Field identification of Russian Common Gull and its occurrence in Scotland

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Plate 75. Second-cycle *Larus canus heinei* ('Russian Common Gull'), Istanbul, Turkey, 7 January 2014. © *Chris Gibbins*. The lack of a mirror on primary 9 and extensive black in the wingtip (black extending inwards as far as primary 3, and critically the full band across primary 4) are indicative of *heinei* at this age; the strong black markings in the secondaries and vivid bill tones further support identification, as do the pattern of head streaking (dark largely confined to nape) and the extensive brown cast to the wing coverts. This is an identifiable Russian Common Gull.

The Common Gull *Larus canus* is generally considered to consist of four subspecies: nominate *L. c. canus* (hereafter referred to as '*canus*'), breeding in Britain and Europe (including parts of European Russia), 'Russian Common Gull' *L. c. heinei* throughout Russia and Siberia, 'Kamchatka Gull' *L. c. kamtschatschensis* in eastern Siberia, and 'Short-billed Gull' *L. c. brachyrhynchus* (sometimes treated as a full species) in western North America. 'Russian Common Gull' (hereafter referred to simply as '*heinei*') is thought to be a regular winter visitor to Europe (Bengtsson & Pedersen 1998), but the lack of known field characters has hindered assessment of its true status. Its occurrence in Britain is based only on a small number of ringing recoveries (Parkin & Knox 2010) and it has not yet officially been recorded in Scotland.

The identification of extralimital *heinei* has generally been considered impossible in the field (Malling Olsen & Larsson 2003, Howell & Dunn 2007). On average *heinei* is larger than *canus* and so trapped birds have been identified using biometrics: a bird with a wing length of more than 390 mm is generally considered to be *heinei* (e.g. Schmitz & Degros 1988, Kompanje & Post 1990, Kompanje & Post 1993, Bengtsson & Pedersen 1998, Hein & Martens 2002). However, as more studies are being carried out, breeding *canus* with wing lengths of up to 395 mm have been recorded (Bukaciński & Bukacińska 2003). Thus, even with trapped birds, relying solely on size to identify *heinei* can be problematic.

As part of work on all four Common Gull taxa, we recently developed criteria that allow *heinei* of all age groups to be separated from *canus* in the field (Adriaens & Gibbins 2016). Here we summarise these criteria and discuss what the status of *heinei* might be in Scotland.

Methods

A detailed methodology is described in Adriaens & Gibbins (2016), so only a summary is provided here. We studied both taxa in the field within accepted core ranges (Table 1). To supplement field studies we examined specimens of both taxa in the Zoological Museum of Moscow, collected in breeding areas extending from European to Eastern Russia, including birds from the overlap zone. We were also sent photographic material from Estonia and Finland. All locations of sample birds are shown in Figure 1. We then developed a scoring system for adult and second-cycle[1] birds to characterise wing-tip features and bare parts (Tables 2 and 3). Scoring (402 adult and 121 second-cycle *canus*, and 330 adult and 131 second-cycle *heinei*) was done from photographs or directly from examination of skins. We also produced general categories to help describe the tail and rump patterns of first-cycle birds. The frequency (% of sample) of different tail and rump patterns shown by first-cycle birds of each taxon was calculated to help compare them. Sample sizes for this analysis, as well as those for assessment of post-juvenile moult, are given in respective figures. We also measured the wing lengths and assessed the upperpart grey tones of the specimens we examined in Moscow.

Table 1. Summary of all locations and sample sizes for adult and second-cycle Common Gulls included in the analysis. Third-cycle types, and birds from the presumed intergradation zones, were excluded from the analysis and therefore are not listed in this table.

Taxon	Age	Location	Season	Number of birds
canus	adult	Estonia	summer	94
		Finland	summer	47
		Iceland	summer	6
		Netherlands	summer	1
		Norway	summer	1
		Russia	summer	3
		Scotland	summer	250
				total = 402
	second-cycle	Estonia	breeding	6
		Finland	summer	5
		Iceland	summer	2
		Netherlands	summer	2
		Russia	summer	5
		Scotland	winter	101
				total = 121
heinei	adult	Georgia	winter	163
		Istanbul, Turkey	winter	97
		Kazakhstan	summer	10
		Russia (western)	summer	20
		Siberia (Russia east of Ob River)	summer	40
				total = 330
	second-cycle	Georgia	winter	79
		Istanbul, Turkey	winter	37
		Kazakhstan	summer	1
		north-west China	winter	1
		Russia (western)	summer	1
		Siberia (Russia east of Ob river)	summer	12
				total = 131

[1] **Footnote.** We use the term 'cycle' to avoid the confusion and ambiguity that comes with other ageing systems and associated terminology. A plumage cycle runs from the start of one complete moult to the start of the next. The first-cycle starts with juvenile plumage. A bird is in its first-cycle until it commences its first complete moult, signalled by the shedding of its first primary in the summer of its second calendar year (when it is around nine months old). Once this moult has commenced it is in its second-cycle, and it is considered a second-cycle until it commences its second complete moult more or less a year later, at which point it becomes a third-cycle. Our paper focuses on identification in the winter period (when *heinei* are likely to appear in Europe) so in practice first-cycle birds are birds over their first winter of life and second-cycle birds over their second winter. Some third-cycle Common Gulls can be aged as such (they may have some dark in the alula or primary coverts), but as some adults (20 years old) can also retain such features, it is best just to talk about third-cycle 'types'. Exact ageing of these two classes is not critical for the present paper as the features for adults apply also to third-cycle types.

Plate 76. Adult Common Gulls.

a Adult *heinei*, Georgia, January 2014. © *Peter Adriaens*. Note rather pale eye (iris slightly paler than pupil), and that the white primary tips are rather small so black dominates on the closed wingtip.

b Adult *heinei*, Romania, February 2011. © *Chris Gibbins*. Many *heinei* (63%) have eyes that look pale, though not all are quite as pale as this startling individual. A deep black band is visible across P5 and some black is also present on P4. Although this is mid-winter, head streaking is limited. Bare parts are vivid, mustard coloured.

c Adult *canus*, Scotland, December 2011. © *Chris Gibbins*. Note extensive streaks distributed uniformly across the head, dark eye and yellow-green bill. The white primary tips are large.

d Adult *canus*, Scotland, June 2014. © *Chris Gibbins*. This is a Scottish *canus* photographed in summer on the breeding grounds. Note the complete absence of black on P5. This is frequent in *canus* (9 % of our sample), but very rare in *heinei* (none of our sample birds). Also note that the tongue on the underside of P8 is very long - more than half of the length of the exposed feather. *Heinei* typically have a shorter tongue (less than half of the length of the feather).

e Adult *canus*, Scotland, November 2013. © *Chris Gibbins*. Broken black band on P5 is typical of *canus* and note also that black on the outer web of P8 falls well short of primary coverts.

f Adult *heinei*, Georgia, January 2014. © *Peter Adriaens*. Black on the outer web of P8 reaches primary coverts and black on P5 forms a complete band across both webs. Pattern of nape streaking and vivid mustard bill help confirm identification as *heinei*.

g Adult *heinei*, Georgia, January 2014. © *Peter Adriaens*. Note full black band on P5, black on both webs of P4, and that black on the outer web of P6 reaches more than half of the way to the primary coverts.

h Adult *heinei*, Georgia, January 2014. © *Peter Adriaens*. Note black on both webs of P4 (frequent in *heinei* (29% of our sample), but rare in *canus* (1% of sample). Also, P7 has no white tongue tip, a feature frequent in *heinei* (24 %), but not found in any of our sample *canus*.

Plate 77. Second-cycle Common Gulls.

a Second-cycle *canus*, Scotland, February 2015. © *Chris Gibbins*. On standing birds, second-cycle Common Gulls can be told from adults by the absence of large white spots at the tips of the outer primaries. Note that on this second-cycle *canus* the wing coverts and tertials are grey and adult like. A few have dark marks in the tertials so this is of no significance, but extensive brown in the coverts is very rare in *canus*.

b Second-cycle *heinei*, Georgia, January 2014. © *Peter Adriaens*. Two second-cycle *heinei* together. Note the extensive brown in the wing coverts of the bird in front. The bill is in shadow here, but in life it was rather bright and vivid yellow, unlike the green-tone typical of *canus*. These features would draw attention to this bird on the ground; details of the open wing would then be needed to confirm identification. The other bird exhibits the typical white-headed appearance of *heinei*.

c Second-cycle *canus*, Scotland, February 2011. © *Chris Gibbins*. Note the presence of mirrors on both P9 and 10, with the mirror on the former extending across both webs. Also note the absence of black on P4. Head and neck streaking is extensive; many *canus* in fact are more heavily marked than this.

d Second-cycle *heinei*, Georgia, January 2014. © *Peter Adriaens*. As this bird banks, its head and neck pattern are shown to full effect. Notice that, as with many *heinei*, streaks are concentrated on the nape and neck sides, forming a boa. The P9 mirror is tiny, to the point of hardly being visible at all.

e Second-cycle *canus*, Scotland, October 2014. © *Chris Gibbins*. Black extends to P4, but is confined to the outer web only on this feather. Also note that the P9 mirror extends across both webs. As with the previous *canus*, head is streaked extensively on the crown and ear coverts.

f Second-cycle *heinei*, Georgia, January 2014. © *Peter Adriaens*. No mirror on P9 and black on primaries extends inwards as far as P2. Black on P4 forms complete band. P10 mirror small compared to most *canus*.

g Second-cycle *heinei*, Georgia, January 2014. © *Peter Adriaens*. Streaking confined to nape. Also note black on both webs of P4 and absence of P9 mirror.

h Second-cycle *heinei*, Romania, February 2011. © *Chris Gibbins*. Very well-marked bird looking very immature for its age. Such contrasting, sharp and extensive black piano keys in the secondaries are not seen in *canus* (though rarely *canus* can have a few subtle brown spots or smudges) . Also note extensive brown in wing the coverts and the boa of nape streaks set off against the white head. Black on primaries extends to P3. P9 mirror confined to inner web.

Plate 78. First-cycle Common Gulls.

a First-cycle *canus*, Scotland, February 2015. © *Chris Gibbins*. Note extensive streaks on crown, ear coverts and across breast and down flanks. Some arrowheads also present on undertail coverts.

b First-cycle *heinei*, Georgia, January 2014. © *Chris Gibbins*. More or less unmarked on whole of head and body giving snowy impression. Also, pink of bill in first-cycle *heinei*, as with this bird, is often brighter than typically seen in *canus* (which ranges from greenish to flesh).

c First-cycle *canus*, Scotland, November 2015. © *Chris Gibbins*. Note extensive head, breast and flank markings, dark tips to many underwing coverts and well marked axillaries. Undertail coverts with dark crescents.

d First-cycle *heinei*, Georgia, January 2014. © *Peter Adriaens*. Identifiable *heinei* are snowy white, and more or less unmarked on underwings and underbody. Note also the dark trailing edge to the underwing, as well as the long, slender wing shape.

e First-cycle *heinei*, Georgia, January 2014. © *Peter Adriaens*. A few *heinei*, like this one, have strangely chocolate underwings, but note how the head and body remain white.

f First-cycle *canus*, Scotland, January 2015. © *Chris Gibbins*. Note the five o'clock shadow on the upperside to the tail, adjacent to the black band, and the well-marked rump and uppertail coverts.

g–h First-cycle *heinei*, Georgia, January 2014. © *Peter Adriaens*. The most typical *heinei* have a clean white rump and uppertail coverts and a neat black tail band, with the tail otherwise lacking any dark markings. Note the lead pellet eye set off on a snowy white head. Any dark markings are confined to the nape, giving an impression quite like some of the large Asian white-headed gulls.

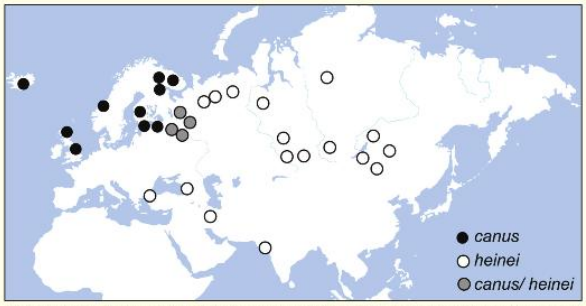

Figure 1. Locations of sampled Common Gulls. The points marked on the maps are a mixture of those visited by us to study birds in the field, and the collection locations of skins we examined in the Zoological Museum, Moscow. Note that many birds were examined from each location (sample sizes in Table 1). For those locations where we did not have exact grid co-ordinates (e.g. many of the specimens examined in the Zoological Museum, Moscow were referenced simply by administrative region) the symbol is positioned in the centre of the region. Grey shaded symbols are birds from the assumed intergradation zone (as given by Malling Olsen and Larsson 2003)

Separation of *heinei* and *canus* in the field

Size and structure

While there may be average differences in size, there is much intra-taxon variation so it is unlikely that a *heinei* will stand out in terms of its physical bulk. However, in flight some can look strikingly long-winged, with a narrow hand, and this may catch the eye. The long wings of *heinei* can sometimes also be evident on standing birds when the wings appear to droop, with their tips almost reaching the ground. Evaluation of any such size or structural differences depends on observers being extremely familiar with *canus*. In practice, it is only a percentage of *heinei* that might stand out for such reasons, so structure is not hugely significant for field identification.

Adults

Grey tones: The upperparts of adult *canus* are very similar to nominate Yellow-legged Gull *L. michahellis michahellis* and so slightly paler than Kittiwake *Rissa tridactyla*. On average *heinei* is a little darker than *canus*, and best matches Kittiwake; however, some are darker than this, in extreme cases even matching Lesser Black-backed Gull *L. fuscus* of the subspecies *graellsii*. Figure 2 plots Kodak grey tone values, based on our own measurements (of skins in the Zoological Museum of Moscow) integrated with published ones (Malling Olsen & Larsson, 2003, Howell & Dunn, 2007). It is evident that grey tones differ somewhat between the taxa, but also that there is considerable overlap. The published values for *heinei* are 6–8, but we found nine adult birds in the museum collection that we assessed as Kodak 5 (i.e. as pale as the palest *canus*) and six adults with Kodak 9 (i.e. far darker than any *canus*).

The overlap in grey tones, and the fact that they can be hard to assess in the field, mean that they are of only limited use for field identification. Many *heinei* should stand out amongst *canus* as being a little darker, but not all will. However, a bird looking distinctly dark grey among its congeners should be checked for other features.

Bare parts and head pattern: In winter, adult *heinei* regularly show a clean, unmarked white head sharply set off from a 'boa' of dark, pencil-like streaks or neat, rounded and often rufous spots on the lower hindneck. This gives them an 'Asian look' somewhat reminiscent of adult Caspian Gull *L. cachinnans*. In winter, adult *canus* have a head that is more extensively and heavily streaked, especially on the crown, nape and ear coverts, with any pattern on the neck often rather smudgy brown; the most well marked birds can look hooded.

There are average differences in iris and bill colour between the taxa (Table 2). Adult *canus* usually have a dark iris throughout the year (83% in our sample), but the iris can be slightly paler than the pupil in a minority (17%), especially when seen in bright sunlight. An obviously pale iris is very rare in *canus*; we have seen only a few examples of it. The majority of adult *heinei* show a fairly pale (44%) or obviously pale (19%) iris. The palest-eyed birds can actually have yellow tones to the iris and so give the feel of a Ring-billed Gull. In winter, the bill of *canus* is usually quite dull (greenish yellow). In contrast, the whole bill of *heinei* is often brightly coloured in the winter: the tone is often strong mustard yellow to orange, quite different from most *canus*. We found no clear differences in bill pattern between adult winter *heinei* and *canus* – both typically have a complete blackish bill band.

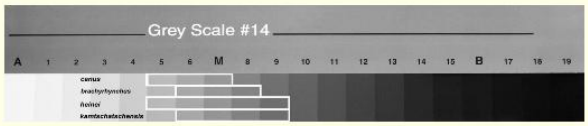

Figure 2. Upperpart grey tones of Common Gull taxa. For completeness, the grey tones of *canus* and *heinei* are shown along with those of the other two taxa. Values are on the Kodak grey scale used in many gull studies. Values shown here integrate our own assessments (skins of *canus, heinei* and *kamtschatschensis* housed in the Zoological Museum in Moscow) along with those published by Malling Olsen & Larsson (2003) and Howell & Dunn (2007).

Table 2. Frequencies of different wingtip and bare part features of adult Common Gulls included in this analysis. Values show the percent of sample birds showing each feature. PC = primary coverts.

Feature	Score	Pattern	% of *canus*	% of *heinei*
Length of tongue on underside of P10	1	Tongue > ½ of the length of the exposed/visible feather	0	0
	2	Tongue ⅓–½ of visible feather	2	1
	3	Tongue < ⅓ of visible feather	56	31
	4	No pale tongue	42	68
Shape of tongue on underside of P10	1	Diagonal	80	94
	2	Rectangular	20	6
Length of tongue on underside of P9	1	Tongue cutting through to mirror	0	0
	2	Tongue > ½ of visible feather	2	0
	3	Tongue ⅓–½ of visible feather	43	9
	4	Tongue < ⅓ of visible feather	55	88
	5	No pale tongue	1	3
P9 mirror	1	No mirror	0	0
	2	Mirror confined to inner web	0	1
	3	Mirror on both webs; white on outer web > black tip	95	63
	4	Mirror on both webs; white on outer web about equal to black tip	5	24
	5	Mirror on both webs; white on outer web < black tip	1	12
Extent of black on P9 (upperside)	1	Entire outer web black to primary coverts	50	92
	2	Black reaches PC only along outer edge	44	7
	3	Black falls up to ⅓ short of PC	6	1
	4	Black falls > ⅓ to ½ short of PC	0	0
	5	Black falls > ½ short of PC	0	0
Extent of black on P8 (upperside)	1	Entire outer web black to PC	0	27
	2	Black reaches PC only along outer edge	14	25
	3	Black falls up to ⅓ short of PC	80	47
	4	Black falls > ⅓ to ½ short of PC	6	1
	5	Black falls > ½ short of PC	0	0

Feature	Score	Pattern	% of *canus*	% of *heinei*
Shape of black on P8 (upperside)	1	Straight/blunt	36	64
	2	Pointed	64	36
P8 tongue length (underside)	1	Tongue > ¾ of visible feather (about = mirror P9)	1	0
	2	Tongue > ½ - ¾ of visible feather	62	22
	3	Tongue ⅓–½ of visible feather	35	51
	4	Tongue < ⅓ of visible feather	2	26
	5	No pale tongue	0	0
White in tongue tip of P8 (upperside)	1	No white on tongue-tip	85	99
	2	Thin white crescent on tongue-tip	12	0
	3	Broad white spot on tongue-tip	2	0
P8 mirror	1	No mirror	75	95
	2	Mirror on inner web only	22	4
	3	Mirror on both webs	3	1
White in tongue tip of P7	1	No white on tongue-tip	0	24
	2	Thin white crescent on tongue-tip	17	58
	3	Broad white spot on tongue-tip	83	18
Shape of black in P7 (upperside)	1	Straight/blunt	20	41
	2	Pointed	80	59
Length of black in P7 (upperside)	1	Short (< ½ length of visible feather)	6	1
	2	Medium (= ½ length of visible feather)	32	5
	3	Long (> ½ length of visible feather)	62	94
Black band across P6 (upperside)	1	Broken	2	0
	2	Complete & symmetrical	71	21
	3	Complete; not symmetrical	27	79
Extent of black on P6 (upperside)	1	Black outer edge for < ⅓ along length of feather	88	39
	2	Black outer edge for ⅓ to ½ along length of feather	12	30
	3	Black outer edge for ½ to ⅔ along length of feather	1	17
	4	Black outer edge for > ⅔ along length of feather	0	14
Black pattern on P5 (upperside)	1	No black	9	0
	2	Black spot on only one web	14	0
	3	Both webs, but broken	52	9
	4	Complete band & symmetrical	19	83
	5	Complete band; not symmetrical	6	8
Depth of black band on P5 (upperside)	1	Black on inner web > P10 black tip	43	93
	2	Black on inner web < P10 black tip	57	7
Black pattern on P4 (upperside)	1	No black	91	43
	2	Black spot on only one web	8	25
	3	Both webs, but broken	1	29
	4	Complete band & symmetrical	0	2
	5	Complete band; not symmetrical	0	1
Depth of black on P4 (upperside)	1	Black on inner web > P10 black tip	11	12
	2	Black on inner web < P10 black tip	89	88
Black pattern on P3 (upperside)	1	No black	100	96
	2	Black spot on only one web	0	4
	3	Both webs, but broken	0	0
	4	Complete band & symmetrical	0	0
	5	Complete band; not symmetrical	0	0
Iris colour	1	Dark	83	37
	2	Slightly paler than pupil	17	44
	3	Obviously paler than pupil	0	19
Blackish pigment on bill	1	Absent	2	4
	2	One mandible only	4	16
	3	Both mandibles, but broken	21	18
	4	Forms complete band	73	63

Table 3. Frequencies of different wingtip and bare part features on second-cycle Common Gulls included in this analysis. Values show the percent of sample birds showing each feature. PC = primary coverts.

Feature	Score	Pattern	% of *canus*	% of *heinei*
Length of tongue on underside of P10	1	Tongue > ½ of the length of the exposed/visible feather	0	0
	2	Tongue ⅓–½ of visible feather	0	0
	3	Tongue < ⅓ of visible feather	32	14
	4	No pale tongue	68	86
Shape of tongue on underside of P10	1	Diagonal	81	75
	2	Rectangular	19	25
Length of tongue on underside of P9	1	Tongue cutting through to mirror	0	0
	2	Tongue > ½ of visible feather	0	0
	3	Tongue ⅓–½ of visible feather	1	1
	4	Tongue < ⅓ of visible feather	90	83
	5	No pale tongue	9	16
P9 mirror	1	No mirror	3	32
	2	Mirror confined to inner web	16	30
	3	Mirror on both webs; white on outer web > black tip	14	8
	4	Mirror on both webs; white on outer web about equal to black tip	20	12
	5	Mirror on both webs; white on outer web < black tip	47	18
Extent of black on P9 (upperside)	1	Entire outer web black to primary coverts (PCs)	100	100
	2	Black reaches PC only along outer edge	0	0
	3	Black falls up to ⅓ short of PC	0	0
	4	Black falls > ⅓ to ½ short of PC	0	0
	5	Black falls > ½ short of PC	0	0
Extent of black on P8 (upperside)	1	Entire outer web black to PC	82	93
	2	Black reaches PC only along outer edge	16	2
	3	Black falls up to ⅓ short of PC	2	5
	4	Black falls > ⅓ to ½ short of PC	0	0
	5	Black falls > ½ short of PC	0	0
Shape of black on P8 (upperside)	1	Straight/blunt	86	98
	2	Pointed	14	2
P8 tongue length (underside)	1	Tongue > ¾ of visible feather (about = mirror P9)	0	0
	2	Tongue > ½ - ¾ of visible feather	5	3
	3	Tongue ⅓–½ of visible feather	16	13
	4	Tongue < ⅓ of visible feather	76	75
	5	No pale tongue	3	9
White in tongue tip of P8 (upperside)	1	No white on tongue-tip	100	100
	2	Thin white crescent on tongue-tip	0	0
	3	Broad white spot on tongue-tip	0	0
P8 mirror	1	No mirror	99	100
	2	Mirror on inner web only	1	0
	3	Mirror on both webs	0	0
White in tongue tip of P7	1	No white on tongue-tip	18	83
	2	Thin white crescent on tongue-tip	66	14
	3	Broad white spot on tongue-tip	15	3
Shape of black in P7 (upperside)	1	Straight/blunt	64	94
	2	Pointed	36	6
Length of black in P7 (upperside)	1	Short (< ½ length of visible feather)	0	0
	2	Medium (= ½ length of visible feather)	0	0
	3	Long (> ½ length of visible feather)	100	100
Black band across P6 (upperside)	1	Broken	0	0
	2	Complete & symmetrical	0	0
	3	Complete; not symmetrical	100	100
Extent of black on P6 (upperside)	1	Black outer edge for < ⅓ along length of feather	1	0
	2	Black outer edge for ⅓ to ½ along length of feather	8	3
	3	Black outer edge for ½ to ⅔ along length of feather	17	2
	4	Black outer edge for > ⅔ along length of feather	75	95

Feature	Score	Pattern	% of *canus*	% of *heinei*
Black pattern on P5 (upperside)	1	No black	0	0
	2	Black spot on only one web	0	0
	3	Both webs, but broken	2	0
	4	Complete band & symmetrical	47	38
	5	Complete band; not symmetrical	51	62
Depth of black band on P5 (upperside)	1	Black on inner web > P10 black tip	91	98
	2	Black on inner web < P10 black tip	9	2
Black pattern on P4 (upperside)	1	No black	31	7
	2	Black spot on only one web	44	30
	3	Both webs, but broken	22	25
	4	Complete band & symmetrical	1	16
	5	Complete band; not symmetrical	3	21
Depth of black on P4 (upperside)	1	Black on inner web > P10 black tip	0	22
	2	Black on inner web < P10 black tip	100	78
Black pattern on P3 (upperside)	1	No black	89	66
	2	Black spot on only one web	11	31
	3	Both webs, but broken	0	2
	4	Complete band & symmetrical	0	0
	5	Complete band; not symmetrical	0	0
Iris colour	1	Dark	100	85
	2	Slightly paler than pupil	0	13
	3	Obviously paler than pupil	0	2
Blackish pigment on bill	1	Absent	0	0
	2	One mandible only	0	1
	3	Both mandibles, but broken	4	1
	4	Forms complete band	96	98

Wing tip pattern: The frequencies of different patterns on the outer primaries of adult birds are summarised in Table 1. In general *heinei* have more black and less white in their wingtip than *canus*. There are a number of overall differences in the frequency of different scores for certain features. We will first describe average differences in the primary pattern and then present combinations that strongly indicate *heinei*.

- ***Black on Primary 5 (P5).*** Frequently *canus* lacks black altogether on this feather, or the black is confined to the outer web (9 and 14% respectively); none of our sample *heinei* lacked black or had black only on the outer web of this feather. Most *heinei* have a complete black band on P5 (92%) but as an appreciable number of *canus* show such a band (25%), on its own this is not diagnostic.
- ***Black on P4***. Present on both webs in 32% of *heinei* but only 1% of *canus*.
- ***P9 mirror.*** Generally smaller in *heinei*: in 36% of *heinei* the part of the white mirror on the outer web extends for a similar or shorter length than the black at the tip of the feather, whereas such small mirrors occur in only 6% of *canus*.
- ***P8 mirror.*** A mirror on this feather is present much less frequently in *heinei* (5%) than *canus* (25%)
- ***P8 black.*** On 27% of *heinei* the black on this feather reaches the primary coverts across the full width of the outer web, whereas this pattern was not recorded in any of our full adult *canus* (i.e. the black always falls short of the primary coverts or just reaches on the outer edge).
- ***P8 tongue***. The tongue on this feather is very short (less than one third of the exposed feather) on 26% of *heinei* but only 2% of *canus* (i.e. on *canus* the tongue is typically longer)
- ***P6 black.*** The black extending up the outer web of P6 is typically longer on *heinei* than *canus*
- ***P7 tongue-tip.*** The white area separating the grey from the black in P7 (i.e. the tongue tip) is typically smaller and more crescent shaped in *heinei* and is regularly absent altogether; in *canus* it is most often larger and more rounded (pearl-shaped)

The frequency statistics (Table 1.) indicate that each taxon has a typical pattern on each feather. However, they also indicate that in almost all cases the pattern typical of one taxon is occasionally shown by the other one. This means that none of the features on their own are truly diagnostic, and so have to be used in combination.

Adult birds belonging to either of the following three categories of features are very likely *heinei*:

A There is no white tongue-tip on P7;

B If a white tongue-tip is present, it should be clearly thin and crescent-shaped, like the tip of a fingernail. In addition, at least one of the following features should also be present:

- black on P8 reaches the primary coverts across the full width of the outer web;
- the black wedge on outer web of P6 covers more than ½ of the length of the feather

C Some birds with less black on P8 and P6 (but still with little white on P7) may still be identifiable if they show the following combination of features:

- the white mirror on P9 is smaller than the black tip, or at most equal in size, and
- P5 shows a complete black band (across both webs), and
- the pale tongue on P8 is shorter than ½ of the feather length.

A bird scoring positively for A, B or C should also be checked for additional **supportive features** that will help confirm but are not essential to the identification. These features are the presence of black on P4, a pale eye and a white head set off against a neat boa of neck streaks, along with upperparts looking a fraction darker than *canus*. In addition, the tongues on the underside of the primaries may be a little shorter than *canus*, and perhaps less obvious due to a slightly darker grey tone (paler and more silvery in *canus*). On the folded wings, white primary tips of *heinei* tend to be slightly smaller than *canus*, but the difference is subtle and not easy to use, especially not from late winter onwards when worn *canus* make things more difficult. Nonetheless, large white primary tips (almost as large as the black space between them) is a useful indicator of *canus* rather than *heinei*.

Second-cycle birds

In general, *heinei* have more extensive blackish markings in their wings than *canus*, but there is considerable variation within each taxon so multiple features have to be used simultaneously to separate the two. *Heinei* frequently show extensive dark areas in the tertials but such a pattern is also found sometimes in *canus* (e.g. 18% of a sample of 116 second-cycle *canus* from North-east Scotland) so this alone is not useful. *Heinei* regularly show dark in the tail (30%) whereas this is scarce in *canus* (3% of birds). While the presence of black in the tail is useful but not on its own indicative of *heinei*, it is notable that many have such extensive black that a tail band, rather like that seen in a Ring-billed Gull of this age, is formed; in *canus* the black, if present at all, is usually just a few isolated spots. Probably more useful still is the presence of blackish marks in the secondaries. None of our sample of *canus* showed dark here, with all showing an adult like pattern of grey feathers with white tips. In contrast, 12% of *heinei* showed some blackish marks in the secondaries, some even so extensively that they formed a clear secondary bar. However, we cannot exclude the possibility that a larger sample of *canus* might reveal a few birds with blackish marks on the secondaries.

Like adults, second-cycle *heinei* generally show more extensive blackish and less white in the wingtip than *canus*. The summary statistics (Table 2) indicate that there are few aspects of the primary pattern and bare parts that differ consistently enough between the two taxa to be diagnostic. The three most useful ones are:

- ***P9 mirror.*** This mirror is regularly absent in *heinei* (32%), but rarely so in *canus* (3%).
- ***P4 black.*** A complete black band across this feather is rare in *canus* (4%), but frequent in *heinei* (37%).
- ***Iris***. No second-cycle *canus* were found with pale eyes, whereas 15% of the *heinei* in our sample had an iris that was paler than the pupil.

Our analysis of features in combination indicates that field identification of second-cycle birds should be based on the following rules:

- A bird with black marks on both the outer and inner webs of P4 (either as isolated spots or as a complete black band), the mirror on P9 absent or confined to the inner web, no white tongue-tip on P7 and a blunt tip to the black wedge on outer web of P7 can be identified as *heinei* if head pattern and bill colour also indicate this taxon.
- If the white mirror on P9 extends onto the outer web, second-cycle birds can still be identified as *heinei* if they show a complete black band across both webs of P4 and no white tongue-tip on P7 and their head pattern and bill colour also indicate this taxon.
- A second-cycle bird with no black on P4 should not be identified as *heinei* (i.e. it is most likely a *canus*).
- A second-cycle bird with black only on the outer web of P4, a white tongue tip on P7 and with a pointed black wedge on the outer web of P7 should not be identified as *heinei* (i.e. it is most likely a *canus*).

In addition, the exact pattern of any black on the inner primaries (P1–4) is worth noting. In *canus* the black pattern peters out by P4 and certainly P3; in these feathers black is rarely anything more than a black spot on the outer web and in many individuals it is absent altogether. In second-cycle *heinei* black is more frequently present across both webs of these feathers either as a complete band or two isolated spots,

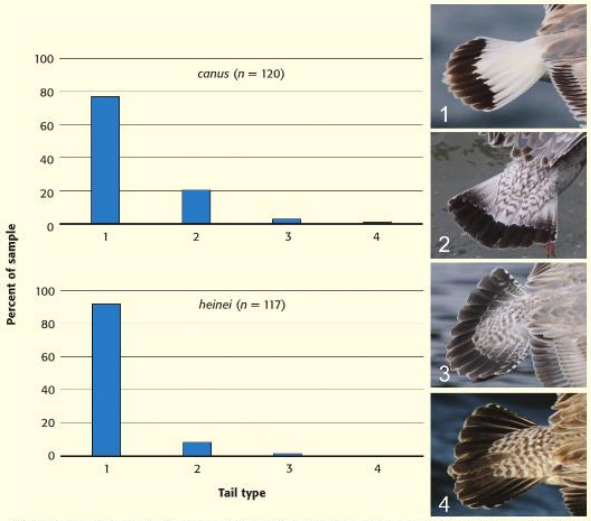

Figure 3. Tail patterns of first-cycle *canus* and *heinei* Common Gulls. The values show the frequency (percent of sampled birds) of different types of pattern on the upperside of the tail.

but in particular additional black can be present running parallel with the shaft (along the leading edge or close to the shaft) as a line or smudge; on some *heinei* this black is also present on P2.

Second-cycle *heinei* regularly have more extensive dark markings along the leading edge of the wing and a brown cast to the remaining coverts. The overall effect (on some but far from all *heinei*) is therefore of a much more extensively dark and immature-looking upperwing. This effect is heightened on those *heinei* which have dark in the secondaries and tail. Such birds, assuming they also show the diagnostic features listed above, can be identified with confidence. The pattern of head streaking described for adults of the two taxa also applies to second-cycle birds, so *heinei* often has less extensive head streaking (i.e. confined to the hindneck). Similarly, the bill of some second-cycle *heinei* is already rather bright.

First-cycle birds

The general plumage patterns of first-cycle *heinei* and *canus* are similar, but many *heinei* are whiter and more clean-looking overall. They are typically less well marked on the head, body, tail and underwing. The general impression can therefore be striking on the most typical birds, but precise details of the features that give this impression need to be recorded to support firm identification.

Canus has a white ground colour to the head and body, with a rather variable amount of streaks and scales overlain. The norm is for streaks around the ear coverts, crown and neck, extending down onto the flanks and often a few spots or streaks on the belly. Many birds have some spots or crescents on the undertail coverts. There is considerable variation: while some are very extensively streaked and scaled, paler birds lack or have extremely limited flank streaking and show an unmarked belly, or have just a few isolated marks.

Heinei is typically much whiter and hence more clean looking on its head and body, with many unmarked except for a 'boa' of sharp, fine streaks around the rear neck. In this regard they can be reminiscent of a first-cycle Caspian Gull. A frequent pattern is for a rather extensive boa,

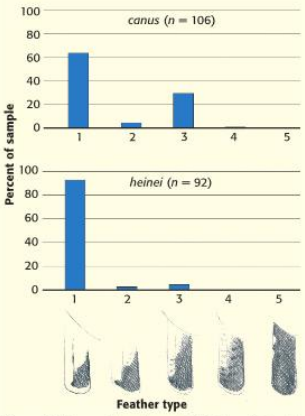

Figure 4. Pattern on the outer-most tail feather of first-cycle *canus* and *heinei* Common Gulls. The values show the frequency (percent of sampled birds) of different types of pattern on the outer most tail feather.

extending round as a half-collar, which contrasts with a striking white head. We have not seen *canus* with such a pattern. Many *heinei* completely lack flank markings and we saw no birds in the wintering range with extensive dark on their belly. The whiteness of *heinei* might be the first thing that draws attention to a typical bird. However, some *heinei* are rather more marked, with streaks over the head and around the breast sides and down the flanks. Such birds begin to match paler *canus*.

The vast majority (>90%) of *heinei* that we studied in the wintering range had a completely unmarked vent and undertail coverts; the remainder had just a few isolated fine pencil streaks and only one had extensive dark feather centres.

The underwing of many *heinei* appears gleaming white as a result of virtually unmarked underwing coverts and axillaries. These are the

most striking and distinctive birds. Most, however, have small dark tips to their underwing coverts and axillaries which contrast starkly with the white ground colour. Similarly, the secondaries may look contrastingly blackish from the underside, and together with rather dark inner primaries may form a broad dark trailing edge to the wing that contrasts markedly with the white underwing coverts and underparts. Darker *heinei* have more extensive brown tips to the underwing coverts which create alternating bands of pale and dark running along the wing, but such birds are less frequent. Barring or stippling on the axillaries is rare in *heinei* (just one in our sample). In general, *canus* has duller looking underwings as a result of deeper/broader dark feather tips, with many looking banded or barred. Quite surprising were a few *heinei* with uniformly brown underwings contrasting with gleaming white underparts and head; we have seen nothing like this among *canus*.

The patterns on the tail and uppertail coverts provide some additional critical clues for identification (Figures 3–5). The majority of *canus* and *heinei* in our sample had Type 1 or 2 tails, but Type 1 is more frequent in *heinei*. Most *heinei* combined a Type 1 tail with little or no dark on the outer tail feather (Type 1 outer tail feather pattern was found in 90% of birds) and either no or very few dark spots on the uppertail coverts (Type 1 was the modal category for uppertail coverts). Only 4% of *heinei* had any vermiculation or

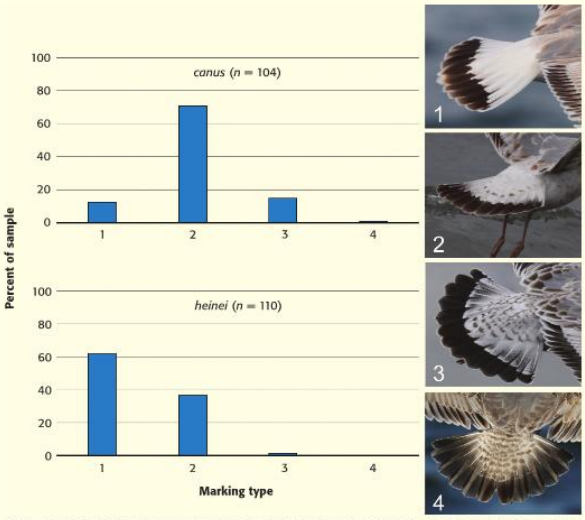

Figure 5. Extent of dark markings on the upper tail coverts of first-cycle *canus* and *heinei* Common Gulls. The values show the frequency (percent of sampled birds) of different degrees of spotting/barring on rump and uppertail coverts.

Plate 79. Adult *heinei* Common Gull, Poti, Georgia, 30 January 2014. © *Peter Adriaens*. We travelled to Georgia to study *heinei* on the wintering grounds, as well as to the Zoological Museum of Moscow to examine skins of *canus* and *heinei* collected on respective breeding grounds. Georgia proved to be a superb place for *heinei*, but also many other gulls. This *heinei* is surrounded by Black-headed Gulls which we estimated to number in their millions at this particular location.

barring on the outer web of the outer tail feather, while this is frequent in *canus* (around 40% have Type 2, 3 or 4 outer feather patterns). Most *canus* have a degree of spotting or light barring on the uppertail coverts (Type 2) and it is not hard to find *canus* with rather extensive barring (i.e. Type 3) here. Thus, overall, the *heinei* to look for are those with unmarked uppertail coverts, clean outer tail feathers and an upper tail with a simple dark band, without any stippling.

Type 1 uppertails include birds which have black lines extending basally from within the tail band. These lines vary in length; on some birds they are extremely short (and hence hardly visible at all) and on others very long, extending for a length equivalent to the depth of the tail band. We have found no consistent differences in the length of these lines between *canus* and *heinei*. The depth of the tail band also varies within each so is of no value in identification.

Malling Olsen & Larsson (2003) argue that the greater coverts of *heinei* "average darker, deeper brownish tinged" (than *canus*), and that the lesser coverts "are darker brown than in *canus*, creating a stronger dark leading edge to the inner wing" (p.74). Certainly many *heinei* have rather dark upperwings, including very dark greater coverts, and this can result in a starkly contrasting bird because of the clean white head and body. However, many have pale grey greater coverts and others sandy ones, while *canus* has greater coverts which can range from pale, silvery grey to very dark brown. Thus, the greater covert colour is of no real use for field identification of these two taxa.

The retention of a full set of juvenile scapulars has been suggested as a way to detect first-cycle *heinei* in Europe in winter. Figure 6 shows the results of an assessment of the extent of post-juvenile scapular moult of the two taxa. Two main points are evident from this figure. (i) Within each taxon there is considerable variation in the extent of the moult, with each one spanning four or five of the categories. (ii) There is no indication that *heinei* often retain all of their first generation scapulars after October; indeed, none fell within this category whereas a small number (1%) of *canus* did. By increasing sample size it is possible that we might have found some *heinei* with all juvenile scapulars, but it is nonetheless evident that the extent of the post-juvenile moult is not a sound basis for separating first-cycle *heinei* and *canus*.

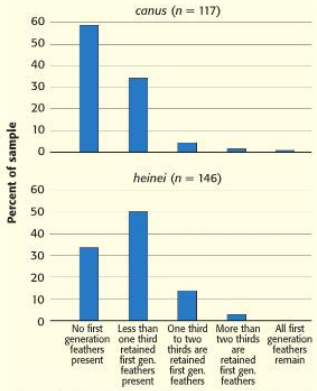

Figure 6. Extent of the post-juvenile moult of first-cycle *canus* and *heinei* Common Gulls. Individual birds were assigned to one of the categories, as a function of the extent of their moult. Categories were broad/simple, such that it was not necessary to count feathers, but simply assess the overall extent of moult.

First-cycle *canus* have a dirty flesh or sometimes blue-grey basal portion to their bill, while *heinei* often have very bright bills; several from Georgia had a rather yellow or orangey tone. Hence bill colour may be useful for field identification, when used to support the plumage features highlighted above.

Discussion and conclusions

The reported existence of intergradation between *canus* and *heinei* (Malling Olsen & Larsson 2003) and the presence of birds with mixed or intermediate characters mean that observers have to be critical with identification of suspected out of range birds. Only birds showing diagnostic combinations of features should be identified, and ideally should also have supporting features.

The distinctive appearance of many adult and second-cycle *heinei* came as something of a surprise to us, given that previous literature suggested that field identification is not possible. The pale eye, for instance, was very obvious and prevalent but has not been mentioned previously. Similarly, many first-cycle birds proved to be rather distinctive. Interestingly though, their distinctiveness was for reasons opposite of those suggested by existing literature. Malling Olsen & Larsson (2003) describe first-cycle *heinei* as having more well marked tails and uppertail coverts than *canus*, a description that puts them closer to *L. c. kamtschatschsensis* in overall appearance. However, our field and museum studies indicate that first-cycle *heinei* are actually paler than *canus*, in terms of tail markings, extent of head and body streaking and underwing. Thus, observers should not be looking for heavily marked birds, but very white ones. We cannot explain why previous literature has suggested they are dark.

Plate 80. First-cycle *heinei* Common Gull, Istanbul, Turkey, 3 January 2014. © *Chris Gibbins*. It came as a surprise to us that, contrary to suggestions in the literature, first-cycle *heinei* are generally paler than *canus*; many, like this one, are strikingly white in fact. The white body and underwing, with just a subtle boa of streaks around the neck, make them look rather beautiful, and give an impression not unlike a first-cycle Caspian Gull. Note also the contrastingly black secondaries.

Identification and status in Scotland

Ringing recoveries have demonstrated that birds from the breeding range of *heinei* occur in Europe in winter (Bengtsson & Pedersen 1998). While our geographic location means that *heinei* is likely to be less frequent in Scotland than on the European mainland, we should still expect some to reach us. Despite considerable effort in recent years, we have yet to find a bird which fully matches all of our criteria; we have seen one or two good candidates but our photographs unfortunately failed to capture certain features in the detail necessary for confident identification. Like larger gulls, it is very important that birders are rigorous and critical in application of the criteria, such that birds failing to tick all the necessary boxes are left unidentified. What the true status of *heinei* is in Scotland is something that only time will tell. The first record is out there waiting to be found, and we hope that this paper helps birders to find it.

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