

This series summarizing current knowledge on ageing and sexing waders is co-ordinated by Włodzimierz Meissner (Avian Ecophysiology Unit, Department of Vertebrate Ecology & Zoology, University of Gdansk, ul. Wita Stwosza 59, 80-308 Gdansk, Poland, w.meissner@ug.edu.pl). See Wader Study Group Bulletin vol. 113 p. 28 for the Introduction to the series.

## Part 11: Ageing and sexing the Common Sandpiper *Actitis hypoleucos*

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Meissner, W., P.K. Holland & T. Cofta. 2015. Ageing and sexing series 11: Ageing and sexing the Common Sandpiper *Actitis hypoleucos*. *Wader Study* 122(1): 54–59.

**Keywords:** Common Sandpiper, *Actitis hypoleucos*, ageing, sexing, moult, plumages

The Common Sandpiper *Actitis hypoleucos* is treated as monotypic through a breeding range that extends from Ireland eastwards to Japan. Its main non-breeding area is also vast, reaching from the Canary Islands to Australia with a few also in the British Isles, France, Spain, Portugal and the Mediterranean (Cramp & Simmons 1983, del Hoyo *et al.* 1996, Glutz von Blotzheim *et al.* 1977). For population estimation purposes, three sub-populations are often identified: birds breeding in Western and Central Europe spend the non-breeding season mainly in Western Africa, those from Eastern Europe and Western Asia go mainly to Eastern, Central and South Africa and those from Central and Eastern Asia go towards India, South-East Asia and Australia (Kirby & Scott 2009, Stiefel *et al.* 1985, Underhill *et al.* 1999).

Our paper is based on the literature (Chandler 2009, Cramp & Simmons 1983, Glutz von Blotzheim *et al.* 1977, Prater *et al.* 1977) and the authors' own experience from ringing in Central Europe and the British Isles. Data on the moult schedule were taken from published sources (Brown 1973, Cramp & Simmons 1983, Nicoll & Kemp 1983, Pearson 1974, Tree 1974, 2008) and correspondence with Phil Round (Thailand) and Jez Blackburn (Gambia). Descriptions of feathers provided in this paper

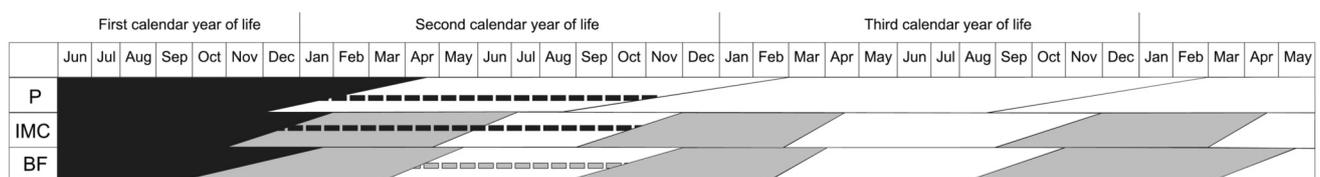
were validated using about 500 photographs available on the Internet and about 50 from WRG KULING ringing sites in northern Poland.

### MOULT SCHEDULE

Juveniles and adults leave the breeding grounds as soon as possible: the female usually soon after the chicks no longer need brooding, the male when the juveniles are flying and juveniles about a week after they can fly and migrate in basically southerly directions (Fransson *et al.* 2008, Glutz von Blotzheim *et al.* 1977, Meissner 1997). Only exceptionally do any start post-nuptial moult before they reach their non-breeding grounds. Although the moult schedule seems to be highly variable, its default pattern appears to be that adults start to moult as soon as they arrive, while juveniles start some weeks later, partly because they arrive later but there also appears to be a further pause before starting moult and they may be into their second calendar year before they start (Fig. 1).

#### Primary moult

In areas that have both passage and staying birds (e.g. Thailand) the staying adults start primary moult in September and may complete by November while juveniles are still



**Fig. 1.** Moulting schedule of Common Sandpipers. P = primaries, IMC = inner median coverts, BF = body feathers, black = juvenile feathers, grey = winter plumage, white = breeding plumage. The dashed line means that a few feathers may be retained until the next moult. In the text the 'first calendar year of life' is referred to as juvenile.

passing through. In Indonesia, Cramp & Simmons (1983) reported based on museum skin inspections that all the juveniles undertake a full primary moult. In Zimbabwe, the adult primary moult starts in August and September, while further north in Kenya the moult starts in October and finishes in late January and February (Pearson 1974, Tree 2008). Individuals finish by late February or early March to prepare for migration north. Most birds return to the northern breeding areas to breed at one year old.

Those juveniles which reach Zimbabwe may start primary moult anywhere from the first to the sixth primary starting in November and December, with the earliest completed moult by 28 February (Tree 2008). In East Africa, first-year birds renew their outer primaries between January and March, usually proceeding outwards from the fourth or fifth primary, and the old inner feathers are retained (Pearson 1974). Thus, a juvenile leaving a non-breeding area south of the equator leaves later than adults and often with new outer primaries but old inners. In Gambia, no birds were caught before December (when the ringers arrived) by which time the adults had all new primaries, while the juveniles exhibited a wide range of moult advancement with some not yet starting and some nearly finished but, by March, most juveniles were nearing completion of a full moult, though two appeared to have stopped moult, one after six and another after eight primaries (J. Blackburn, pers. comm.).

There may be differences in moult strategy between non-breeding areas because three of 23 juvenile Common Sandpipers caught during autumn in Morocco had well-advanced primary moult (Pienkowski *et al.* 1976). It seems that these birds were moulting normally from the innermost primary, and would complete a full primary moult. There are also some suggestions that birds that choose to spend the non-breeding period around the coastal fringe of Europe get on with moulting of flight feathers immediately (Brown 1973, Pienkowski *et al.* 1976, P.K. Holland – unpublished data).

### **Secondaries and under-wing pattern**

Adults have much whiter secondaries than juveniles (Glutz von Blotzheim *et al.* 1977). Indeed, a newly fledged juvenile has a dark look as it flies partly because of its secondaries. Most sources (e.g. Pearson 1974) suggest that secondary moult in juveniles may involve just a few feathers almost at random so with more data on the changing inner secondary pattern with age this could be a useful criterion for separating birds in their second calendar year from older birds.

### **Body and tail moult**

Juveniles leave the breeding territory just before they have fully grown wings and may still have bits of down around the tail and new body feathers, but as they prepare for longer migration steps their biometrics will be similar to those of adults. Adults leave a few weeks before juveniles and start moult of body, head and tail feathers upon arrival

in the non-breeding areas. Full non-breeding plumage in which the feathers all appear dull is apparent in adults in October, but in juveniles often later, up to January. In adults, pre-breeding moult, giving a lustre to the general appearance of head, neck, mantle, scapulars and underparts, some tertials, wing coverts and tail feathers, lasts between February and April, whereas juvenile birds start this moult later and usually retain some feathers from non-breeding plumage (Fig. 1). Tail moult is reported to progress slowly, with the inner feathers starting on arrival and the outers being among the last (Cramp & Simmons 1983).

## **AGEING**

Distinguishing between juveniles and adults at stopover sites during southward migration is based on differences in pattern on tertials (Fig. 2), scapulars (Fig. 3), wing coverts (Fig. 4) and inner tail feathers (Fig. 5). Moreover, in this period adults also have worn plumage, while all feathers in juveniles are fresh (see Photos 1 and 2). Some adults start to change upper wing coverts and scapulars during autumn migration but, at this stage, only a few feathers are involved. In general, moult begins in the non-breeding grounds, where adult birds steadily attain all fresh plumage, generally by early in the new year. Juvenile moult starts later, proceeds slower and some protected feathers in inner tracts will remain unmoulted, though they are often difficult to distinguish. Some juveniles retain unmoulted inner primaries which allows them to be aged well into their second calendar year (Fig. 1). However, the key feature for ageing is the presence of juvenile inner median coverts. It remains unknown whether the ageing of all second calendar year birds is possible. To be safe the non-juvenile birds should be aged during southward migration as 'older than 1 year' (ringing codes: EURING = 4; North American = AHY). In spring, those with at least one juvenile covert or two generations of primaries are in their second calendar year (Ringing codes: EURING = 5; North American = SY).

**Adults in breeding plumage:** The upperparts are olive-brown, often with slight bronze gloss. The upperpart feathers have dark brown streaking or irregular barring with arrow-marks, which are most visible on the scapulars and tertials. Fresh scapulars and tertials have buffish tips (Figs. 2 & 3). Inner median coverts have broad dark bars with buff (sometimes almost gold) colour limited to tips only (Fig. 4). The central tail feathers have a black subterminal bar and transverse dark short bars at the feather sides. A whitish tip is visible in fresh plumage (Fig. 5).

**Adults in non-breeding plumage:** The breeding plumage wears and fades as an individual migrates south. In this plumage, the upperpart feathers look more uniform with faint dark streaks on the feathers. Scapulars and tertials have no dark arrow-marks or heavy barring except a single bar at the tip of the feather (Figs. 2 & 3) but, in some cases, two not-well-separated bars might appear. In the tertials, faint dark spots are visible along the feather sides (Fig. 2). The upperwing coverts have a dark subterminal



Fig. 2. Tertials of adult and juvenile Common Sandpipers (drawing: Tomasz Cofta).



Fig. 3. Scapulars of adult and juvenile Common Sandpipers (drawing: Tomasz Cofta).

bar bordered buffish-white, which may be fairly similar to those of the juveniles whose feathers are fading and wearing (Fig. 4). The central tail feather looks similar to breeding plumage (Fig. 5). By February, an adult will have completely new plumage and be ready to start pre-breeding body moult. The absence of any juvenile feathers is key.

**Juvenile plumage:** The general appearance is deep brown and the coverts have clear buff tips and a very dark brown subterminal bar, then a buff bar, then another dark bar or at least a transition to the chocolate brown of a typical covert (Fig. 4). It should be noted that there is a high variability of this pattern, even among neighbouring feathers.

However, double dark bars are diagnostic (but see an exception – Fig. 4). The scapulars and tertials are dotted laterally with buff and black along the feather edges (Fig. 2 and 3). The middle tail feathers are spotted buff and blackish at the edges (Fig. 5). Juveniles differ from adults in breeding plumage by lacking dark streaks and arrow-marks on the scapulars and tertials (Figs. 2 & 3). During southward migration, juveniles have fresh while adults have worn plumage (Photos 1 & 2).

**First non-breeding plumage:** On arrival at the wintering area, the plumage is similar (slightly faded) to the juvenile and usually remains so until December. The timetable of moult differs with latitude, and possibly with habitat, but



**Fig. 4.** Fresh inner median wing coverts of adult and juvenile Common Sandpipers. Worn juvenile inner median coverts are visible in some second-year birds. The juvenile feather on the right with single buff and black bars is atypical, but possible to see in some individuals (drawing: Tomasz Cofta).



**Fig. 5.** Middle tail feathers of adult and juvenile Common Sandpipers (drawing: Tomasz Cofta).

the last juvenile feathers to remain are likely to be inner median coverts though, by this time, the buff tips will be faded and somewhat worn. Hence, the presence of juvenile inner median coverts with close double blackish and buffish barring is a key feature for distinguish first year birds from older ones. Winter plumage feathers of first year and older birds are indistinguishable.

**First breeding plumage:** In most cases it is impossible to distinguish birds breeding for the first time from older adults. However, Nicoll & Kemp (1983) describe a study where three of 16 birds showed partial primary moult in Scotland where only four to six of the outer primaries were fresh (Photo 3). This was consistent with observations from Kenya and Zimbabwe where it was found that first-year birds often only moult five–seven outer primaries, as described in the Moulting Schedule section. However, it is worth noting that the initial observation in Nicholl & Kemp (1983) was on a ringing casualty under museum conditions and the primaries of juveniles and adults are essentially identical, so the ringer is relying on differences in fading or wear (Photo 3). A study of 104 adult skins in Netherlands museums by G. Boere showed only four with

partial moult (Cramp & Simmons 1983). A few birds on the breeding grounds have been identified as in first breeding plumage on coverts (D. W. Yalden, pers comm.). Juvenile inner median coverts (if still present) remain until the moult at the end of the second calendar year and are visible in birds during autumn migration (Fig. 1), and 16% among 1,155 Common Sandpipers caught by WRG KULING in Poland have been aged such either on primaries or coverts.

## SEXING

On average, females are larger than males (Glutz von Blotzheim *et al.* 1977), but there is considerable overlap in ranges of all measurements and their frequency distributions do not show bimodality in large samples of birds caught during migration (Brown 1973, Meissner 1997, Mitrus *et al.* 1998). Hence, only birds with extremely large or small measurements might be reasonably sexed (Løfaldli 1981, Teubert & Kneis 1984). For example, an adult with a flattened straightened wing of less than 110 mm is highly likely to be a male and one over 115 mm a female.



**Photo 1.** Pattern on the wing feathers of a juvenile Common Sandpiper (Vistula Mouth, 28 July 2012; photo: W. Meissner).



**Photo 2.** Pattern on the wing feathers of an adult Common Sandpiper (Vistula Mouth, 28 July 2012; photo: W. Meissner).

When catching birds on the breeding grounds, gravid females will weigh up to 80 g while males will be less than 55 g and often less than 50 g. So, body mass as a single character is a reliable way of sexing individuals, but only during egg-laying (Løfaldli 1981). If a ringed bird's behaviour can be observed, that is valuable means of determining sex, whether in early season (copulation or general territory defence which is mainly a male task while the female feeds) or at the end of the season when the bird accompanying nearly fledged chicks will be the male. Both sexes incubate and brood patch is not diagnostic.

There have been suggestions that adults can be sexed on breeding plumage and these are reviewed now, but they are not recommended for use at present. According to Teubert & Kneis (1984) the breeding plumage of males and females differs slightly in the dark pattern of the breast, nape, upper-wing secondary coverts and back. In general, females probably have thicker and more densely distributed dark grey streaks on the breast and lower part of the neck than males. In males, these streaks are thinner and sparse in the centre of the breast, whereas in typical females these streaks go further towards upper breast and neck. Sex differences may also be seen on the nape, back, upper-wing coverts, scapulars and tertials, where dark marks on feathers are thinner in males than females. From a distance, these differences give the impression that males are lighter and more grey than females. These characters allowed correct sex identification in 75% (n=12) of adult males and 93% (n=15) of adult females among bird skins available in the natural history museum in Berlin (Teubert & Kneis 1984). However, it should be noted that sample

size in this test was quite small. A check according to tertial pattern on skins in the British Natural History Museum (Tring) revealed that eight of 11 males and nine of 15 females were correctly sexed. There is no doubt that sexing of Common Sandpipers according to the pattern of scapulars, tertials and upper-wing coverts should be validated using a larger sample of birds (sexed molecularly or behaviourally). Hence, the use of these characters for sexing needs experience and may be wrong, due to individual variation. In the authors' opinion, the pattern in coverts seems to be a much better feature for sexing than the breast pattern. Probably only individuals with clear thick W-shaped cross bars on the feathers can be classified as females and those with very thin bars or with a lack of such barring as males.



**Photo 3.** Two generations of primaries (5 outer new and 5 inner old) in a Common Sandpiper (Northern Scotland, June 2013; photo: Ron Summers).

## ACKNOWLEDGEMENTS

We are grateful to Phil Round and Jez Blackburn for providing data on the moult of Common Sandpipers, and to Ron Summers for valuable comments and the Common Sandpiper photo. Many thanks to colleagues from Waterbird Research Group KULING for their invaluable help during field studies in Poland, and for comments from Scottish ringers and the late Derek Yalden.

## REFERENCES

- Brown, S.C. 1973. Common Sandpiper biometrics. *Wader Study Group Bulletin* 11: 18–22.
- Chandler, R. 2009. *Shorebirds of the Northern Hemisphere*. Christopher Helm, London.
- Cramp, S. & Simmons, K.E.L. (eds). 1983. *The Birds of the Western Palearctic*. Vol. 3. Oxford University Press, Oxford.
- del Hoyo, J., Elliott, A. & Sargatal, J. (eds). 1996. *Handbook of the Birds of the World*, Vol. 3. Hoatzin to Auks. Lynx Edicions, Barcelona.
- Fransson, T., Österblom, H. & Hall-Karlsson, S. 2008. *Svensk ringmärkningsatlas*, Vol. 2. Naturhistoriska riksmuseet, Stockholm.
- Glutz von Blotzheim, U.N., Bauer, K.M. & Bezzel, E. 1977. *Handbuch der Vögel Mitteleuropas*. Vol. 7. Aula-Verlag, Wiesbaden.
- Kirby, J. & Scott, D. 2009. Common Sandpiper *Actitis hypoleucos*. In: Delany, S., Scott, D., Dodman, T. & Stroud, D. (eds), *An atlas of wader populations in Africa and Western Eurasia*. Wetlands International, Wageningen, pp: 346–350.
- Løfaldli, L. 1981. On the breeding season biometrics of the Common Sandpiper. *Ringing & Migration* 3: 133–136.
- Meissner, W. 1997. Autumn migration and biometrics of the Common Sandpiper *Actitis hypoleucos* caught in the Gulf of Gdańsk. *Ornis Fennica* 74: 131–139.
- Mitrus, C., Kuczborski, R. & Słupek, J. 1998. Autumn passage of the Common Sandpiper *Actitis hypoleucos* in the Bug River valley – dynamics and biometry. *Notatki Ornitologiczne* 39: 13–25. [In Polish with English summary.]
- Nicoll, M. & Kemp, P. 1983. Partial primary moult in first-spring/summer Common Sandpipers *Actitis hypoleucos*. *Wader Study Group Bulletin* 37: 37–38.
- Pearson D. 1974. The timing of wing moult in some Palearctic waders wintering in East Africa. *Wader Study Group Bulletin* 12: 6–12.
- Pienkowski, M.W., Knight, P.J., Stanyard, D.J. & Argyle, F.B. 1976. The primary moult of waders on the Atlantic Coast of Morocco. *Ibis* 118: 347–365.
- Prater, A.J., Marchant, J.H. & Vuorinen, J. 1977. *Guide to the identification and ageing of Holarctic waders*. BTO, Tring.
- Stiefel, A., Prikłonski, S.G. & Postelnych, A.V. 1985. Common Sandpiper – *Actitis hypoleucos* (L.) In: Viksne, J.A. & Mihelson, H.A. (eds), *Migrations of birds of Eastern Europe and Southern Asia*. Gruiformes – Charadriiformes. Nauka, Moscow, pp. 126–140. [In Russian.]
- Teubert, W. & Kneis, P. 1984. Geschlechtsspezifische Flügel-längen adulter Flußuferläufer, *Actitis hypoleucos*, nach Messungen aus dem Elbtal bei Riesa. *Actitis* 23: 34–42.
- Tree, A.J. 2008. The Common Sandpiper in Zimbabwe. *Honeyguide* 54: 40–51.
- Underhill, L.G., Tree, A.J., Oschadleus, H.D. & Parker, V. 1999. *Review of ringing recoveries of waterbirds in southern Africa*. University of Cape Town, Cape Town.



An adult Common Sandpiper (Vistula Mouth, 31 July 2012; photo: W. Meissner).