

Identification and taxonomy of bean geese

Dan Brown

Bean geese breed from northern Scandinavia eastwards across northern Asia. Five forms are generally recognised, three of which breed in the taiga biome, and two in the tundra. These two groups are treated as representing separate species by several authorities, including the AOU since 2007, but to date this proposal has not been endorsed by the BOU. The two forms that occur in the Western Palearctic are treated by *Birding World* as two separate species, Taiga Bean Goose *Anser fabalis* and Tundra Bean Goose *A. serrirostris rossicus*.

Both of these regularly winter in Britain in small numbers, with Taiga Bean Geese traditionally occurring almost exclusively in two regular flocks (in central Scotland and in Norfolk, totalling only a few hundred birds) and Tundra Bean Goose occurring more widely, but in even smaller numbers, mostly as individuals and very small flocks amongst other wintering geese. The

winter of 2009/2010 saw a more substantial than usual influx of both Taiga and Tundra Bean Geese into Britain, however, with successive waves of new arrivals. An initial influx into northern Scotland, East Anglia and Kent in early November was followed by smaller numbers throughout the winter until a second, more substantial, arrival occurred during February.

It is likely that the unusually cold winter weather on the continent precipitated these displacements to the relatively more equable climates of Britain. Taiga Bean Geese predominantly winter in southern Sweden, Denmark, northeast Germany and Poland, whilst Tundra Bean Geese winter in large numbers in the Netherlands and Germany. Additional wintering grounds for both species are found elsewhere in Europe, but these closer areas are most likely to have been the source of birds turning up in Britain.

Plate 1. Adult Taiga Bean Goose *Anser fabalis*, Holkham, Norfolk, March 2010 (Steve Gantlett).

Often appearing rather long in the body and with a long, thin neck, a typical Taiga Bean Goose also shows a wedge-shaped head and bill profile. On this individual, the bill is nearly as long as the head and shows a slightly concave culmen, a straight cutting edge to the upper mandible and a shallow lower mandible, while the distal portion of the bill is parallel-sided. The extent of orange colouration on the bill is about average for *fabalis* (although many show far more orange). Note also the warm brown hue to the neck and head.





Plate 2. Juvenile Tundra Bean Goose *Anser serrirostris rossicus*, Klaksvík, Faeroe Islands, December 2009 (Silas Olofson). The first for the islands (where there has been one previous record of *fabalis*). Ageing is straightforward, as the few newly moulted, adult-like (larger and wider) second-generation upper scapulars and flank feathers are obvious enough; otherwise, this individual is still largely in juvenile plumage. As well as the short, thick neck and quite solid-looking head, note the bill structure. As well as the convex culmen, short bulbous nail and arched cutting edge to the upper mandible, note the relatively deep lower mandible.

The 2009/10 influx

Taiga Bean Goose In addition to the regular wintering flocks on the Slammanan Plateau, central Scotland and the Yare Valley, Norfolk (peaking at 301 and 98 birds respectively this winter), it is likely that at least 65 additional Taiga Bean Geese were present around Britain during the winter. This compares with no more than six being reported away from the two main sites in winter 2008/9 and 17 being recorded away from the two main sites in 2007/8. The majority were recorded along the east coast of England and Scotland. About 15 were present on the Northern Isles, two were seen elsewhere in Scotland, at least 40 arrived in northeast England, four were in East Anglia, and four arrived in the south-eastern counties.

Additionally, about 11 were reported in north-west England but were not fully validated, while 14 birds presumed to have been Taiga Bean

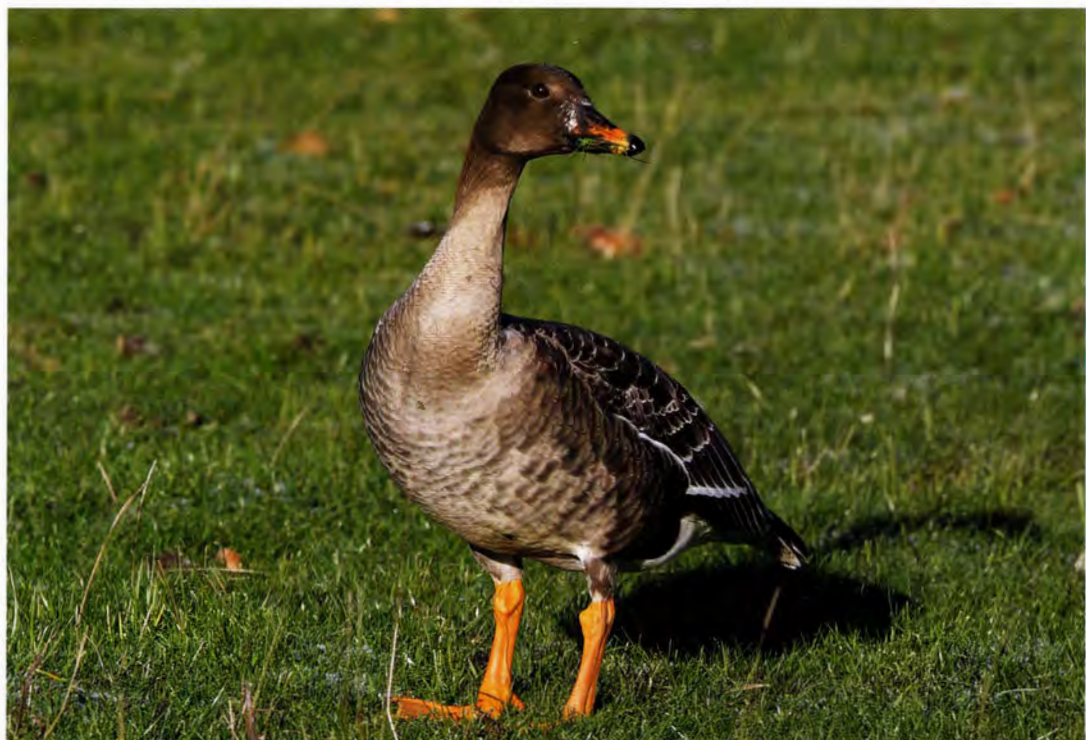
Geese were noted in Lothian. These last birds may well have then moved west as, in Falkirk, 14 Taiga Bean Geese were later noted away from the traditional Slammanan site. Interestingly, nine of these exhibited extreme bill patterning and structure similar to a flock photographed on Shetland in February (see Plates 10-14).

Tundra Bean Goose About 215 Tundra Bean Geese were recorded around Britain during the winter, many of them in small groups. This is well over double the c.85 recorded in winter 2008/2009 and over three times the c.70 recorded in 2007/2008. Fifteen were in Scotland (all but one on the Northern Isles), c.65 were in northeast England, c.73 were in East Anglia, c.46 were seen in the south-eastern counties, and five were seen in northwest England, while 11 reached the Midlands and the south-western counties (one of which hopped over the border into Wales briefly).



Figure 1. Approximate distribution of bean goose forms based on Delacour (*The Waterfowl of the World*, 1954), Hagermeijer & Blair (*The EBCC Atlas of European Birds*, 1997) and Brazil (*Birds of East Asia*, 2009), as well as Madge & Burn (1988), Ruokonen *et al.* (2008) and Svensson *et al.* (2009). The breeding ranges mapped here are very approximate and interbreeding may occur between some or all of these taxa; note that some authorities do not recognise *johanseni*, which may represent a hybrid form. The dashed blue lines encompass the extent of the main winter ranges of all forms, with *fabalis* and *rossicus* migrating to the west (Europe), and *serrirostris* and *middendorffii* wintering in eastern Asia. Evidence from the wintering grounds in Europe suggests that Tundra Bean Goose (*rossicus*) is increasing in numbers, especially in Scandinavia, whereas Taiga Bean Goose (*fabalis*) appears to be in decline.

Plate 3. Juvenile Tundra Bean Goose *Anser serrirostris rossicus*, Walmer, Kent, January 2010 (Steve Ashton). This approachable bird provided plenty of debate, with opinions on its identity swinging from Tundra to Taiga Bean and back again. The small, rounded breast feathers suggest that it is a young bird, and the retained first-generation scapulars and wing coverts further confirm that it is a juvenile. It appears rather emaciated, masking its true proportions. Individuals such as this, that may yet have some growing to do, look unfamiliar and can cause confusion, especially when seen out of context. The rather chunky head and bill profile, along with the relatively short neck, strongly suggest that this is a Tundra Bean Goose, albeit a tricky one. In reality, it may not be possible to identify every individual Bean Goose with 100% certainty, but the examination of a series of good photographs may help.





Plates 4 & 5. Taiga Bean Geese *Anser fabalis*, male left, female right, North Slob, Co. Wexford, Ireland, March 2004 (Alyn Walsh). These two birds were trapped on 10th March 2004, and just ten weeks later the female was controlled in Renttimaapa, Finland on 25th May 2004. Of interest, the male weighed 3,800 grams, while the female weighed just 2,900 grams (with wing, head and leg lengths all measuring about 10% less than the male); these are good weights for *fabalis* (Madge & Burn 1998). Note that at least the male is facing slightly away from the camera, fore-shortening the bill, and that the in-field head-shape can not be accurately assessed on these in-hand photographs. Taiga Bean Goose is a rare vagrant to Ireland, and it is interesting that this pair, having spent the late winter (21st January until 21st March) with Greenland White-fronted Geese, successfully reorientated to NE Europe on spring migration. Note the straight or slightly concave culmen, narrow distal portion of the bill, shallow lower mandible and typical distribution of orange colouration on the bill.

Identification and taxonomy

At least 34 further bean geese were reported around Britain during the winter, but were not confidently assigned to either species. Calculating exactly how many birds were involved in the winter influx is impossible due to the mobility of many individuals and small flocks, while the problem was exacerbated by some birds being misidentified. The influx of geese brought with it the challenge of identification, but also provided more opportunities than usual for observers to study both forms and to put the identification criteria into practice. Even given good views, not all identifications were straightforward, however, causing some observers to question the geographical origin of some individuals (see Plates 10-14).

The taxonomy and identification of bean geese have been covered in some depth previously, respectively by Sangster & Oreel (1996) and Oates (1997), but it seems timely to revisit these subjects here. The bean goose complex has enjoyed a complicated taxonomic history, but is now variously considered by different authorities to consist of one, two, or three species. For a time, Pink-footed Goose was lumped together with all forms of bean goose, but this is no longer maintained by any authority. BWP (Cramp & Simmons 1977) and HBW (del Hoyo *et al.* 1992) consider Bean Goose to be a single polytypic species, *Anser fabalis*, comprising five subspecies, with *fabalis* and *rossicus* in the west and *johanseni*, *serrirostris* and *middendorffii* in the east. Parkin & Knox (2010) and the BOU currently endorse this arrangement. Following Sangster & Oreel (1996), however, the Dutch taxonomic committee (CSNA) split the taiga-

breeding forms, *fabalis*, *johanseni* and *middendorffii*, as separate from the tundra-breeding forms, *rossicus* and *serrirostris*, with each of the two 'new' species being regarded as monotypic: Taiga Bean Goose *A. fabalis* (with *johanseni* and *middendorffii* subsumed) and Tundra Bean Goose *A. serrirostris* (with *rossicus* being regarded as synonymous). The AOU adopted this two-way split in 2007, but they consider each species to comprise two subspecies – the missing form being *johanseni*, which they consider synonymous with *fabalis* (following Emelyanov 2000).

More recently, as well as supporting the species status of Pink-footed Goose, a phylogenetic study by Ruokonen *et al.* (2008) proposed that just *middendorffii* should be elevated to species status, while *johanseni* was again disallowed and the remaining three forms (*fabalis*, *rossicus* and *serrirostris*) should be regarded as subspecies of a single polytypic species. So, following this, since January 2009, Dutch Birding has recognised three species of bean goose: Middendorff's Bean Goose *A. middendorffii*, Taiga Bean Goose *A. fabalis* and Tundra Bean Goose *A. serrirostris*. So, after having been effectively buried by CSNA for several years, *middendorffii* has been granted a brand new lease of life.

Ruokonen *et al.* (2008) demonstrated that the summer ranges of *fabalis* and *middendorffii* overlap in western Siberia, but failed to ascertain whether or not the two forms are interbreeding there (although it is stated that, based on morphology, it was not possible to identify all individuals from that region used in their study).



Plate 6. Tundra Bean Geese *Anser serrirostris rossicus*, with Greylag Geese *A. anser*, Bigton, Shetland, February 2010 (Hugh Harrop). These two Tundra Bean Geese look typically short-bodied, with thick necks, chunky heads and short, deep bills but, rather disconcertingly, they appear very large and not dissimilar in size to the Greylag Geese. Fortunately this size discrepancy can be easily explained, as the accompanying Greylag Geese are Icelandic birds – wild migrants that are smaller and more daintily-built than the more sedentary (often feral) Greylag Geese that many birders are used to seeing in western Europe. The shorter-billed, lightweight Greylag Geese of Iceland, Scotland and Norway have been regarded as a separate form, *A. a. sylvestris*, but this is not a recognised as a valid subspecies today. When looking for size comparisons, it is useful not to rely on generalisations.

Plate 7. Two Tundra Bean Geese *Anser serrirostris rossicus* and (right) one Taiga Bean Goose *A. fabalis*, Loch of Spiggie, Shetland, February 2010 (Roger Riddington).

When the two species are seen side-by-side, telling them apart may seem quite straightforward. Beside the two squat-looking Tundra Beans, the lone Taiga Bean Goose stands long and tall, with a snaky neck and neatly wedge-shaped head and bill profile (and it even shows plenty of orange on the fine bill). The Tundra Bean Geese are stockier birds, with a 'chunky' head and bill profile. Without the benefit of direct comparison, specific identification can be far more challenging, and birders need to employ a 'suite of characters' approach, including a careful assessment of the bill structure. Note how the small patch of colour on the bills of Tundra Bean Goose may often appear pinkish, or at least much less orange than the colour of the legs, and this may lead to confusion with Pink-footed Goose.





Plates 8 & 9. First-winter Tundra Bean Goose *Anser serrirostris rossicus*, Sidestrands, Norfolk, January 2010 (Simon Chidwick). The same individual is shown in both of these photographs, but while Plate 8 obviously portrays a typical, no-nonsense Tundra Bean Goose, Plate 9 depicts the bird in a slightly different posture; here it looks thinner-necked and with a longer, wedge-shaped head and bill profile! Note also the greater extent of orange on the left side of its bill, which closely matches the bill pattern shown by the adult female Taiga Bean Goose in Plate 5.

The current Dutch arrangement does not recognise any difference between the western and eastern tundra forms, *rossicus* and *serrirostris*, but this decision could alter pending future study. The mere fact that a migratory divide occurs in the western Taimyr – with birds breeding west of there (*rossicus*) wintering in Europe and those breeding east of there (*serrirostris*) wintering in eastern Asia – does at least suggest that they could be biologically significant forms.

The precise boundaries of the breeding ranges of all forms of bean goose have been drawn in a somewhat arbitrary fashion, and there remains the real possibility that some interbreeding of various forms occurs (as noted in Madge & Burn 1988). Given this scenario, although the identification of wintering populations is relatively straightforward, to assign every vagrant individual to form is clearly problematic.

It appears that the taxonomy of the bean goose complex remains an issue that has yet to be settled, so it would seem that the most expeditious treatment for now is to regard Taiga and Middendorff's Bean Geese as separate monotypic species (*A. fabalis* and *A. middendorffii* respectively) and Tundra Bean Goose as a polytypic species comprising two very similar forms (*A. serrirostris serrirostris* and *A. s. rossicus*).

In addition, the name '*johanseni*' could be usefully retained to describe those individuals that may originate from the contact zone between *A. fabalis* and *A. middendorffii* and that are not easily assigned to either of these two taiga-breeding species. Indeed, as it was originally described as a subspecies that looked somewhat intermediate between, and nested between, these two long-billed forms, might the poorly known '*johanseni*' always have been a hybrid population?

John Oates summarised the identification of Taiga Bean Goose and Tundra Bean Goose in *Birding World* 10: 421-426, and just how these two forms differ is concisely illustrated by Killian Mullarney in *Collins Bird Guide* (1999 & 2009). Bearing in mind that *middendorffii* and *serrirostris* are potential vagrants to Europe, and given the controversial nature of some of the bean geese seen in Britain this winter, both of these forms are considered here although, on current knowledge, it is unlikely that *serrirostris* would be separable in the field from *rossicus*.

The identification of all forms of bean goose focusses on bill structure and bill colouration, together with overall size and structure. This article examines variation within the perceived ranges of these features and explores several additional characters which may be of use in the field. No single feature should be used to identify

an individual, but a combination of features should normally prove conclusive.

Bill colouration and structure It has long been assumed that Tundra Bean Geese show largely dark bills with a narrow sub-terminal orange band, whilst Taiga Bean Geese show extensive orange patterning on the bill. Whilst this remains the general rule, it is now widely recognised that there is considerable variation within this feature, such that Taiga can show bill patterns matching that of 'typical' Tundra and vice versa, with some western Tundra (*rossicus*) showing rather more orange than expected. The eastern populations, however, seem to show a greater consistency in bill colouration, with both Middendorff's and eastern Tundra Bean Geese (*serrirostris*) both exhibiting a narrow (normally covering 25% of the bill length or less) orange sub-terminal band.

Although bill colouration is useful, particularly when dealing with a flock of geese, more reliance should be paid on the structure and

relative proportions of the bill in relation to the total head length. As with bill pattern and colouration, there is individual variation in bill size and structure, but assessment of the following features should help to identify most birds.

Taiga Bean Goose shows a long, straight (occasionally slightly concave or convex) culmen and a distinct, narrow, bulbous nail. On many individuals, the distal third of the bill is parallel-sided, which is very rarely the case with other forms, generating a long, slim-billed appearance. In most Taiga Beans, the bill does not appear heavy, and the bill profile is often shovel-shaped, reminiscent of Pochard or even Canvasback. The cutting edge of the upper mandible is straight, with a slight down-curve at the base. The depth of the lower mandible at its base is approximately 20-25% of the total depth of the bill, and the whole bill accounts for 43-47% of the total length of the head and bill combined.

Tundra Bean Geese (of both forms) show a moderately long to short and straight or convex

Plate 10. Taiga Bean Goose *Anser fabalis*, Sandwick, Shetland, February 2010 (Juan Brown).

In mid February 2010, this flock of seven Taiga Bean Geese arrived in Shetland and these initial photographs suggested that at least two of these birds exhibited features thought to be possibly indicative of Middendorff's Bean Goose. Not only did they appear bulky, but they also sported very long bills (with all but one showing a relatively restricted orange subterminal band). However, the depth of the bill did not match that of *middendorffii*; indeed, their bills were too slim (particularly towards the tip), the lower mandible was not deep or bulbous enough, and the cutting edge of the upper mandible was not arched. Interestingly, also in February 2010, a group of nine birds exhibiting very similar features (and looking very different from the regularly wintering birds) arrived in central Scotland. Could all of these visiting birds have been *fabalis* simply exhibiting extreme characters that British birders are not used to seeing, or could they have originated from further east and potentially even be examples of '*johanseni*'? Knox & Parkin (2010) state that some birds resembling *johanseni* have been seen in Europe; the situation is not fully resolved, but birders are urged to remain mindful of the notion that vagrancy from the east is a real possibility.



culmen, and a short, often distinctly bulbous, nail. The cutting edge of the upper mandible is moderately down-curved (although in some *serrirostris* it is strongly down-curved, with the main arc closest to the bill base). The whole bill accounts for 40-43% of the total length of the head in *rossicus*, and only 33-37% in *serrirostris*. The overriding impression of the tundra-breeding forms is that they have short, deep, wedge-shaped bills.

Size and structure The monotypic Taiga Bean Goose is a large and comparatively ungainly goose with short legs, a long, slim neck and a moderately large, wedge-shaped head with a tapering bill. The body frequently seems too large for the head and neck. In contrast, Tundra Bean Geese of both forms are significantly smaller and more compact, with shorter, thick-set necks. They appear less rangy, but relatively slightly longer-legged than Taiga Bean Goose. The leg-length may be particularly apparent when Tundra Bean Geese are found with Pink-footed Geese, when the former can be seen to stand significantly taller. The head of Tundra Bean Goose generally appears rounded, with a short, deep-based bill, more reminiscent of Pink-footed Goose, albeit usually with much more weight in the bill. Also, perhaps due to greater musculature correlated with the deeper lower mandible, Tundra Bean Geese can show a rather deep chin, further accentuating the more bulbous head-shape. These differences are instantly apparent if both species of bean goose are seen together (which occurs only very rarely in Britain), but much more difficult to judge when lone birds are encountered, particularly when birds with seemingly 'abnormal' bill patterns are encountered.

Additionally, the kink at the top rear of the neck in Taiga Bean Goose is far more pronounced than that in Tundra Bean Goose. This is mainly a product of the sloping rear crown of Taiga and the slimness of its neck exaggerating the kink (and thus giving a more Canada Goose-like or even swan-like appearance). In both forms of Tundra Bean Goose, the rear neck is typically straight and the kink far less obvious due to the deep, high crown. When assessing neck length and structure, it is vital to consider whether the bird is relaxed, agitated or alert, and also its age and physical condition, as all these factors can significantly alter the appearance. Young birds may not have a fully developed bill structure, while tired migrants may be emaciated, thus compromising comparative judgements.

Plumage Although the differences between the forms are slight, on average, *fabalis* tend to be



Plate 11. Taiga Bean Goose *Anser fabalis*, Bigton, Shetland, February 2010 (Hugh Harrop). The geese depicted in Plates 10-14 were all part of the same mobile flock. This appears to be the same individual that appears in Plate 10 (back right), but here more orange is visible on the bill. Even so, it is unusual in being a very bulky-looking and extremely long-billed individual.

browner and rather less grey than *rossicus* & *serrirostris*, whilst *middendorffii* frequently shows a gingery wash to the plumage unlike any of the other forms. Additionally, initial observations suggest that *rossicus* show a more extensive and darker tail-band than *fabalis*. Many *fabalis* appear to show a more charcoal, rather than black, tail-band, with variably broad white tips to the feathers. In some *fabalis*, the white terminal band can be extensive, whereas *rossicus* seems consistently to exhibit only a very narrow white terminal tail band, but there may be some age-related variation in this feature.

Middendorff's Bean Goose

Middendorff's Bean Goose is so far unrecorded in the Western Palearctic, but it is clearly a potential vagrant. It is a very large, well-proportioned goose, larger than *fabalis*, with a long but relatively thick-set neck, which typically lacks the snaky appearance that Taiga Bean Goose frequently exhibits: the neck appears long and smoothly curved. The head is large and can appear top-heavy for the bird, and the bill is huge, heavy and dominates the head; as well as being very long, it is noticeably deep-based. In comparison, Taiga Bean Goose sports a far more lightweight bill. The culmen is very long and straight or slightly convex, progressively tapering to a thick, but not bulbous nail. The cutting



Plate 12 & 13. Taiga Bean Geese *Anser fabalis* and Tundra Bean Goose *A. serrirostris rossicus*, Bigton, Shetland, February 2010 (*Hugh Harrop*). The lone Tundra Bean Goose (lower left) can be seen to be smaller and shorter-necked than the five Taiga Bean Geese it accompanies, with a shorter, more conical bill. In comparison, there is almost a swan-like look to the profiles of the Taiga Bean Geese in this photograph. Structurally at least, Taiga Bean Goose appears to look relatively homogeneous, but Tundra Bean Goose appears to be a rather more variable taxon; it is thus more likely that Tundra could be more readily misidentified as Taiga than vice versa. The two species are seen together in Britain on only very rare occasions, so variation within a flock is not normally indicative of both species being present; more likely it will be intraspecific variation.





Plate 14. Taiga Bean Geese *Anser fabalis*, Bigton, Shetland, February 2010 (Hugh Harrop). Note the long, thin (almost swan-like) neck and neat wedge-shaped head and bill profile. The bill is long and narrow, with a straight or concave culmen and a 'stretched' look towards the tip. Although a restricted orange subterminal band is typical of Tundra Bean Goose, it can also be shown by Taiga Bean Goose. Unusually however, this flock contained just one bird with a largely orange bill; the majority showed a surprisingly limited amount of orange on the bill.

Plate 15. Eastern Tundra Bean Geese *Anser serrirostris serrirostris*, Seosan, South Korea, March 2006 (Dr Kim Shin-Hwan). This is the eastern counterpart of *rossicus*, and is plainly a very similar-looking taxon. Here, the 'lookout bird' is adopting a typical pose that shows off the thick neck, chunky head and conical bill. But, as demonstrated in Plates 8 & 9, posture may affect the assessment of structure and the feeding bird here looks slimmer about the head and neck, with a longer, narrower bill. In winter, Tundra Bean Geese habitually graze in cereal-crop and short grass habitats (and, in Asia, dry rice paddies), whereas Taiga Bean Geese favour damper habitats where longer, rushy grasses grow. Middendorff's Bean Goose shows a distinct preference for wetlands, where it is often seen up-ending in shallow water or delving deep into wet mud for its food.

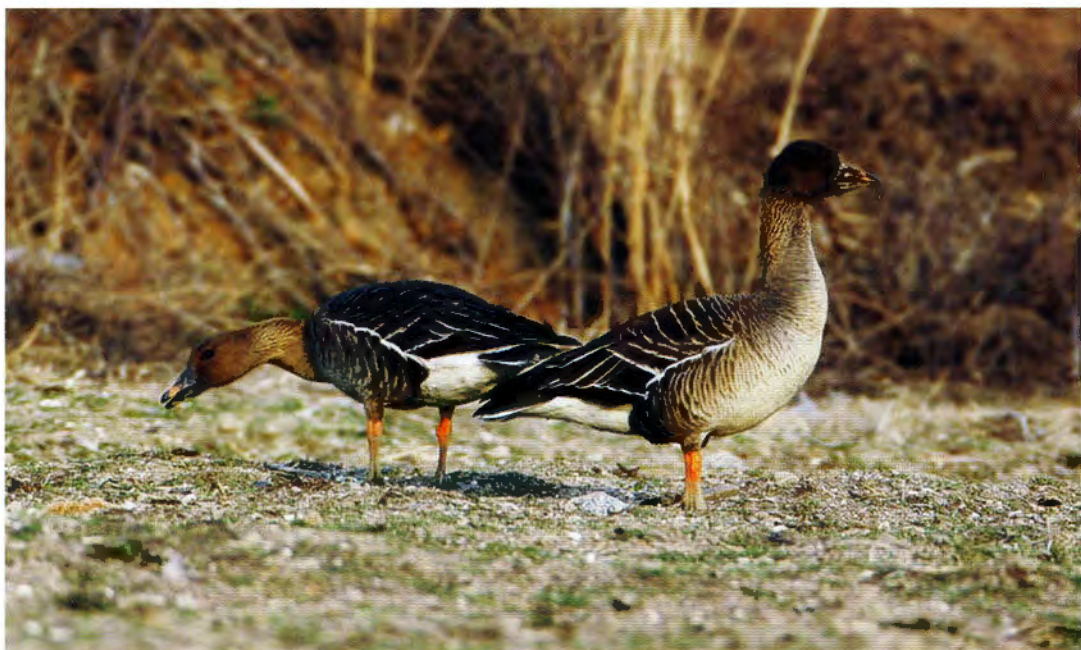




Plate 16. Eastern Tundra Bean Goose *Anser serrirostris serrirostris*, South Korea, February 2007 (Tim Edelsten). In flight, the short neck, bulbous head and almost conical bill are diagnostic.

Plate 17. Eastern Tundra Bean Goose *Anser serrirostris serrirostris*, South Korea, February 2007 (Tim Edelsten). Measurements indicate that *serrirostris* averages larger than *rossicus*, with a slightly deeper, shorter-looking bill. In the east Asian wintering grounds, telling Eastern Tundra from Middendorff's Bean Goose is relatively straightforward as these two species are very different in structure, although both do show a swollen lower mandible and a limited orange subterminal band on the bill. Picking out a vagrant *serrirostris* from the local *rossicus* in Europe is likely to prove rather more of a challenge!





Plate 18. Middenдорff's Bean Goose *Anser middendorffii*, South Korea, December 2006 (Barry Heinrich).

edge of the upper mandible is strongly curved, this being greatest at the base of the bill. The depth of the lower mandible at the base accounts for approximately 30% of the total bill depth at this point. The lower edge of the lower mandible is convex and seemingly bulges out beneath the bill at the chin. The whole bill accounts for 50% of the total head and bill length.

The underwings of Taiga and Tundra Bean Geese are very similar, being largely charcoal-grey, with just slightly darker axillaries. Middenдорff's, however, appear to show considerable contrast between more silvery underwings and significantly blacker axillaries. This may be an age-related feature and it should be noted that light conditions are likely to play an important role in judging the contrast.

Conclusion

Experienced observers may struggle to put a name to every bean goose they see. Particularly where mixed flocks of Tundra and Taiga Bean Geese are encountered, some birds are almost impossible to identify with absolute certainty. This should not be taken as evidence of hybridisation between forms, however; instead, such testing birds merely indicate that these geese are closely related and highlight the shortcomings of the identification criteria we currently employ. On a good day, however, birders mindful

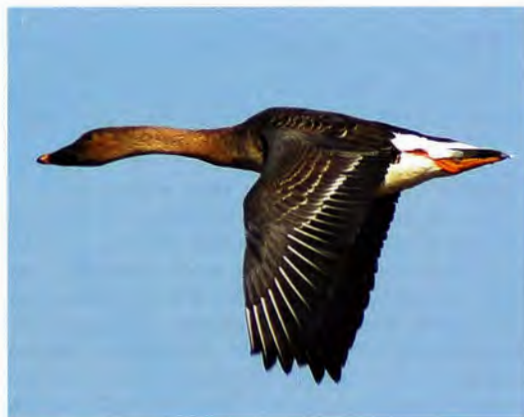


Plate 19. First-winter Middenдорff's Bean Goose *Anser middendorffii*, South Korea, December 2006 (Barry Heinrich). This large, rangy goose has a long neck and heavy head, with an exceptionally bulky bill (which is not only long but also very deep, especially at the base). Note also the curved cutting edge to the upper mandible, deep lower mandible and overall honey-brown hue to the plumage. On this species, the orange colouration on the bill is generally restricted to a narrow subterminal band.

If a lone *middendorffii* were to reach Europe as a vagrant, it should stand out from the crowd (of whichever other species of goose it is accompanying, even if *fabalis*) as being a very large, long-necked goose with a long and massively-built bill.

of the features discussed in this paper can hope to identify most bean geese they see with a reasonable degree of confidence.

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