Bull.* 11: 15–17.
- Walters, J.** 1984. The onset of primary moult in breeding *Charadrius* plovers. *Bird Study* 31: 43–48.



Ringed Plovers *Charadrius hiaticula*,  
German Wadden Sea, 18 April 2005.  
(Photos by Jan van de Kam.)