

Ageing, sexing and subspecific identification of Osprey, and two WP records of American Osprey

Roine Strandberg

In autumn 2002, I conducted fieldwork for my master thesis at Lake Hammarsjön in southernmost Sweden. My research focused on foraging strategies during migration of Osprey *Pandion haliaetus* (Strandberg 2002, 2004, Strandberg et al 2006). The studies have continued since, with satellite tracking of Swedish Ospreys by the Raptor Research Group at Lund University (RRGL). My interest in Ospreys encouraged me to examine, in addition to free-flying and handheld birds, 1000s of photographs online (mostly from www.artportalen.se and www.netfugl.dk) to reveal useful characters for identification. In 2010, I started to look more closely at the differences between birds of the European and North American population, ie, between nominate *P h haliaetus* (hereafter

haliaetus) and American Osprey *P h carolinensis* (hereafter *carolinensis*). During a visit to Veracruz, Mexico, in autumn 2010, I observed nearly 600 *carolinensis* in the field, which was the key to revealing subspecific differences.

Four subspecies are traditionally recognized (Poole 1989, del Hoyo et al 1994, Ferguson-Lees & Christie 2001): *haliaetus* (Palearctic), *carolinensis* (North America), *ridgwayi* (Caribbean region) and *cristatus* (coastal Australia and Indonesia to New Caledonia); note that *cristatus* has been given species status recently (Eastern Osprey *P cristatus*; cf Christidis & Boles 2008, Gill & Donsker 2013). The population of *haliaetus* breeding along the Red Sea differs distinctly from the rest of *haliaetus*. In this paper, short basic descriptions of all

97 Osprey / Visarend *Pandion haliaetus haliaetus*, adult male, Hammarsjön, Sweden, 11 April 2009
(Patrik Olofsson)





FIGURE 1 Ospreys / Visarenden *Pandion haliaetus haliaetus*. **A** adult female, Skagen, Denmark, 19 April 2005 (*Carsten Gadgaard*); **B** first calendar-year female, Stevns, Denmark, 25 August 2007 (*Frank Abrahamson*). Combination of fresh plumage, pale tips to flight-feathers and upperparts, rusty yellow wash to underwing-coverts and orange-yellow iris are first-autumn characters. Young females often lack the distinct dark drop-spots on the underwing-coverts that adult females show. Note also female characters shown by both birds, including large head, broad and long wings, long tail, large feet and robust breast/belly. Pattern on greater underwing-coverts is often hard to judge and also variable (see figure 6-7 and 14). Looking closer at the adult female (**A**), tips of often concealed outer median underwing-coverts are visible.

subspecies are given, while focusing on *haliaetus* and *carolinensis*.

With the information found in current literature in mind, it was clear to me that there is need for a fresh comprehensive Osprey identification paper dealing with accurately given characters for ageing and sexing and for subspecific identification. My research also resulted in the discovery of two Western Palearctic (WP) records of *carolinensis*, from the Azores and Iceland.

Current knowledge on identification

Even though species recognition and ageing of Ospreys is rather straightforward, identifying subspecies and sexing has received very little attention in the literature. Concerning sexing, most handbooks and field guides note that females are larger than males and highlight that females have a breast-band which is 'darker, broader, wider, better marked, more prominent, more pronounced, more heavily patterned or browner'

FIGURE 2 Ospreys / Visarenden *Pandion haliaetus haliaetus*. Comparison of iris colour between adult and juvenile. **A** adult female, Grimsö, Sweden, 5 July 2007 (*Raymond Klaassen*); **B** rather typical juvenile male, Hammarsjön, Sweden, 8 August 2010 (*Patrik Olofsson*). Note bluish tinged orbital ring and gape (compare with *P h carolinensis* in figure 12).



than in males and that the breast-band character overlaps between the sexes (Cramp & Simmons 1980, del Hoyo et al 1994, Wheeler & Clark 1995, Forsman 1999, Ferguson-Lees & Christie 2001, Gensbøl 2004, Liguori 2005, Olsen 2007, Dennis 2008, Svensson et al 2009, van Duivendijk 2011). Aside from the breast-band character, the most up-to-date information is found in Forsman (1999), who describes the sex differences as: 'males have narrower wings and a slimmer body, particularly around the belly and vent, than females' and 'males also show more uniformly white lesser and median underwing-coverts than females, which often show a more patterned forearm, with several rows of dark spots to their lesser and median coverts'.

Very little is said about the sexing of juveniles but Forsman (1999) concludes that 'nothing is known about sexing juveniles by plumage' and Prevost (1982) notes that juveniles overlap completely in breast coloration and underwing-covert markings.

According to Ferguson-Lees & Christie (2005), compared with *haliaetus*, *carolinensis* is slightly larger, the forehead, back and wings are darker brown, the crown and chest are whiter and it has almost no gorget streaks; *cristatus* is smaller and has shorter wings, the whole head is whiter, the eye-stripe narrower and 'less continuous' and the gorget stronger.

Identification

Before starting with identification, it must be considered that, even though subspecific and sex differences are relatively reliable, every single character overlaps. There are individuals that will be impossible to identify with certainty in the field. However, most adult birds are possible to sex with some practice. Usually, size and jizz are the most evident sex differences but they still require experience. Using field marks only, juvenile Ospreys (of the two subspecies) are often 'easier' to assign to subspecies than to sex. To simplify the text when describing characters, I have tried to limit the use of phrases like 'most often' or 'the majority show', which could be added to every single character. Hence, when reading the text, keep in mind that a combination of characters always gives a more reliable identification.

Ageing (all subspecies)

Because subadult birds (first-winter to third-summer) do not occur regularly in northern latitudes (Dennis 2008, Bai & Schmidt 2012, RRGL unpublished) and young Ospreys complete a full moult

in c 18 months (Prevost 1983), this paper only deals with Ospreys in adult and juvenile plumage. Ageing has been thoroughly dealt with by most of the current identification guides (eg, Wheeler & Clark 1995, Forsman 1999, Svensson et al 2009). For information concerning moult, see Prevost (1983) and Forsman (1999). A summary of the most useful juvenile characters that separate juveniles from adults (figure 1) includes: **1** pale tips to flight-feathers and upperparts; **2** pronounced barring to greater underwing-coverts (note that these are barred in all age classes but the majority of adults have a broader dark outer band fading inwards to greyer coloration, while juveniles show dark hourglass shapes or two equally broad blackish bands on white background); **3** barring on secondaries more distinct and regular; **4** rusty-yellow wash to underwing-coverts (adults show sandy wash on close views); **5** orange-yellow to reddish iris (yellow in adults); and **6** fresher plumage in general.

Sex differences in adult *haliaetus*

Haliaetus is relatively easy to sex and even though most individuals overlap in one or a few characters, most have either a typical female or male appearance. Figure 3 summarizes, in order of preference, the most useful characters for sexing *haliaetus*: **1** wing shape; **2** pattern of underwing-coverts and axillaries; **3** breast and belly shape; **4** head and bill shape (same female in figure 9 from a better angle to show head jizz); **5** breast-band pattern; **6** tail length; and **7** under primary coverts pattern/carpal patch shape. More subtle differences can be found in the upperparts coloration. Differences summarized in figure 3 are discussed below. Furthermore, females typically show active moult during the breeding season; males moult continuously but suspend the moult of flight-feathers until they reach their autumn stop-over or wintering grounds (though beware of unsuccessful breeders).

Size and jizz (wing shape, breast and belly shape, head and bill shape and tail length)

The size difference between the sexes is a good clue as females are distinctly larger than males, adding to the overall differences in jizz. However, measurements overlap and when dealing with birds showing intermediate size and jizz one needs to consider plumage characteristics. Obviously, this is impossible with distant birds. With practice, it is apparent that a typical female has broader and longer wings, a longer tail, a more pronounced head (often with a bushier neck)

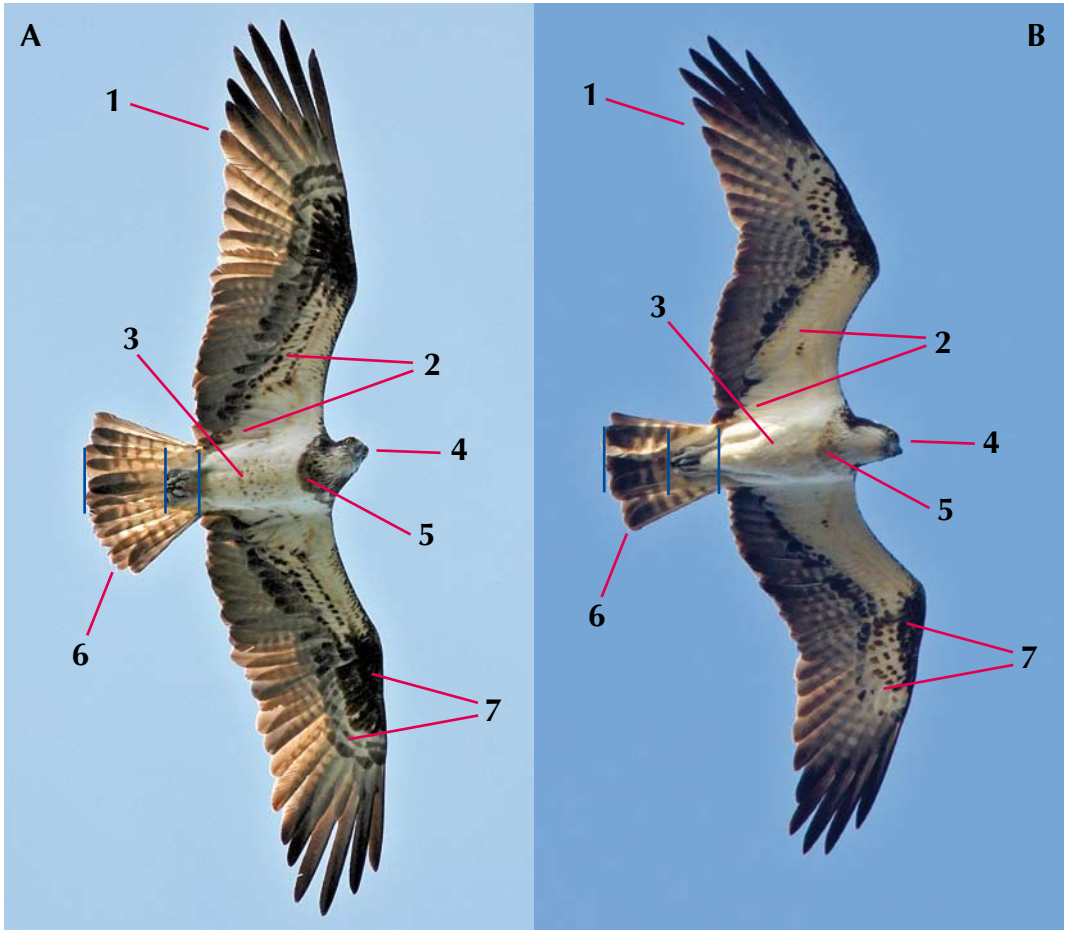


FIGURE 3 Ospreys / Visarenden *Pandion haliaetus haliaetus*. **A** adult female, Åsnen, Sweden, 1 July 2008 (*Håkan Berg*); **B** male, Färjansö, Sweden, 25 April 2011 (*Lars Petersson/www.larsfoto.se*). Numbers refer to sexing characters mentioned in text. Blue lines indicate differences in ratio of feet and tail.

with a somewhat heavier bill, larger feet and a more pronounced breast and belly (often giving a 'beer-bellied' look). A typical male is more 'athletic-looking', with narrower wings, muscular breast and flatter belly. In females, the remiges are longer, giving a more disproportionate appearance with a large wing area. This can be especially hard to judge from photographs as an instant frozen angle often gives a skewed appearance. The longer tail of females is best judged in profile, with the feet ending well short of half the tail length. The feet of males extend to about half or slightly less than half of the tail length. However, this is rather hard to judge from images as it depends on the angle and most probably is subject to individual variation. Many Ospreys

pictured at close range are flying away from the photographer, at which point the tail is often spread and the feet pushed backwards. Remember that the size of the feet (larger in females) is difficult to judge in flight as they are often concealed by feathers. Females show a bigger head (or, maybe more correctly, are longer necked) although this can be very hard to judge because females are larger overall. Hence, this feature is best observed in perching birds or in a profile view (and with experience).

Breast-band

The character that most field guides focus on, the breast-band, is quite a good start when examining the plumage. The majority of *haliaetus* females

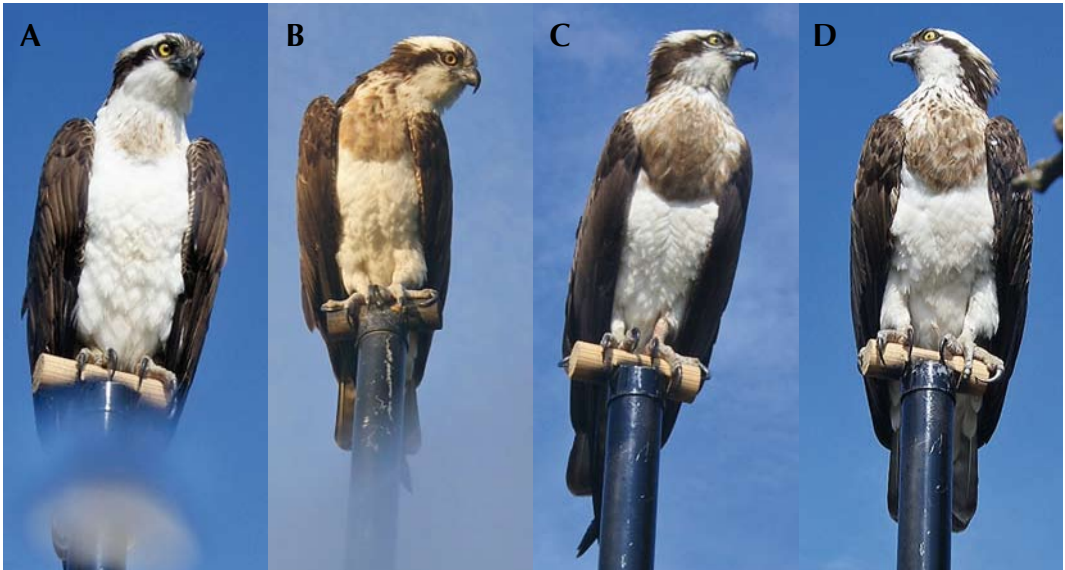


FIGURE 4 Ospreys / Visarenden *Pandion haliaetus haliaetus*, Ivösjön, Sweden, 1 April to 5 June 2010 (*Raptor Research Group at Lund University*). Variation in breast-band in nominate *haliaetus* illustrated by three adult males (A-C), compared with rather typical adult female (D). Note also larger size, feet and head, longer tail, paler shoulders (wing-coverts) and bushier neck of female.

have a broader, darker and more visible breast-band than males, even though there is overlap between the sexes. The bird in figure 7A shows a rather typical breast-band for male *haliaetus*. However, of 480 sexed adult Ospreys in a gallery of images from www.artportalen.se (c 70% of which were males, which are overrepresented in photo galleries due to the species' behaviour dur-

ing the breeding period – males forage while females care for the young), 12% of the males showed a pale, sparsely streaked to sometimes nearly invisible breast-band (with a faint pale brown wash). Hence, a minority of *haliaetus* males shows incomplete markings or faint coloration on the breast but I have not found one single male, either in the field or in photo galleries, that lacks

FIGURE 5 Ospreys / Visarenden *Pandion haliaetus haliaetus*. **A** adult female, Ivösjön, Sweden, 6 July 2008 (*Linda Niklasson*); **B** adult male, Armsjön, Sweden, 25 April 2012 (*Leif Strandberg*). Comparison of underwing patterns in well-pigmented individuals.



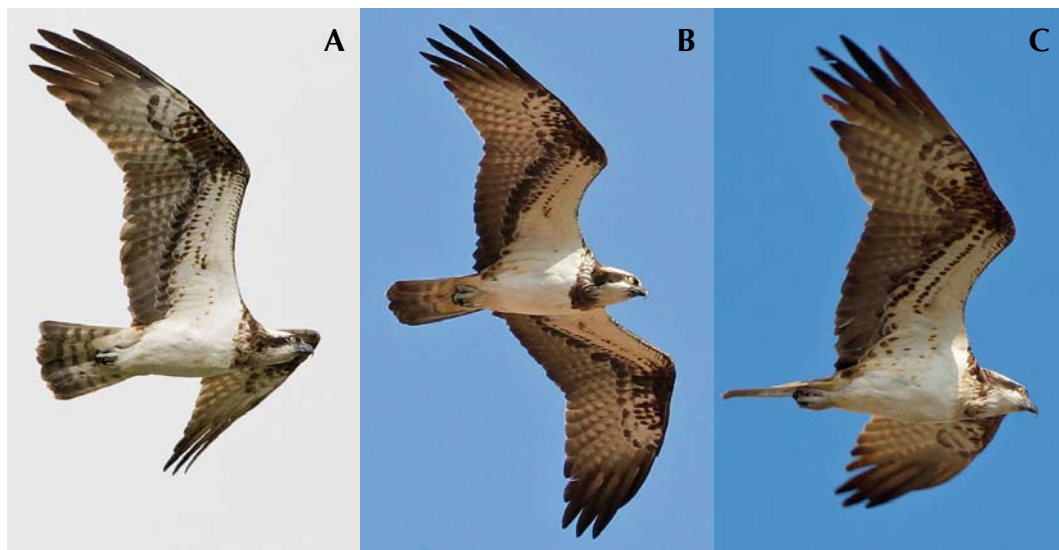
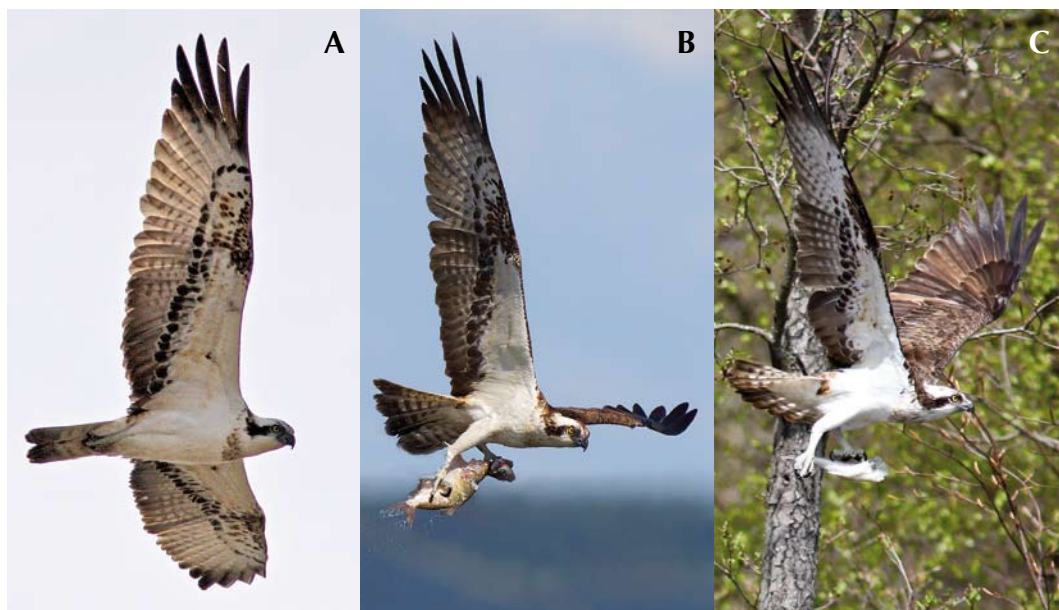


FIGURE 6 Ospreys /Visarenden *Pandion haliaetus haliaetus*, adult females. **A** Havgårdssjön, Sweden, 20 August 2008 (*Christian Ljunggren*); **B** Jordan, 25 April 2011 (*Mats Wallin*); **C** Havgård, Sweden, 26 August 2011 (*Christian Ljunggren*). Typically, females appear heavier with larger head (longer neck), bigger feet, broader wings and longer tail than males. Underparts are overall more spotted and barred than in males. Note variation in underwing patterns and extent of breast-band.

FIGURE 7 Ospreys /Visarenden *Pandion haliaetus haliaetus*, adult males. **A** Foteviken, Sweden, 29 April 2010 (*Tommy Holmgren*); **B** Vänern, Sweden, 16 July 2012 (*Patrik Olofsson*); **C** Ivösjön, Sweden, 2 May 2010 (*Linda Niklasson*). Typically, males appear slimmer with smaller head, smaller feet, narrower wings and shorter tail than females. Underparts are overall less spotted and barred than in females. Note variation in underwing patterns and extent of breast-band.



any colour tone on the breast. At the other end of the spectrum, c 10% of the males had a well-marked breast-band as in typical females, sometimes at the extreme end even for a female (figure 4). As most photographed presumed males with exceptionally pronounced breast-bands exhibit a set of female-like plumage characters due to a general high amount of feather pigmentation, they are best left unsexed by the inexperienced observer. In females, more than 80% have a broad and heavily marked breast-band, most often continuing as an intact band on the neck sides, while c 5% show a reduced breast-band, even less developed than in a typically marked male. Hence, one out of 10 males shows a female-like breast-band while females rarely show reduced breast-bands, making this a rather good start when sexing *haliaetus*.

Underwing-coverts and axillaries

The spot markings on the underwing-coverts (figure 5-7) are a very good sexing character, apart from jizz. In both sexes, most birds have a blackish to greyish centre to the outer median underwing-coverts. However, in most birds this pattern is completely or partly concealed by the next row of coverts (see adult female in figure 1). A typical female shows one or two additional rows of relatively large and drop-like spots on the median underwing-coverts ('drop-spot band'), the spots often continuing up on to the flanks and sometimes even onto the belly (figure 9). Females can also show spotting on the lesser underwing-coverts. Well-pigmented males show one row of medium-sized spots (often consisting of elongated, pale brown drop-like spots) and one row of small spots on the median underwing-coverts, often combined with spotless axillaries.

Rarely, females lack a second drop-spot band to the median underwing-coverts but instead show a few randomly distributed spots, especially in the centre of the coverts area and onto the axillaries. A few females even lack typical drop-spot bands but have big scattered drops on the median underwing-coverts and randomly distributed spots elsewhere on the coverts and axillaries. In most cases, they show other reliable female characters as well. Males in general have, with the exception of the outer (often concealed) median coverts band, an almost completely white coverts area with one or a few spots in the centre. Less than 10% lack these central spots, while the same amount of birds shows two rather obvious but pale brownish bands of small spots, and 1-2% show two prominent bands with female-type spots that are, however,

slightly smaller than in typical females (figure 5). The band formed by the blackish tip of the greater underwing-coverts is solid and narrow in males, while females have slightly longer feathers (giving a banded appearance) with irregular gaps (due to moult during northern summer). However, individual variation is large in this aspect.

Under primary coverts and carpal patch

Males show an open white field to the inner hand and greater under primary coverts, often divided by a dark border line to the outer greater under primary coverts. Females give a more barred appearance with one thinner proximal and one broader distal band or two broad dark bands across the greater under primary coverts. When males show a female-type central band across the greater under primary coverts, the band is typically paler and narrower. The black solid part of the carpal patch is generally more restricted in males, while females can have a more solid blackish coloration to the median under primary coverts, even similar to *carolinensis*.

Upperparts

The brown upperwing and back are slightly paler brown in females, often looking mottled, whereas males are plainer blackish. This may be most pronounced in autumn when females are in active moult, with sun-bleached feathers (from sunny incubating days) admixed with fresh feathers, while males show fewer extremely sun-bleached feathers and have fewer fresh feathers due to a lower rate of summer moult.

Sex differences in adult *carolinensis*

In figure 8, typical *carolinensis* adults are shown, with the differences between sexes described in the captions.

Size and jizz

The differences between the sexes seem to be slightly less pronounced in *carolinensis* than in *haliaetus*. Females are rarely as massive looking as in *haliaetus*, maybe due to a slightly narrower wing and slimmer body. However, the general jizz differences given above for sexing *haliaetus* also apply for *carolinensis*.

Breast-band

In typical birds, the breast-band is almost absent on males, reduced to a few central spots/streaks but rather well defined by several rows of spots on females. There is overlap, probably larger than in *haliaetus*. Poole (1989) noted that he was able to



FIGURE 8 American Ospreys / Amerikaanse Visarenden *Pandion haliaetus carolinensis*. **A** adult female, Bahamas, 14 March 2010 (Craig Nash); **B** adult male, Wyoming, USA, 10 July 2007 (Mats Wallin). General sex appearance is same in *carolinensis* as in *haliaetus* but difference is slightly less obvious as the size difference seems to be less. Nevertheless, wings, tail and neck are typically longer in females while the belly is less pronounced in *carolinensis* females, making body shape more even between sexes. Furthermore, females show stronger markings with spotted underwing-coverts area and heavily spotted breast-band. Note also big solid carpal patch in both sexes and slightly broader bands across greater under primary coverts in female.

sex only 50-70% of the pairs studied in North America when relying on breast-band alone.

Underwing-coverts and axillaries

Females show distinct spotting to the underwing-coverts with, in most birds, a central cluster of spots fading outwards and an irregular band of spots along the outer median underwing-coverts. Some females have two or more drop-spot bands as in *haliaetus*. Males often show an identical drop-spot band as females to the outer median underwing-coverts but are often plain white on the remainder of the underwing-coverts.

Under primary coverts and carpal patch

Both sexes often show barred greater under primary coverts. However, females have a broader terminal bar while males are paler barred, sometimes lacking obvious bars. The carpal patch, which includes the median under primary coverts, is typically solid black in both sexes but some in-

dividuals – especially males – have sparsely white-spotted median under primary coverts.

Upperparts

The upperparts are blackish to blackish-brown with females generally slightly paler than males.

Subspecies identification: adult *haliaetus* and *carolinensis*

Distinguishing adult *carolinensis* from *haliaetus* is difficult but not impossible, and as adults are very unlikely to be recorded on the opposite continent it will usually not be a significant problem (see below for WP records). The key is to age and sex the bird correctly and combine the critical characters accordingly. The important characters for separating adults of both subspecies are listed below (see also figure 9).

General coloration

Haliaetus: brownish, females paler and often



FIGURE 9 Ospreys / Visarenden *Pandion haliaetus*. **A** *P h carolinensis*, adult female, Cape May, New Jersey, USA, 20 September 2010 (Mats Wallin); **B** *P h haliaetus*, adult female, Åsnen, Sweden, 1 July 2008 (Håkan Berg); note extremely dark median under primary coverts for a *haliaetus*; **C** *P h carolinensis*, adult male, Wyoming, USA, 10 July 2007 (Mats Wallin); same bird as in figure 8B; **D** *P h haliaetus*, adult male, Dakar, Senegal, 22 November 2006 (Patrik Olofsson)



FIGURE 10 Ospreys / Visarenden *Pandion haliaetus*, first-year females. **A** *P h haliaetus*, Djoudj, Senegal, 21 November 2006 (Patrik Olofsson); **B** *P h haliaetus*, Falsterbonäset, Sweden, 31 August 2011 (Christian Ljunggren); **C-D** *P h carolinensis*, Cape May, New Jersey, USA, 28 September 2010 (Stefan Magnusson). Most useful characters to distinguish between young birds is illustrated in these females. Note prominent breast-band in *haliaetus*, continuing all the way up onto neck sides, while *carolinensis* has a spotted band reduced to a breast-patch. No direct subspecies differences are recognized concerning carpal patches. Iris color differs with more orange-yellow to reddish eyes in *carolinensis*. Also compare belly shape.



FIGURE 11 Ospreys / Visarenden *Pandion haliaetus*. **A** *P h haliaetus*, juvenile, Hammarsjön, Sweden, 2 July 2011 (Roine Strandberg); **B** *P h carolinensis*, juvenile, West River, Shady Side, Maryland, USA, 30 July 2011 (Eliot Malumuth). Note differences in upperwing coloration, with *haliaetus* showing less contrast, narrower and rustier pale tips to wing-coverts and also typically a paler patch in centre of wing-coverts.



FIGURE 12 Ospreys / Visarenden *Pandion haliaetus*. **A** *P h carolinensis*, juvenile, Tashmoo, New England, USA, 2 August 2008 (Rob Bierregaard); **B** *P h haliaetus*, Grimsö area, Sweden, 19 July 2007 (Raymond Klaassen). Note in *carolinensis* reddish iris, blackish plumage, darker upper gape, black eyeliner, and lack of gorget streaks, and in *haliaetus* yellow-orange iris, brownish plumage, equally bluish upper and lower gape, blue-grey eyeliner and black gorget streaks.

mottled brown and pale brown on upperwing-coverts. *Carolinensis*: blackish-brown, males often blacker on upperwing-coverts.

Breast-band

Haliaetus: intact broad and blurry breast-band. Males can show very pale wash but still often over a relatively broad area while females are richer brown in a broader band all the way up onto the neck sides. *Carolinensis*: distinctly spotted breast-band. The band is often absent in males, while females show distinct and large spots producing a relatively narrow 'mosaic' band across the breast.

Underwing-coverts

Haliaetus: blackish or barred greater underwing-coverts. Males commonly show a black central spot in a white coverts area (median and lesser underwing-coverts), while females have two distinct bands on the underwing-coverts. *Carolinensis*: distinctly black greater underwing-coverts. Males commonly show completely white coverts area, while females have a distinct central cluster of spots on the underwing-coverts. Both sexes generally have dark spots irregularly distributed on outer median underwing-coverts (only visible if not concealed).

Under primary coverts and carpal patch

Haliaetus: incompletely barred greater under primary coverts; males can lack barring, females have one or two broader bands. Carpal patch excludes median under primary coverts; median un-

der primary coverts of females heavily spotted, in males with smaller sparsely distributed spots. *Carolinensis*: completely barred greater under primary coverts, in males paler barred than in females. Carpal patch includes median under primary coverts, uncommonly showing white-spotted median under primary coverts.

Subspecies identification: juvenile *haliaetus* and *carolinensis*

Juveniles of *carolinensis* are separated from adults by the same criteria as in *haliaetus*. However, juvenile *carolinensis* differs significantly from juvenile *haliaetus* and can be distinguished using a combination of important characters (figure 10-12).

General coloration

Juvenile *carolinensis* looks very pied when perched. In addition, *carolinensis* often lacks the whitish patch on the upperwing-coverts that *haliaetus* usually shows (figure 11) and has distinct white scaling to the feathers. *Haliaetus* looks a bit sordid in comparison.

Breast-band

The character somewhat overlaps but most *haliaetus* show a rather prominent breast-band all the way up onto the neck sides, while *carolinensis* has a large patch of spots confined to the breast (female type) or just a row of fine spots in the centre of the breast (male type).

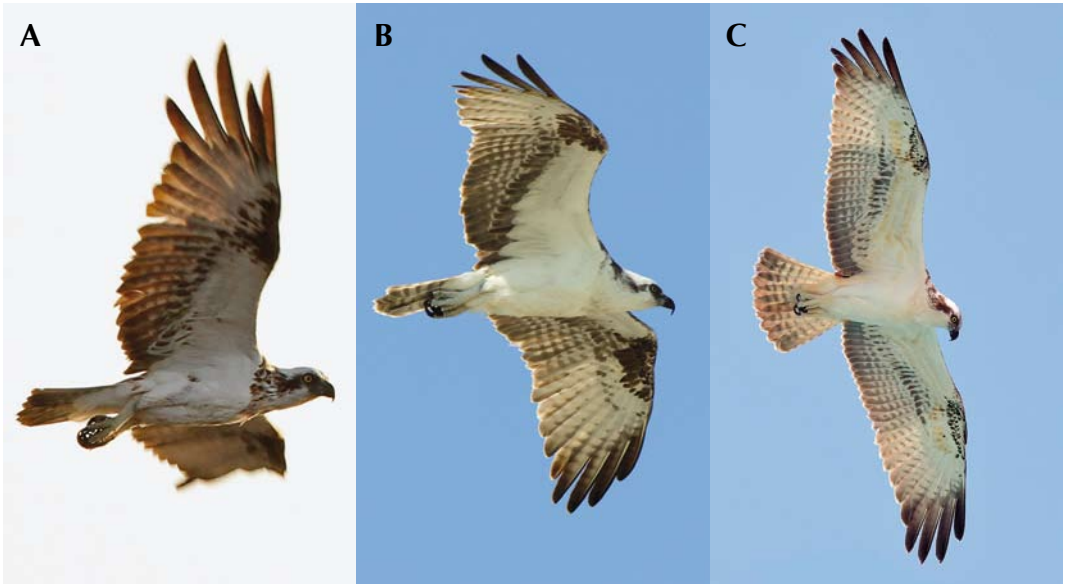


FIGURE 13 Ospreys /Visarenden *Pandion haliaetus*. **A** *P h cristatus*, adult female, Flores, Indonesia, 10 August 2010 (Lars Petersson/www.larsfoto.se); **B** *P h ridgwayi*, adult male, north Yucatan, Mexico, 6 February 2012 (Greger Flyckt); **C** nominate *haliaetus* of Red Sea form, juvenile male, Hurghada, Egypt, 8 August 2010 (Stefan Magnusson). In *cristatus*, note large feet and head in combination with shorter tail and large wing area, well-marked breast-band combined with few droplets confined to outer median underwing-coverts. In *ridgwayi*, note black-and-white plumage, distinct carpal patches, pure white median and lesser underwing-coverts and lack of breast-band. In Red Sea *haliaetus*, note sandy wash to overall very pale underparts and lack of breast-band and spotting.

Underwing-coverts

Juveniles show the same differences as in adults but the majority of individuals seem to have an unspotted underwing-coverts area.

Under primary coverts and carpal patch

As in adults but juveniles of both subspecies have white and rusty scaling on the under primary coverts. No direct subspecies differences are recognized but *haliaetus*, especially males, can show a more restricted carpal patch.

Iris color

Haliaetus: yellow to orange-yellow (orange uncommon); *carolinensis*: orange-yellow to red-orange (yellow uncommon) (figure 12). Note that the iris of *haliaetus* seems to get paler and more yellowish at a younger age than in *carolinensis*.

Eye region

Haliaetus is paler around the eye with most often a bluish-grey orbital ring, while *carolinensis* is distinctly blackish around the eye (as if using mascara), with a reduced or absent bluish-grey orbital ring (figure 12).

Facial pattern

Haliaetus has a bluish to grey upper gape in the same colour tone as the lower gape, while *carolinensis* typically shows a blackish to dark grey upper gape. Furthermore, *haliaetus* most often shows noticeable black gorget streaks (more common in females), while *carolinensis* lacks gorget streaks or shows very fine striping that is difficult to detect.

Other subspecies: *cristatus*, *ridgwayi* and southern form of *haliaetus*

Ospreys breeding in southern (sunnier) regions (*cristatus*, *ridgwayi* and southern form of *haliaetus*) are generally plainer than northern birds, showing a paler back and whiter underparts (figure 13). Typical for all three is that the underwing is very clean, with unmarked median and lesser underwing-coverts and a large white area across the base of the primaries and greater under primary coverts, with no prominent banding.

Cristatus (Australasia) is the smallest taxon, with a pronounced white crown. Males also have reduced black on the neck sides, creating a typical 'bandit mask'. The upperparts are generally paler brown than in other subspecies. Compared with

Ageing, sexing and subspecific identification of Osprey, and two WP records of American Osprey



FIGURE 14 Ospreys / Visarenden *Pandion haliaetus haliaetus*, showing variation in underwing pattern. Left row: females; right row: males. **A-F** north-eastern Germany, 27 June to 13 July 2005 (Daniel Schmidt); **G** Grimsö area, Sweden, 9 July 2007 (Patrik Olofsson); **H** Ivön, Sweden, 15 August 2009 (Linda Niklasson). Note larger size of females with broad and long wing, long tail, large head and feet, as well as robust body. Females also show double-barred under primary coverts, big carpal patch, large drop-spots to median underwing-coverts and well defined breast-band. Palest males show only fine rusty yellow streaking to breast. Upper female (**A**) shows very male-like drop-spots (elongated and diffuse) in combination with very pale plumage and is best sexed by jizz (however, note that photograph is slightly overexposed).

the other subspecies, *cristatus* has large feet and a large head (most likely due to smaller body size) in combination with a shorter tail and large wing area. In adults, the sex characters seem to be as in other subspecies: the breast-band is very well marked in females but often absent in males. The droplets are mainly confined to the outer median underwing-coverts, with differences between the sexes hard to judge.

Ridgwayi (Caribbean) is rather close to *carolinensis*, showing black-and-white plumage with large blackish carpal patches. However, from below, the body and median and lesser underwing-coverts are pure white with no breast-band or spotting. Females have a slightly darker wash on the breast and only a few diffuse spots on the outer median underwing-coverts.

Haliaetus breeding along the Red Sea differ from the rest of the population significantly. They are rather pale brown on the upperparts and juveniles have a sandy (not rusty as in *haliaetus*) wash to the underparts. As in *cristatus* and *ridgwayi*, Red Sea birds lack prominent breast-bands and spotting on the underwing-coverts. I think there is a need for further investigation to judge if this population warrants treatment as a distinct subspecies or not. At least, the breeding population is geographically separated from the other subspecies and birds are relatively easy to identify in the field.

Western Palearctic records of *carolinensis*

During my research, I came across two well-documented records in the WP of birds that I identified as *carolinensis*. If accepted by the relevant rarities committees, these records constitute the first for the Azores and Iceland, respectively, and the first and second for the WP.

Iceland, September 2008

On 22 September 2008, a young male Osprey showing characters of a male *carolinensis* was photographed at close range at Hafnarfjörður, Iceland (plate 98-100). I found the photographs at the website <https://notendur.hi.is/yannk/index-eng.html> and contacted the photographer, who kindly

sent me the images. No additional information was given to the observation other than that it was the 22nd Osprey record for Iceland. Typical characters shown in the photographs are the generally blackish-brown coloration with clear-cut white scaling, narrow small-spotted breast band, black lining to the gape, lack of gorget streaks (although prominent gorget streaks is first and foremost a female character), orange iris with blackish eyeliner, large carpal patch and distinctly black hour-glass patterned greater underwing-coverts.

Azores, October-November 2011

From 13 October to 4 November 2011, a young Osprey was present on Flores, Azores (plate 101-102). As Osprey is a very rare visitor to the islands, which are a magnet to American vagrants, I received a letter with photographs of the bird from Olof Jönsson, who asked my opinion about it. The photographers, Mika Bruun and Jan Kåre Ness, had realised that the black-and-white appearance was odd for a northern European Osprey. Going through the characters one by one, none corresponded with *haliaetus*! As the bird was easily recognized as a female, the characters pointed to a first-year *carolinensis*: generally black-and-white appearance, yellow-orange iris (in October), blackish gape, distinctly black around the eye, lack of obvious gorget streaks and unspotted axillaries in combination with a typical cluster of spots (as in adult females) in the centre of the underwing-coverts. Furthermore, the breast-band was rather restricted, which is rarely the case in young *haliaetus* females that show well-spotted underwing-coverts as this bird. For more images of this bird, see www.birdingazores.com.

Discussion

With an increased knowledge and awareness, it seems likely that *carolinensis* will show up in the Old World more often in the near future (and probably *haliaetus* in North America), either being wind drifted or ship assisted over the Atlantic Ocean. Another interesting record concerns an adult male Osprey photographed on board a ship at sea south-west of the Azores in October 2007



98-99 American Osprey / Amerikaanse Visarend *Pandion haliaetus carolinensis*, first-year male, Hafnarfjörður, Iceland, 22 September 2008 (Dagur Brynjólfsson)





100 American Osprey / Amerikaanse Visarend *Pandion haliaetus carolinensis*, first-year male, Hafnarfjörður, Iceland, 22 September 2008 (*Dagur Brynjólfsson*) **101** American Osprey / Amerikaanse Visarend *Pandion haliaetus carolinensis*, first-year female, Flores, Azores, 20 October 2011 (*Jan Kåre Ness*) **102** American Osprey / Amerikaanse Visarend *Pandion haliaetus carolinensis*, first-year female, Flores, Azores, 22 October 2011 (*Mika Bruun*)



(<http://tinyurl.com/aqzc9oo>), showing no obvious breast markings (and a black eye region, no gorget streaks and pied appearance), and as the record location was closer to the American continent than to the European, this suggests that the bird was a *carolinensis*. However, as there is only one photograph of this bird perched, it will remain unidentified to subspecies. No other decent Osprey photograph in the www.birdingazores.com photo gallery fits *carolinensis* and most photographs appear to show *haliaetus*.

Further research

I hope this paper will encourage birders to pay more attention to Osprey identification. Hopefully, the features mentioned in this paper will be tested further and other features will be added in the future.

Acknowledgements

First and foremost, I like to thank Mikael Hake for sharing his expertise during long and encouraging Osprey discussions, not the least during our fieldwork. I also thank the rest of the Raptor Research Group at Lund University, especially Thomas Alerstam, Nils Kjellén, Raymond Klaassen (the Netherlands), Patrik Olofsson and Mirja Ström-Eriksson. Thanks also go to Rob Bierregaard (Pennsylvania, USA), Alan Poole (Massachusetts, USA) and Daniel Schmidt (Germany) for correspondence. My gratitude goes to Eduardo Martínez Leyva (Mexico) and the crew at ProNatura Veracruz for hosting Mirja and me as volunteers during a fantastic migration season in 2010. Thanks go to Jörgen Bernsmo, Olof Jönsson, Hans Larsson and Oskar Nilsson for providing some important references and discussion. Thanks also to Greg McIvor for correcting and improving my English and Mirja Ström-Eriksson for advices on the manuscript. I also wish to thank Frank Abrahamson (Denmark), Håkan Berg, Rob Bierregaard, Mika Bruun (Finland), Dagur Brynjólfsson (Iceland), Per Schans Christensen (Denmark), David Erterius, Greger Flyckt, Carsten Gadgaard (Denmark), Tommy Holmgren, Raymond Klaassen, Christian Ljunggren, Stefan Magnusson, Eliot Malumuth (Maryland, USA), Craig Nash (Northern Ireland), Jan Kåre Ness (Norway), Linda Niklasson, Patrik Olofsson, Lars Petersson, Daniel Schmidt, Leif Strandberg, Mattias Ullman and Mats Wallin for kindly allowing me to use their photographs.

Samenvatting

BEPALING VAN LEEFTIJD, GESLACHT EN ONDERSOORT VAN VISAREND EN TWEE WP-GEVALLEN VAN AMERIKAANSE VISAREND
In dit artikel worden kenmerken besproken waarmee

leeftijd, geslacht en ondersoort van Visarend *Pandion haliaetus* kunnen worden bepaald. Hierbij ligt de nadruk op de Europese ondersoort *P h haliaetus* (hierna *haliaetus*) en Amerikaanse Visarend *P h carolinensis* (hierna *carolinensis*). Afzonderlijke kenmerken vertonen overlap en een combinatie van kenmerken levert de meest betrouwbare determinatie. Grootte en 'jizz' zijn de beste geslachtsverschillen maar zonder ervaring lastig te gebruiken; juveniele zijn vaak gemakkelijker op ondersoort dan op geslacht te determineren. Juveniele verschillen van adulte door: **1** lichte toppen aan slagpennen en veren van bovendelen; **2** duidelijkere en regelmatigere bandering op armpennen; **3** roestgele waas op ondervleugeldekveren; **4** oranjegele tot roodachtige iris (geel bij adulte); en **5** verser verenkleed.

Vrouwtjes *haliaetus* zijn duidelijk groter dan mannetjes en hebben bredere en langere vleugels, een langere staart, langere hals, grotere poten en een opvallende borst- en buikpartij ('bierbuik'); mannetjes zien er 'atletischer' uit, met smallere vleugels, 'gespieerde' borst en vlakkere buik. De langere staart van het vrouwtje valt het beste op van onder, met poten die duidelijk tot minder dan de helft van de staart reiken. De meeste vrouwtjes *haliaetus* hebben een bredere, donkerdere en opvallendere borstband dan mannetjes, hoewel hier overlap is; c 10% van de mannetjes vertoont een vrouwtjesachtige borstband en vrouwtjes vertonen in zeldzame gevallen een gereduceerde borstband. De vlekken op de ondervleugeldekveren vormen een zeer goed geslachtskenmerk: vrouwtjes vertonen een rij van vrij grote drupelvlekken op de middelste ondervleugeldekveren (vrijwel ongetekend wit bij mannetjes); minder dan 10% van de mannetjes vertoont twee rijen van bruinachtige en iets kleinere vlekken dan bij vrouwtjes. Mannetjes hebben vaak een open wit veld op de binnenhandvleugel en grote onderhanddekveren, terwijl vrouwtjes twee donkere bandjes over de grote onderhanddekveren vertonen. Het massief zwarte deel van de polsvlek is doorgaans bij mannetjes kleiner dan bij vrouwtjes. De bovenzijde is bij vrouwtjes iets lichter bruin dan bij mannetjes.

Bij typische *carolinensis* is de borstband vrijwel afwezig bij mannetjes maar te zien als verschillende vlekkenrijen bij vrouwtjes. Vrouwtjes vertonen meestal een cluster van vlekken in het centrum van de ondervleugeldekveren (bij mannetjes vaak egaal wit). Beide geslachten hebben gebandeerde grote onderhanddekveren; de polsvlek, die ook de middelste onderhanddekveren omvat, is typisch massief zwart. De bovendelen zijn zwartachtig tot zwartbruin (bij vrouwtjes iets lichter dan bij mannetjes).

Het onderscheiden van adulte *carolinensis* en *haliaetus* is lastig maar de donkere veerpartijen zijn zwartbruin bij *carolinensis* en bruinachtig bij *haliaetus*. De borstband van mannetjes *haliaetus* kan tot een waas zijn gereduceerd (maar meestal over een vrij breed gebied), terwijl vrouwtjes een duidelijke, smalle mozaïekband van vlekken vertonen. Mannetjes *haliaetus* hebben vaak een centrale donkere vlek op de witte ondervleugeldekveren, terwijl vrouwtjes *haliaetus* daar twee duidelijke vlekkenrijen hebben. Mannetjes *carolinensis* hebben

doorgaans geheel witte ondervleugeldekveren; vrouwtjes hebben een opvallende cluster van vlekken in het centrum van de ondervleugeldekveren. Bij *haliaetus* omvat de polsvlek niet de middelste onderhanddekveren, maar is bij vrouwtjes wel vaak zwaar gevlekt; bij *carolinensis* omvat de polsvlek ook de middelste onderhanddekveren.

Juveniele *carolinensis* verschilt duidelijk van juveniele *haliaetus* door een combinatie van kenmerken. Juveniele *carolinensis* in zit maakt een zeer bonte indruk met duidelijke geschubde veren, en de witachtige vlek op de bovenvleugeldekveren van juveniele *haliaetus* ontbreekt. De meeste juveniele *haliaetus* hebben een vrij opvallende borstband, doorlopend tot op zijhals; juveniele *carolinensis* hebben een grote vlekkenconcentratie beperkt tot de borst (vrouwtjes-type) of slechts een rij van kleine vlekjes in het midden van de borst (mannetjes-type).

Vooraf mannetjes *haliaetus* kunnen een kleinere polsvlek hebben dan *carolinensis*. Juveniele *haliaetus* heeft een gele tot oranjegele iris (oranjegeel tot roodoranje bij *carolinensis*). *Haliaetus* heeft een blauwgrijze oogrand en bovensnavelbasis; *carolinensis* is opvallend zwart rond het oog en aan de bovensnavelbasis. *Haliaetus* heeft meestal zwarte keelstreping (vooral bij vrouwtjes); deze keelstreping ontbreekt of is zeer fijn bij *carolinensis*.

Studie van foto's op internet leverde twee WP-gevallen op van *carolinensis*: in IJsland op 22 september 2008 en op Flores, Azoren, van 13 oktober tot 4 november 2011. Indien aanvaard betreft het hier de eerste gevallen voor de WP.

References

Bai, M-L & Schmidt, D 2012. Differential migration by age and sex in central European Ospreys *Pandion haliaetus*. *J Ornithol* 153: 75-84.
Christidis, L & Boles, W E 2008. Systematics and taxon-

omy of Australian birds. Melbourne.
Cramp, S & Simmons, K E L (editors) 1980. The birds of the Western Palearctic 2. Oxford.
Dennis, R 2008. A life of Ospreys. Dunbeath.
van Duivendijk, N 2011. Advanced bird ID handbook – the Western Palearctic. London.
Ferguson-Lees, J & Christie, D A 2001. Raptors of the world. London.
Forsman, D 1999. The raptors of Europe and the Middle East: a handbook of field identification. London.
Gensbøl, B 2004. Rovfuglene i Europa, Nordafrika og Mellemøsten. København.
Gill, F & Donsker, D (editors) 2013. IOC world bird names (version 3.3). Website: www.worldbirdnames.org.
del Hoyo, J, Elliott, A & Sargatal, J (editors) 1994. Handbook of the birds of the world 2. Barcelona.
Liguori, J 2005. Hawks from every angle: how to identify raptors in flight. Princeton.
Olsen, K M 2007. Rovfugle i felten. København.
Poole, A F 1989. Ospreys: a natural and unnatural history. Cambridge.
Prevost, Y A 1982. The wintering ecology of Ospreys in Senegambia. PhD thesis. Edinburgh.
Prevost, Y A 1983. The moult of the Osprey *Pandion haliaetus*. *Ardea* 71: 199-209.
Strandberg, R 2002. Stopover and migration strategies in the Osprey *Pandion haliaetus*. Master thesis. Lund.
Strandberg, R 2004. Fiskgjusarna vid Hammarsjön – vad pysslar de med egentligen? *Anser* 43: 129-138.
Strandberg, R, Alerstam, T & Hake, M 2006. Wind-dependent foraging flight in the Osprey *Pandion haliaetus*. *Ornis Svecica* 16: 150-163.
Svensson, L, Grant, P J, Mullarney, K & Zetterström, D 2009. Collins bird guide. Second edition. London.
Wheeler, B K & Clark, W S 1995. A photographic guide to North American raptors. San Diego.

*Roine Strandberg, Department of Biology, Ecology Building, Lund University, Sweden
(roine.strandberg@biol.lu.se)*