From the Rarities Committee's files

Identification of Caspian Gull

Part 1: typical birds

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Abstract This paper deals with the identification of the Caspian Gull *Larus cachinnans*. The aim is to synthesise what is currently known about the identification of this species and discuss the appearance of proven and suspected hybrids. The paper is split into two parts. Part 1 deals with the identification of typical *cachinnans* and their separation from Herring *L. argentatus* and Yellow-legged *L. michahellis* Gulls. It is targeted at non-specialists who remain unsure of the most reliable identification criteria, and at local records committees who need a structured basis for assessing claims. The paper covers all age groups, but concentrates particularly on those treated in less detail in the published literature. It includes a summary table that distils key information and ranks criteria according to their value in field identification. Part 2, to be published in a future issue, will deal with the identification of less typical individuals and hybrids.

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Introduction

Rationale and aim

Our perception of the Caspian Gull *Larus cachinnans* as a British bird has changed dramatically in the past 20 years. It has gone from being a poorly known, southeastern race of Herring Gull *L. argentatus* (Grant 1986) to being recognised as a valid species (Leibers *et al.* 2001; Collinson *et al.* 2008) that regularly occurs in Britain. This transformation has been due, in no small part, to the groundbreaking identification studies of Klein (1994), Gruber (1995), Garner (1997), Garner & Quinn (1997) and Jonsson (1998). Subsequent contributions (e.g. Bakker *et al.* 2000, Small 2000, Gibbins 2003) built on this pioneering work. Along with that of Malling Olsen & Larsson (2003), these studies have demystified this gull to the extent that its identification may now be considered rather passé by some birders. But can we really close the book on the identification of *cachinnans*?

An identification review is timely, given that BBRC has now passed assessment of post-1999 claims to local committees. Moreover, there is anecdotal evidence that many observers are still struggling with the identification of Caspian Gull. Understandably, this is chiefly the case in areas where *cachinnans* remains truly rare and where observers have had little chance to gain first-hand experience. The key problems are confusion over the most reliable identification features and a failure to appreciate fully the normal variability shown by *cachinnans* and similar taxa. Some identification problems merely reflect the extremes of variation shown by *cachinnans*; others stem from hybrids, originating from the mixed-species colonies in central Europe (Neubauer *et al.* 2009); and some problems may occur with birds that have no *cachinnans* genes but which represent the extremes of variation in other species. We have arrived at a point where we should take stock of what we know of the identification of typical *cachinnans* and begin to look more closely at the identification of less typical individuals and their separation from hybrids. Are there clear dividing lines, and if so where are they?

The aim of this paper is to provide a distillation of known criteria, assess their merits and, for the first time, discuss the identification of less typical and hybrid individuals. We hope that it will be of value to both birders and local records committees. Part 1 deals with typical individuals. We describe in detail the plumage and structure of typical birds, emphasising key average differences from Herring Gull and Yellow-legged Gull *L. michahellis*; we outline normal variation but leave the extremes aside. Appendix 1 summarises key distinctions between typical *cachinnans*, *michahellis* and Herring Gull and ranks criteria according to their relative importance. It should not be used in isolation, but as a convenient summary and as an entry point to the details in the text. Less typical and extreme individuals will be dealt with in part 2, where we shall also discuss the identification of hybrids; this will be published in a future issue.

To date, literature on *cachinnans* has tended to focus on one or two age groups – the first-winter and adult birds that are found most regularly in Britain. To redress this balance, we pay particular attention to other age groups. The paper is intended primarily for birders in Britain, so does not discuss Heuglin's Gull *L. fuscus heuglini*. This taxon can look remarkably *cachinnans*-like in structure and some immature plumages. However, serious confusion is unlikely: *heuglini* has a different call, dark inner first-generation primaries, and once adult-type grey feathers develop their tone is much darker than those of *cachinnans*.

Circularity and the empirical basis of this paper

Circular reasoning (bird A is a Caspian Gull, it shows features X, Y and Z, therefore X, Y and Z are features of Caspian Gull) may undermine attempts to develop identification criteria. Circularity can be avoided if: (a) the species is studied in the core of its accepted breeding range, where potential confusion species are absent and hybridisation is not a significant issue; or (b) the sample consists only of individuals of known provenance (ringed birds). Much of our knowledge of *cachinnans* is actually based on unringed birds observed in western Europe in winter, well away from core breeding areas and on the edge of the wintering range. Circularity is thus a potential problem, especially because

of the risk of incorporating an unknown number of hybrids into the '*cachinnans*' sample. Moreover, as we may be picking up only the most striking birds in Europe, there is a danger of developing criteria based on an unrepresentative sample. Studies of *cachinnans* wintering in the Middle East suffer similar problems, owing to the presence of extremely similar taxa whose identification has yet to be fully resolved (notably *barabensis*). Access to the heart of the breeding range of *cachinnans*, where both Herring and Yellow-legged Gulls are absent, is difficult and few western ornithologists have studied the species there. Consequently, we are largely constrained to studying *cachinnans* in wintering areas and must be aware of the problem of circular reasoning.

Circularity is most problematic with less typical individuals. In part 2 we therefore use ringed individuals of known provenance to help to develop criteria for the separation of hybrid from pure individuals. Circularity is less of an issue with the 'classic' birds that are the focus of part 1. Nonetheless, to study *cachinnans* we have travelled to parts of the breeding range (e.g. several trips to the Danube Delta, Romania) and areas of the southern Baltic where *cachinnans* occurs in large numbers in the immediate post-breeding period and can be the most abundant large gull at some localities (e.g. on the Curonian Spit in Lithuania). The majority of plates show birds from these areas. Since the paper is aimed at British birders, it may seem that examples of *cachinnans* photographed in Britain are under-represented in the plates; this is a product of the need to limit the problems of circularity.

'Herring Gull' is used here to refer collectively to both races; '*argentatus*' is used when referring specifically to the Scandinavian/Baltic race and '*argenteus*' when referring to the British/west European race. Yellow-legged Gull is referred to as '*michahellis*' and relates only to Mediterranean birds. The Atlantic Island populations of Yellow-legged Gull represent a taxon whose status is still debatable and which, in any case, have rather dark immature plumages and structural traits that make them unlikely to be confused with *cachinnans*. We treat *cachinnans* as monotypic, as the extent and nature of geographic plumage variation has yet to be firmly established. Nonetheless, future work may reveal consistent differences between eastern and western birds (see section on adults). Fig. 1 illustrates key terms used in the text.

Patterns of occurrence in Britain

It is difficult to assess the number of *cachinnans* currently occurring in Britain each year. This relates chiefly to the fact that the species is now so abundant in some areas that observers do not necessarily report all sightings. Nonetheless, it is clear that *cachinnans* is recorded more frequently now than in the past and that there are strong seasonal and geographic patterns to its occurrence. Caspian Gulls are most frequent in southern England, particularly the southeast. The first birds arrive in late

Ruud Altenburg

48. A lone Caspian Gull rests with a group of Herring Gulls on a landfill site in Poland (17 Jan 2004). Can you see it? It is white-headed, dark-eyed and is holding its bill distinctly downwards. Some fine 'pencil' streaks are visible on the lower rear neck. It is below-right of centre.

summer and early autumn, when the majority of records come from the coastline between Kent and Suffolk. Juvenile *cachinnans* now occur regularly in early August, when many young British Herring Gulls are not even fully independent. These *cachinnans* are not necessarily from the nearest breeding areas, since juveniles may disperse far from their natal colony soon after reaching independence. For example, a bird at Espoo, Finland, on 26th July 2004 had been ringed as a pullus on 27th May on the River Dnper in southern Ukraine (49°46'N 31°28'E). Consequently, observers should be looking out for first-calendar-year (1CY) *cachinnans* from late July onwards. Post-breeding adults tend not to be seen in Britain until later in the autumn; this delayed arrival may be linked to the progression of primary moult.

Following their arrival, many birds move inland and disperse northwards as the autumn and winter progress. They are supplemented by new arrivals, perhaps linked to cold weather on the Continent. For example, hundreds of *cachinnans* are present at lagoons along the coast of Lithuania in autumn but these disappear in midwinter, once the water freezes (Vytautas Pareigis pers. comm.). The largest numbers of *cachinnans* in Britain are recorded in winter, with birds seen regularly on favoured landfill sites and in reservoir roosts in southern and central England. However, they remain distinctly scarce in north and northwest Britain; there are few records north of the River Tees and the species remains extremely rare in Scotland (fewer than five records) and Ireland. Very few are recorded in the summer months. This probably reflects the movement of birds back to the Continent, but perhaps also the relative difficulty of identifying moulting immatures in summer and the fact that gull-watching in Britain tends to be a winter pursuit.

Identification

Size and structure

Caspian Gulls can be strikingly large, tall birds, but most individuals are similar in length and weight to Herring Gull and so do not stand out on size alone. However, *cachinnans* is structurally distinctive at all ages,

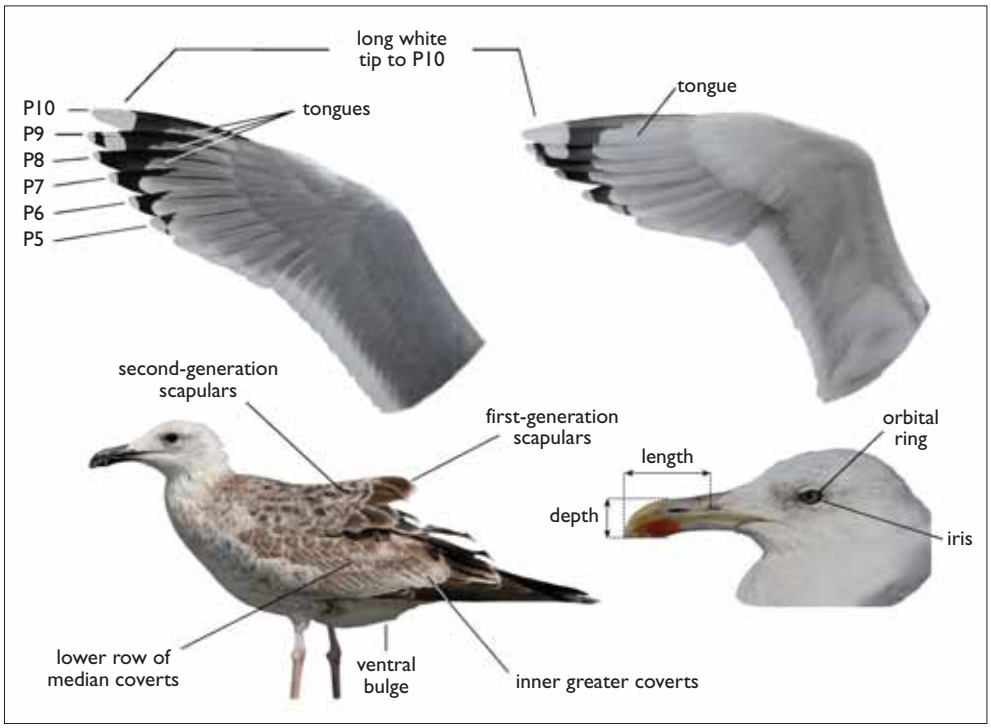

Fig. 1. Key terms, feather groups and plumage features referred to in the text. All images show *cachinnans*: upper two are from an adult (Latvia, April 2009), lower left is a 1CY (Romania, September 2006), lower right is an adult (Romania, September 2008). All images *Chris Gibbins*.

often described as 'lanky' or 'gangly'. It has relatively long, thin-looking legs (the extra length is particularly noticeable in the tibia) and often seems to stand taller than Herring Gull. Next to *michahellis*, its legs tend to look longer and less robust. However, some *michahellis* are long-legged compared with Herring Gulls, so observers should be mindful of this when confronted with an apparently lanky bird. There are marked differences in size and structure between male and female *cachinnans* (see Malling Olsen & Larsson 2003) and these differences may be more marked than for other large gulls (Gibbins 2003). Some, presumably males, can look incredibly long-legged, yet others, presumably females, can actually look rather short-legged. Consequently, birders and committees should not automatically dismiss a bird that lacks the textbook long-legged look.

The head can appear oddly small for the body, generally looks pear-shaped, and normally lacks the bulky feel of the head of Herring Gull and (especially) *michahellis*. The head often looks 'anorexic', as though there is little flesh covering the skull; this means that head shape equates more closely to skull shape than for other large gulls. The often-quoted, but perhaps over-emphasised, 'snouty' look is due to a combination of the long sloping forehead and the relatively long, slim bill, which gives the front of the head a tapering, 'pulled-out' appearance. This snouty look can be a striking and defining feature, but it is important to note that not all *cachinnans* show it. For a significant proportion of (presumed) females, the bill length is unremarkable, and, because of their higher, more rounded heads, they may recall Common Gull *L. canus*. Conversely, some larger males can have a robust bill and a solid, more angular head that overlaps in appearance with both Herring and Yellow-legged Gulls. Yellow-legged Gulls typically have a deeper, blunter bill and a larger, more angular head, yet, as with other gulls, males and females can be rather different, and the slighter individuals overlap with Herring and even Lesser Black-backed Gulls *L. fuscus*. Furthermore, *michahellis* from the Atlantic coast of the Iberian Peninsula tend to be smaller, less robust and less rangy than Mediterranean birds.

Most Caspian Gulls appear longer-billed than Herring Gull and *michahellis*. They have a more gentle, even curve to the culmen and a less obvious gonydeal angle; unlike Herring Gull and *michahellis* there is little or no bulging at the gonys and the general impression is of a gently tapering bill. Data in Malling Olsen & Larsson (2003) indicate that there is actually much overlap in the bill length of *cachinnans* and Herring Gull (males: Herring 46.4–64.9 mm, mean 54.6, *cachinnans* 50.7–63.5 mm, mean 56.3; females: Herring 44.9–59.0 mm, mean 49.7, *cachinnans* 48.0–59.5 mm, mean 51.9). Thus, the longer-billed impression given by *cachinnans* results from the interaction of its shape, depth and length, accentuated in some birds by the pear-shaped head and long neck.

Gibbins (2003) assessed the ratio between bill length and gonys depth (measured from photographs; length and depth as indicated in fig. 1) in a sample of Herring and Caspian Gulls (n = 68). Most Herring Gulls were scored as having a ratio of 1.75–2.00 whereas most *cachinnans* were scored as 2.25–2.50. Thus for *cachinnans* the bill is most often more than twice as long as its maximum depth, while for Herring it is most frequently a little less than twice its maximum depth. Some *cachinnans* can be extremely long- and slim-billed, with ratios up to 3.25, compared with a maximum of 2.5 in Herring. Note that bill deformity is not uncommon among gulls (especially first-years), so a long, slim bill is not, in itself, sufficient for identification or record acceptance.

The body shape of *cachinnans* is subtly distinctive. One of the most noticeable features is the attenuated rear end; this is a consequence of a flat back, limited or absent tertial step and relatively long wings. The tip of the tail falls one-third to halfway along the exposed primaries, while on Herring Gull it usually reaches halfway or slightly further (this comparison holds good only for birds that are not moulting their outer primaries). Herring Gulls and *michahellis* are generally less attenuated and have a more prominent tertial step although, especially in hot weather, *michahellis* can appear to have a very long rear end. The belly profile of *cachinnans* often continues behind the legs as a ventral bulge that sags below the wings, making the

underbody resemble a boat keel in shape. This may be obvious for some birds yet not apparent for others. At rest, compared with Herring Gull and most *michahellis*, *cachinnans* has a higher chest, with a slightly 'bosomed' effect, as if holding its breath. This stance is exaggerated by the long wings and ventral bulge, which, along with the head and bill shape, give the most typical birds an instantly recognisable jizz.

In flight, the long- and broad-winged appearance of *cachinnans* may catch the eye of regular gull-watchers. Compared with Herring Gull and *michahellis*, the greater length of the head, bill and neck extension in front of the wings is also noticeable.

To summarise, the most typical *cachinnans* have a striking jizz, much more eye-catching than that of *michahellis*. They can be a large yet elegant gull, easily located in mixed flocks. However, some lack the rangy/gangly/snouty character usually associated with the species and so are much less distinctive. Weather conditions and posture influence appearance, and in hot conditions, when their feathers are sleeked down, *cachinnans* may look very slim, long-legged and lanky. On cold winter days they look quite different, and experience from birding holidays in the Middle East may not translate well to Britain.

Behaviour and voice

Caspian Gulls mix freely with other large gulls in both feeding and resting areas (plate 48). When feeding on rubbish dumps, large individuals are often extremely aggressive (more so than Herring and *michahellis*) and dominate favoured patches. Caspian Gulls habitually raise their wings, especially in aggressive encounters, and this can be an easy way to locate them in groups of feeding gulls.

Their calls (appendix 1) also attract attention and can be heard clearly even above the noise created by large numbers of squabbling Herring Gulls. The importance of the long call and long-call posture in separating *cachinnans* from other large gulls has been rather underplayed in the literature and it is clear that not all birders are aware of their value. Calls are always difficult to capture in words and the long call of *cachinnans* has been described in various ways. The full long call is a loud, rapid 'haaa-haaa-haa-ha-ha-ha-ha-ha-ha-ha', with a characteristic nasal, laughing quality, very different from Herring Gull's. Once heard it is easily recognised. Adults frequently give shorter versions of this call (the last six or seven notes) during aggressive encounters. Evidence suggests that the full long call takes time to develop: in August and September, 1CY birds give a much more subdued version (Hannu Koskinen, pers. comm., CG pers. obs.). Juveniles often also give screeching calls, especially

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49. Adult Caspian Gull, Latvia, 11 Apr 2009. This large male was typically aggressive and, as pictured here, incessantly gave the rapid, laughing call which is diagnostic of Caspian Gull. Unlike Yellow-legged and Herring, Caspian Gulls hold their wings open when giving the long call – the so-called 'albatross posture'. The characteristic primary pattern is visible here: note the grey tongues eating into the black wing-tip on the upperside of P7–10 and the long silvery tongue on the underside of P10. Like Yellow-legged Gull, Caspian usually has a broad, black subterminal band extending unbroken across P5, but there is much individual variation and this bird has only isolated black marks on the outer and inner webs.

when coming in to land to join a feeding melee. These calls are very high-pitched (they have a clear squealing quality) and, once heard, are distinct from the whine of juvenile Herring Gulls.

The full long call is frequently accompanied by the 'albatross posture', with wings open and held back and the head raised progressively as the notes are delivered (plate 49). Herring Gulls and *michahellis* keep their wings closed when long-calling, so this is a key distinction. Herring Gulls raise their heads only to approximately 45° when long-calling, while both *cachinnans* and *michahellis* often (but not always) raise them to 90°.

Juveniles (1CY birds in July–September)

Moult and wear

This section deals with a period when both fully juvenile birds and individuals moulting into first-winter plumage may be encountered. Plates 50–58 show a selection of birds photographed during this period; captions emphasise key identification features.

Caspian Gulls in fully juvenile plumage may be seen in July and early August, but by mid August many have commenced their post-juvenile moult (the partial moult into first-winter plumage). By early September it is rare to find a *cachinnans* with a full set of first-generation feathers – most have at least some new scapulars and some have a few new coverts and tertials.

Both *cachinnans* and *michahellis* hatch much earlier in the year than Herring Gulls and this contributes to their earlier post-juvenile moult. The stage of scapular moult seen in early to mid September among 1CY *cachinnans* is not reached until late October in many British Herring Gulls. The difference between *cachinnans* and northern *argentatus* is even greater, with many of the latter retaining some or all of their first-generation scapulars throughout the winter. The extent of wear and fading differs among the species, but is likely to be a function of environmental conditions in breeding areas as well as hatch timing. As with *michahellis*, it is not unusual to see *cachinnans* in early September with clear signs of wear on their first-generation feathers; at this time, young Herring Gulls are still in pristine condition. Moult timing and wear can thus be very useful in the identification of 1CY *cachinnans* (and *michahellis*) in a British context; before mid September, any 1CY large gull whose scapulars are mainly second-generation is well worth a closer look. In addition, it is extremely rare for Herring Gulls to include coverts or tertials in the post-juvenile moult (<1% of individuals; CG unpublished data from North-east Scotland). Consequently, any 1CY bird in western Europe with second-generation coverts or tertials and clear signs of wear on remaining first-generation feathers may well prove to be *cachinnans* or *michahellis.*

Plumage

Fully juvenile *cachinnans* (i.e. those with only first-generation feathers) are often quite different from the 1CY birds seen in western Europe in winter; although on average cleaner-looking than Herring Gulls, they are not as strikingly white as 1CYs in midwinter. Relative to Herring Gull, textbook juvenile *cachinnans* have fewer streaks and blotches on the head and body, and their upperparts have a rather washed-out, 'watercolour' look. The first-generation scapulars and wing-coverts are typically light grey-brown ('wet mud') in colour, with narrow, simple, pale fringes which tend to lack the large pale notches and indentations found on Herring Gull and many *michahellis*. Rusty tones are sometimes present on the lower rear neck, but otherwise the overall colour is a rather greyish 'mouse brown', lacking sharp contrasts. The generally soft tones and featureless pattern can sometimes be more reminiscent of juvenile Common Gull than Herring Gull. Juvenile *michahellis* are distinctly darker, more chocolatey brown and often have a dark eye-patch that contrasts with an otherwise white head.

The most striking *cachinnans* have greater coverts that completely lack pale notches; instead, each feather has a dark basal section and a diffuse pale tip that, at a distance, forms a striking pale wing-bar shaped rather like the Nike 'swoosh'. The exact pattern on the greater coverts varies subtly among individuals (e.g. plates 50–52), but the most typical birds have only weak, diffuse and irregular notches on the inner greater

50. 1CY (juv moulting to 1W) Caspian Gull, Latvia, 15 Aug 2008. A typical, elegant individual. Apart from three or four new upper scapulars, this bird is in full juvenile plumage.

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51. 1CY (juv moulting to 1W) Caspian Gull, Romania, 17 Sep 2008. Another typical individual. Note the simple narrow fringes to almost all feathers, lacking strong notches; compare the greater-covert and tertial patterns with those of the Herring Gull in plate 53. The jizz is distinctive: it is a large but elegant bird, with a small, pear-shaped head, long tibia and a relatively slender bill which lacks strong contours. Note the ventral bulge, also apparent on the birds in plates 50 & 52.

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52. 1CY (juv moulting to 1W) Caspian Gull, Latvia, 12 Sep 2009. This bird has more second-generation scapulars than the previous individuals. The diffuse pale distal portion of the inner 6–7 greater coverts contrasts with their dark bases and forms a wing-bar. On this individual there is also a hint of a pale bar across the lower median coverts.

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53. 1CY (juv) Herring Gull, 14 Aug 2008. Typical juv Herring Gulls such as this should pose no identification problems. Note the stocky, compact shape and heavily notched overall appearance, with the notches especially obvious on the greater coverts. The tertials and scapulars have pale fringes that have clear indentations.

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54. 1CY (juv) Yellow-legged Gull, Spain, 13 Aug 2009. A typical, strongly marked *michahellis*. The tertials have simple, sharply defined narrow fringes that extend only around the distal part of the feather, and the greater coverts have extremely obvious notches. There is a dark mask around the eye.

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55. 1CY (juv) Caspian Gull, Romania, 2 Sep 2006. A striking bird, with a well-marked tail pattern and an extensively white underwing. The 'window' in the inner primaries is paler and more distinct than on *michahellis* but less striking than on most Herring Gulls. Note the pale 'lozenges' on the outer webs of P2 and P3: these are less frequently present on the inner primaries of *michahellis* and, when they are, are typically smaller and less prominent than on this *cachinnans*.

56. 1CY (juv moulting to 1W) Caspian Gull, Romania, 14 Sept 2008. This is an example of a bird with darker inner primaries (overlapping with *michahellis*); note also that it has fine but extensive pale brown barring on the underwing-coverts. This is the same individual as shown in plate 51.

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57. 1CY (juv) Herring Gull, North-east Scotland, 2 Nov 2008. A typical individual showing an extensive pale inner-primary window and heavily marked rump, uppertail-coverts and tail base. Despite the late date, this bird appears not yet to have any second-generation feathers (hence, juvenile plumage). The inner primaries have a complex pattern of dark arrowheads and crossbars on a pale ground colour.

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58. 1CY (juv moulting to 1W) Yellow-legged Gull, Romania, 14 Sep 2008. The underwing is much darker than on *cachinnans*, with a bold pattern of alternate dark and pale bands. The inner webs to the inner primaries of this individual are at the paler end of the scale, but note that it lacks pale lozenges on the outer webs of the inner primaries.

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coverts, much less obvious than those of Herring Gull and *michahellis*. Normally, the pattern on the inner greater coverts appears to be more vermiculation than notching. A bird with strongly notched greater coverts should be checked carefully for other anomalous features. Caution is needed with *michahellis*, as some lack notches on their greater coverts (instead, some simply have sharp pale fringes). An oft-quoted feature of *cachinnans* during their first winter (1CY/2CY birds) is the presence of a second pale wing-bar, on the lowest row of median coverts. This, however, is rarely evident on fresh juveniles in July and August.

The first-generation tertials of *cachinnans* typically have a muddy-brown base and a diffuse pale fringe around the distal portion of the feather. The pale fringe sometimes coalesces with pale oval patches in the central part of the feather to form an extensive pale tip, reminiscent of the pattern on a juvenile Common Gull (e.g. plate 50). The exact pattern varies subtly but the key point is that the pale fringe lacks the notches of Herring Gull (plate 53) and is generally broader and less sharply defined than shown by typical *michahellis* (plate 54).

Most juvenile *cachinnans* are as striking in flight as they are on the ground (plates 55 & 56). From above and below, the general impression is clearly different from Herring Gull (plate 57), and while they look similar to *michahellis* from above, their underside is quite different. The relatively white underwing is perhaps the most obvious in-flight feature of *cachinnans*. This is created by the off-white ground colour to the underwing-coverts; the secondaries and primaries are also paler (silvery to off-white) than those of Herring and *michahellis*. Most *cachinnans* have a degree of soft, grey-brown barring on the axillaries and underwing-coverts, so the underwing is not wholly white (e.g. plate 56). The underwing-coverts of Herring Gull are much more extensively and strongly marked with brown and the general impression is therefore of a much darker and rather uniform underwing. In *michahellis* (plate 58) the underwing-coverts are heavily marked with dark, chocolate brown over a pale base colour, often creating a contrasting pattern of light and dark bands. However, some *michahellis* lack such extensive dark marks so from a distance their underwings can look surprisingly pale. The incidence of pale underwings may be more prevalent in eastern populations of *michahellis*.

The underwing of some *cachinnans* is strikingly white, and photographs suggest that some birds drop some underwing-coverts and axillaries during their first winter; this exposes the paler bases to remaining feathers and heightens the appearance of a white underwing. Conversely, observations on breeding lakes in Romania (i.e. birds with known provenance) indicate that some 1CY *cachinnans* can have quite well-marked underwings, with dark brown barring and spotting across many feathers, especially the lesser underwing-coverts and axillaries. Such dark birds tend to have more contrasting underwings than Herring Gulls, as the brown barring sits on an otherwise rather pale ground colour. This creates a degree of overlap with *michahellis*.

The contrasting black-and-white pattern of the rump and tail of *cachinnans* is striking in flight and often likened to that of a Rough-legged Buzzard *Buteo lagopus*. The general pattern is more like that of *michahellis* than Herring Gull. Juvenile Herring Gulls show a variable but usually extensive scatter of dark bars and spots on the rump, uppertail-coverts and tail base. This reduces the contrast between these areas and the broader, more diffuse tail band, which averages a little browner than that of *cachinnans* and *michahellis*. Both *cachinnans* and *michahellis* have a very dark (black-looking) tail band that contrasts strongly with the white rump and tail base. Malling Olsen & Larsson (2003) stated that the tail band of *cachinnans* is 'fuller and more even' than that of *michahellis*. Certainly, the tail band of many *michahellis* is uneven, being noticeably deeper on the central tail feathers. In general, the tail band of *cachinnans is* more even in width but on some it is clearly deepest in the middle, and hence uneven. While many *cachinnans* the tail band is deep across its whole width, on some it is no fuller than for *michahellis*. In short, the depth and evenness of the dark tail band are thus of no real value for the separation of *cachinnans* and *michahellis*. There is a greater tendency for the dark tail band of

cachinnans to break into a series of narrow, regular bars along its basal edge (e.g. plate 55) while the white tips to the tail feathers are deeper in *michahellis* than *cachinnans*, forming a more striking terminal band (Jonsson 1998).

The pale 'window' on the inner 4–5 primaries is generally less prominent in *cachinnans* than Herring Gull. The (ranked) order of window prominence runs from Herring to *cachinnans* to *michahellis* to Lesser Black-backed Gull (virtually no window). In Herring Gull, the inner primaries (both inner and outer webs) are much paler brown than the outer primaries, creating an obvious panel; in *michahellis*, the outer webs of all the primaries are much more similar in tone and only the inner webs of the inner primaries are slightly paler, giving a much less obvious window. In *cachinnans* the pattern is rather variable but overall intermediate between Herring and *michahellis*: on many, the inner webs of the inner primaries are distinctly paler than the outer webs, while the outer webs of these feathers are almost as dark as the outer primaries. This produces a more contrasting, 'Venetian-blind' pattern than seen on Herring Gull and *michahellis*. However, darker *cachinnans* are very similar to *michahellis*, with only slightly paler inner webs to the inner primaries. Occasionally, the outer webs of the inner primaries of *cachinnans* are also paler than the outer wing, so rather than a Venetian-blind pattern the impression is of a subtle, pale panel.

There are also some differences among the species in the markings at the tip of the inner 4–5 primaries. Herring Gulls normally have a complex pattern: individual feathers have a mixture of subtle, diffuse pale areas on both webs, a dark shaft streak and arrowhead, often with a crossbar (plate 57). The precise pattern varies individually, but the key point is the complexity. There is no such complex patterning to the inner primaries of *michahellis*, which simply have a uniform dark outer and a fractionally paler inner web (plate 58). Occasionally, *michahellis* have a small and subtly paler oval patch on the outer and/or inner web of some of their inner primaries (P2–P4/5). Contrary to some literature (e.g. Garner & Quinn 1997), *cachinnans* frequently also show such pale patches. In fact, a large proportion have clear, sharply defined lozenge- or cigar-shaped patches on the outer web of the inner primaries (e.g. plate 55) which are more striking than those of *michahellis*. These are often accompanied by a more diffuse oval patch on the inner web. When present, these pale areas tend to break up the Venetian-blind pattern. However, darker *cachinnans* lack pale patches in their inner primaries and so resemble typical *michahellis*. In general, it seems that both *cachinnans* and *michahellis* have the outer web of P1 entirely dark, with pale patches present on only P2–P4/5, whereas Herring Gull has pale areas as well on P1.

Overall, the pattern on the inner primaries is useful for separating Herring Gull from *michahellis*. Typically, *cachinnans* sits somewhere between the two, but extremes overlap with darker Herring Gulls and lighter *michahellis*, so the pattern of the inner primaries is only a supportive feature. Assessment of the primary pattern requires good-quality flight photographs.

Bare parts

The bill of 1CY *cachinnans* usually appears largely black, with a pinkish base to the lower (and sometimes the upper) mandible visible at close range. In extreme cases, the bill of *cachinnans* (and *michahellis*) can be extensively pale in mid September. This seems to be a more common feature in these species than in Herring Gull. The legs of 1CY *cachinnans* are a pale, washed-out flesh colour, sometimes appearing greyish or bluish flesh. The iris is dark brown.

Birds in their first winter (1CY/2CY birds in October–April)

At this age, *cachinnans* are arguably at their most striking and easy to identify (plates 59 & 60). The general impression is of a bird with an extremely white head and body, pale and rather delicately marked scapulars, and wing-coverts and tertials that, especially at a distance, look as though they have been painted softly in watercolours.

By October, *cachinnans* has second-generation mantle feathers, scapulars and, in some birds, coverts and tertials, representing the progression from juvenile to first-winter plumage. Second-generation scapulars may

Hannu Koskinen

59. 1CY (1W) Caspian Gull, Finland, 20 Oct 2008. This is a rather typical, striking 1W *cachinnans*. Note that, for example, the second-generation scapulars have a silvery tone and only a narrow dark subterminal band and shaft streak. This bird has not (at least by this date) included any coverts or tertials in its post-juvenile moult.

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60. 2CY (1W) Caspian Gull, Latvia, 9 Apr 2009. This bird has the typical pale and silvery overall appearance of late 1W *cachinnans*. Its second-generation scapulars lack strong anchors. It has gained many new wing-coverts during post-juv moult and by early spring these are faded and blend in with remaining first-generation ones. The lower tertials are first-generation, but the upper ones are greyer, second-generation ones, probably moulted during the post-juv moult. This combination of moult and plumage pattern is typical of 1W Caspian but not of Herring Gull.

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61. 2CY (1W) Yellow-legged Gull, Spain, 16 Apr 2006. The post-juv moult of *michahellis* is similar to that of *cachinnans*, but typically the second-generation feathers (visible here in the scapulars, tertials and coverts) are strongly marked with bars and anchors. Yellow-legged Gull includes 0–100% of its coverts in the post-juv moult; this bird has had a more extensive moult than many and only a few first-generation feathers are visible in the wing. Herring Gulls do not look like this until mid July of their second calendar-year.

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62. 2CY (1W) Herring Gull, Latvia, 13 Apr 2009. Note the strongly marked scapulars and heavily notched greater coverts, as well as the compact jizz.

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63. 2CY (1W) Caspian Gull, UAE, 7 Feb 2009. Some Caspian Gulls, like this one, have rather heavily marked second-generation scapulars and overlap with Herring Gulls in this respect. However, note the second-generation lesser and median coverts dotted within the first-generation ones, and the characteristic jizz.

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64. 2CY (1W) Caspian Gull, UAE, March 2007. By early spring, some 1W Caspian Gulls are extremely pale and abraded, especially those that have wintered in hotter climates. The once blackish areas are faded brown and the sun-bleached wing-coverts lack any clear pattern. The underwing is gleaming white.

be highly distinctive, typically showing a silvery-grey ground colour (paler grey than those of adults) with a simple dark shaft streak and either a rather diffuse subterminal anchor pattern or a dark basal diamond; most lack strong crossbarring. The silvery ground colour fades rapidly as the winter progresses and the dark markings become more subdued, leading to an increasingly pale and uniform-looking bird. On many *cachinnans*, the lowest row of second-generation scapulars appear paler and more lightly marked than the rest, and hence form a pale band separating the upper scapulars from the brown wing-coverts. Younger feathers in a moult sequence may differ in pattern from older ones (Howell 2001), which may explain the presence of this pale band.

Typically, *michahellis* are quite different (plate 61): their second-generation scapulars are strongly marked with heavy crossbars and a broad, dark anchor near the tip. The same relative differences occur on any new wing-coverts or tertials moulted in during the autumn: *cachinnans* usually have simple and subtle patterns, *michahellis* strong and bold ones. The pattern on the second-generation scapulars of Herring Gull is extremely variable (plate 62) but in broad terms is intermediate between that of *cachinnans* and *michahellis*. The ground colour of each feather ranges from pale, sandy brown to mid brown, and most have darker crossbars and an anchor pattern towards the tip. It is extremely rare (perhaps unknown) for genetically pure Herring Gulls to have the silver tone and simple dark shaft streak of classic *cachinnans.* Importantly, however, a significant proportion of *cachinnans* have rather heavily marked second-generation scapulars (e.g. plate 63).

The striking appearance of many *cachinnans* during their first winter stems from a combination of the patterns on new second-generation feathers and wear on remaining first-generation ones. Wear is especially evident on birds reared earlier in more southerly and easterly areas, where sun bleaching and sand blasting (on dry beaches) take their toll on feather condition. Even in September, 1CY *cachinnans* around the Black Sea can be rather worn and shabby. Light 'pencil' streaking on the head and body progressively wears away, and can give rise to a startlingly white appearance, compared with Herring Gull. By midwinter, any remaining streaks are confined to a neat necklace around the lower rear neck. The white head isolates and emphasises the dark eye. Wear tends to simplify and thus emphasise the pattern on remaining first-generation greater coverts (dark base, pale distal bar) and, on some, the second pale bar (on the lowest row of median coverts) becomes prominent. The fact that this second bar is less frequently apparent on the same feathers in late summer suggests that its prominence is related to wear and fading.

By spring, most *cachinnans* look a little paler than in autumn, with a more subdued contrast between the whites, greys, browns and blacks. The first-generation feathers can look rather washed-out, with the feather patterning less clear. For those individuals that included some coverts or tertials in the post-juvenile moult, these (now somewhat worn) feathers show up as discontinuities on an otherwise juvenile wing (plate 60). On some, pure grey feathers are distributed randomly across the scapulars (these may be third-generation feathers grown during the winter), giving an overall impression quite unlike Herring Gull; in fact, such advanced *cachinnans* (and especially those which also have some second-generation coverts and tertials) are more likely to be mistaken for a second-winter Herring Gull than a first-winter. The plumage of *michahellis* also fades over the winter and those that have retained their first-generation coverts and tertials can be a trap for the unwary. Despite their original notched patterns, the worn coverts of *michahellis* can become surprisingly uniform by spring. Similarly, tertial wear makes the feather pattern more difficult to discern and so it is effectively inseparable from that of *cachinnans.* The rangy appearance of some *michahellis* means that observers faced with a worn, putative *cachinnans* in the late winter/early spring period should be wary. Careful assessments of bill shape, head proportions, call and details of the underwing are critical at this time.

During their first autumn and winter, a small proportion of *michahellis* moult their tail feathers (certainly less than 20%, and

perhaps less than 10%; Hannu Koskinen and Visa Rauste pers. comm., based on studies in Italy and Greece respectively). Herring Gulls (many thousands observed) and *cachinnans* in northwest Europe (c. 100 first-winters observed) normally do not, unless rectrices are lost or damaged. Thus, a late winter/early spring 2CY is unlikely to be *cachinnans* if it has new tail feathers – it will most likely be *michahellis*. However, the wintering range of *cachinnans* is large and, for example, those wintering in the Persian Gulf may follow a different strategy; insufficient data are available to assess this.

As the remiges and rectrices are not (normally) included in the post-juvenile moult of *cachinnans*, the wing and tail patterns of first-winters are the same as described above for juveniles. However, by late winter *cachinnans* tend to look paler in flight than in the autumn (as a consequence of wear and fading) and so the primary window or Venetian-blind effect often appears more contrasting. The underwing also looks paler, more gleaming white and more sparsely marked than earlier in the winter (plate 64). This suggests that at least some underwing-coverts and axillaries are dropped or replaced with pure white feathers over the winter.

Bare parts

The bill remains black with a variable amount of dirty pink on the basal portion. Close views may reveal a pale tip, which can suggest that birds have a diffuse, subterminal dark band. There is a tendency for *cachinnans* to have a more extensively pale bill than *michahellis* during the first winter, but this is far from diagnostic. The legs and irides are as described for juveniles.

Birds in their first summer (2CY birds in May–September)

Moult

At some point in the spring or early summer, 2CY *cachinnans* drop their innermost primary; this signals the start of their first moult of the wings and tail. In large gulls, what was traditionally seen as the first complete moult (e.g. Grant 1986) is now regarded as the continuation of a cycle of moult that starts in autumn with the partial, post-juvenile moult (e.g. Howell 2001). Large gulls in western Europe generally do not moult during midwinter, so there is a clear break between the end of post-juvenile moult and the start of wing and tail moult several months later. However, some 2CY *cachinnans* in the Middle East do moult in winter (pers. obs.). Moult has not been studied intensively in *cachinnans* and it is difficult to be sure whether the species' post-juvenile and first complete moults are best regarded as two separate events or part of the same continuous cycle. What *is* clear is that the identification of worn, faded 2CY birds in spring does not necessarily become easier once they start moulting – as with both Herring Gull and *michahellis*, the pattern on new feathers varies enormously from bird to bird and truly diagnostic markings are lacking.

Separation of *cachinnans*, *michahellis* and Herring Gull is arguably most difficult during the summer moult period. This is because, once in heavy moult, all three species can look tatty, and their jizz is affected by missing feathers. In Britain, the difficulty of separating these three species at this time is compounded by the fact that many birders are unfamiliar with the identification of worn and/or moulting first-summers because they spend more time looking at gulls in the winter. Importantly, many Herring Gulls look white-headed at this time, so a white-headed appearance is not a particularly useful identification feature.

Plumage

New scapulars grown during the summer may be grey and hence adult-like, but other birds show heavy spotting and anchoring; the same applies to new lesser and median coverts. The new tertials and greater coverts have a rather more consistent pattern, and to a degree resemble first-generation ones. On many *cachinnans* the new tertials have a plain, dark brown base and a diffuse, off-white distal portion. The greater coverts generally lack strong barring and anchoring, instead having a rather uniform greyish to mid-brown wash basally and a diffuse pale fringe and finely vermiculated tip. As with first-generation feathers, there is a pale bar across the greater coverts and often also on the lower medians. The greater-covert and tertial patterns are unlike those of the most

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65. 2CY (1S) Caspian Gull, Latvia, 17 Aug 2008. This is an example of the more distinctive plumage type seen in late summer, with some silvery-grey (probably third-generation) mantle feathers and lower scapulars on the right side. The greater coverts are a rather uniform mid brown. The new (dark) second-generation primaries have much more rounded tips than the remaining first-generation ones. This large, elegant bird should not pose any identification problems.

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66. 2CY (1S) Caspian Gull, Lithuania, 10 Sep 2009.

67. 2CY (1S) Yellow-legged Gull, Spain, 15 Aug 2009. The plumage is quite different from 2CY Herring Gull (e.g. many clear grey scapulars) but overlaps to some degree with *cachinnans*. Best separated using jizz and the pale eye.

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68. 2CY (1S) Yellow-legged Gull, Spain, 15 Aug 2009. First-summer *michahellis* show bewildering variability. This bird is a rather typical example of the more heavily marked type.

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69. 2CY (1S) Herring Gulls, Latvia, 14 Aug 2008. Herring Gulls of this age are variable, but typically rather dull and nondescript. The head of 1S Herring Gull often lacks streaks, so a white-headed appearance is shared with *cachinnans* at this time of year and is not an important identification feature for this age group.

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distinctive *michahellis*, which have strong blackish crossbars and anchors on otherwise pale feathers, and unlike those of Herring Gulls, which have a similar pattern to *michahellis* but more subdued.

By September, it is possible, in very general terms, to recognise two 'types' of 2CY *cachinnans* and *michahellis* (plates 67 & 68). Advanced birds have extensive, clean grey scapulars, wing-coverts and tertials, while less advanced types are heavily spotted and barred in these areas. The former are very mature-looking compared with 2CY Herring Gulls, while the latter share a number of features with them. With less advanced birds, observers should not be looking for individually diagnostic features; identification should be based on structure, voice and subtle plumage clues.

Bare parts

Most 2CYs develop extensive pale areas on the bill by summer; the colour is highly variable, from rather bright pink, through dirty greyish-flesh to yellowish-grey. The legs appear flesh-coloured, sometimes with a grey cast. Eyes are invariably dark-looking (the iris is brown).

Birds in their second winter (2CY/3CY birds during October–April)

The moult to second-winter plumage is usually complete by late November (some complete in October), at which point all feathers are at least second generation. This moult started in spring/early summer and continued through the summer and autumn. Importantly, some of the new feathers gained early in this period are not retained throughout the second winter. Scapulars, some wing-coverts (most frequently the medians) and some tertials may be moulted again later in the period; these third-generation feathers are grey and adult-like and contrast with the remaining brown or barred second-generation ones. Essentially, this is why late summer 2CYs look rather different from December ones, even though in terms of our standard terminology they are in the same plumage/age class. The proportion of adult-type grey feathering is highly variable at this age, but the proportion is typically greater than in Herring Gull (many of which are essentially brown in second-winter plumage) and so *cachinnans* generally look cleaner, older and more striking (plate 70).

The head and body are normally pure white, except for a well-defined collar of dark streaking around the hindneck on some. The mantle and scapulars may be entirely grey, forming a grey saddle, but more typically some feathers retain dark shaft streaks and a paler, creamy fringe. The remaining second-generation lesser and median coverts are basically brownish with creamy or buffish fringes, but dark shaft streaks and small, dark subterminal anchor marks may be apparent in close views. At a distance the greater coverts look rather uniform brown, forming a dark panel; close views reveal a variable amount of pale vermiculation, which typically becomes more prominent towards the inner feathers. A typical *cachinnans* has some grey, third-generation median coverts (matching the scapulars) and some also have one or two grey tertials which contrast with the largely brown second-generation ones. Some inner greater coverts may also be grey, contrasting with the brown outer ones.

These feather patterns give *cachinnans* an overall impression that is typically quite different from Herring Gulls of this age. Most Herrings have many brown, heavily anchor-marked feathers in the mantle, scapulars and wing-coverts and extensive streaking or blotching on the head and body (plate 72). Nonetheless, some do have grey feathers in the scapulars (plate 73) and, less frequently, in the wing-coverts, so this difference is not diagnostic. Herring Gull tertials are normally barred and only rarely show the plain brown pattern typical of *cachinnans*. Second-winter *michahellis* (plates 74 & 75) share the relatively advanced appearance of *cachinnans*, but their legs and bill are typically much brighter (often with strong yellow tones evident) and their wings have much stronger, spotted and notched patterns. They also regularly have fine, sharp pencil streaking on the head, especially around the eye, and on the neck.

The underwing of second-winter *cachinnans* (plate 76) can be gleaming white, but some retain isolated light brown blotches or broken bars over the off-white ground

70. 3CY (2W) Caspian Gull, UAE, 7 Feb 2009. The plumage tones are essentially pure white, silver and black, much sharper and cleaner than 2W Herring Gulls. The dark eye contrasts markedly with the gleaming white head and the typical grey-flesh tones are evident on the legs, especially the tibia. Note that the pattern of the greater coverts matches that of 1W birds – uniform dark bases and a pale bar along the tips.

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71. 3CY (2W) Caspian Gull, Latvia, 10 Apr 2009.

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72. 3CY (2W) Herring Gull, North-east Scotland, 8 Mar 2009. As shown by this and plate 73, the plumage of 2W Herring Gulls is extremely variable. Nonetheless, typically they look much less mature than *cachinnans*: they lack sharp plumage contrasts, appearing to be a mix of off-white and light brown tones. Note particularly the pale eyes of these birds.

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73. 3CY (2W) Herring Gull, Latvia, 13 Apr 2009. This bird has a rather more *cachinnans*-like plumage than many (i.e. it has a grey saddle and upper tertials), but the greater coverts are heavily speckled and it has extensive diffuse streaks on its head and body; also, its stocky, compact jizz should preclude any confusion.

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74. 2CY (2W) Yellow-legged Gull, Spain, 20 Dec 2006. Compared with *cachinnans* of this age, note the solid structure, dark streaking around the eye and foreneck, and especially the heavily marked greater coverts. As with *cachinnans*, the advanced plumage of 2W *michahellis* (clean head and body, pure grey saddle and many wing-coverts) makes them look older than Herring Gulls of the same age.

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75. 3CY (2W) Yellow-legged Gull, Spain, 8 May 2009. By early spring, 3CY Yellow-legged Gulls become extremely clean and bright; compared with the *cachinnans* in plates 70 & 71, note the bright yellow bill/yellow-toned legs and the strongly notched coverts. The eye is clearly rather pale.

76. 2CY (1S–2W) Caspian Gull, Lithuania, 10 Sep 2009. Note the white underwing, with just a few isolated light brown spots and crescents, and the small mirror on P10. This bird is just completing its moult into 2W plumage, with P9 and P10 not quite fully grown.

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77. 2CY (2W) Caspian Gull, Lithuania, 10 Sep 2009. Note the contrasting black-and-white tail, Venetian-blind pattern on the middle primaries (clearer on the far wing), grey saddle and clean head.

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78. 3CY (2W) Herring Gull, North-east Scotland, 8 Mar 2009. The overall impression is of a rather uniform brown bird, without strong plumage contrasts. The tail is extensively dark and the rump and uppertail-coverts are well marked.

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colour. The axillaries tend to be unmarked, pure white. Second-winter *michahellis* most frequently have contrasting light and dark brown bands on their underwing-coverts, so the underwing looks much darker overall than that of *cachinnans*; darker birds resemble *graellsii* Lesser Black-backed Gull. In flight, the general impression of the *cachinnans* upperwing is very similar to that of first-winters, with blackish-brown outer primaries, secondaries and primary coverts. The pattern on the second-generation inner primaries is extremely variable, but at least some have a strong Venetian-blind pattern – pale, greyish inner webs on the inner primaries that contrast markedly with blackish outer webs. This contrast is much less marked on most Herring Gulls. On some *cachinnans*, the inner-primary pattern is less distinctive, with light brown rather than grey inner webs; such birds are similar to Herring Gulls. Some *cachinnans* have a diffuse pale lozenge on the outer web of the inner 4–5 primaries (as for first-generation feathers), but on others the distal part of these feathers is a rather uniform brown.

The rump and tail pattern of *cachinnans* is rather variable at this age (plate 77) but typically the pattern is distinctly different from Herring Gull's. In the most striking *cachinnans*, the rump, uppertail-coverts and tail base are unmarked, pure white and contrast markedly with a narrow black tail band. Most frequently, the tail band has fine black vermiculation along its basal edge. In others, the rump and uppertail-coverts have some isolated spots and bars and the tail band is more coarsely and extensively vermiculated. In Herring (plate 78), the rump and tail base are, on average, more spotted and barred and the tail band is browner, deeper and less sharply defined, so the general appearance is much less clean and striking than in *cachinnans*. A bird whose tail/rump pattern does not differ markedly from Herring Gull' should be checked for other anomalous features (see part 2).

Most second-winter *cachinnans* have a small but distinct mirror on the outer primary (P10). On some it is small and sandy-grey, on others it is large and whitish, but is generally clearly visible. This feature is extremely useful for separating Herring and Caspian Gulls, although not wholly diagnostic: a small proportion (c.1–5%) of second-winter Herring Gulls, particularly *argentatus*, have a P10 mirror, while a small proportion of *cachinnans* lack a P10 mirror. It is extremely rare for second-winter *michahellis* to have a mirror on P10 (the authors have seen only one such individual); when present it is very small and usually apparent only in good quality photographs.

Bare parts

The bare parts of second-winter *cachinnans* begin to take on some distinctive hues. The legs are invariably a rather sickly grey ('dead flesh'), compared with the distinctly pink legs of Herring Gulls. The legs of second-winter *michahellis* are extremely variable: yellowish, greeny-yellow, flesh or grey-flesh.

The basal two-thirds of the bill usually becomes much paler than on first-summers, ranging from greyish-pink on some *cachinnans* to dull greeny-yellow on others. Typically, there is a dark smudge near the tip that extends back along the cutting edge towards the base. The pale bill tip is usually much more prominent than on first-winters. However, while *cachinnans* typically have this bill pattern, the colours and patterns of all taxa vary markedly: there is much overlap and it is not hard to find Herring Gulls and *michahellis* that match *cachinnans*.

The eye is almost invariably dark-looking in second-winter *cachinnans*, contrasting sharply with the white head. Most Herring Gulls and *michahellis* begin to develop paler irides at this age (greyish or brown) and so a bird with distinctly pale eyes is unlikely to be *cachinnans*.

Older immature plumages (3CY–5CY birds)

Moult and plumage development

The second complete moult takes place during the summer and autumn of the third calendar-year and brings in new, pure grey feathers to the mantle, wing-coverts and tertials. The third-generation primaries have small white tips (unlike first- and second-generation ones), as well as large mirrors on P10 and, most frequently, also on P9. The outer primaries are otherwise blackish and the inner ones have adult grey tones. Once

this moult is complete, birds can be regarded as being in third-winter plumage (plates 79–82) and, overall, they show a greater resemblance to adult than earlier immature plumages. The upperparts are largely grey, with variable amounts of brown retained in the tertials and coverts. This plumage is retained over the winter and following spring/early summer, when the third complete moult takes place. This brings fourth-generation primaries and fully adult upperpart tones; normally, the only traces of immaturity are dark marks in the primary coverts and on the bill. The following text deals primarily with third-winter birds, but provides some information and illustrations of fourth-winter individuals.

Once the second complete moult is finished (and third-winter plumage attained), the mantle and scapulars are generally adult grey, while the coverts are most frequently a mixture of grey and creamy-brown. There is much variability in the coverts, with some birds having wholly grey feathers. Brown feathers tend to be retained more in the marginal and lesser coverts, with the medians and greaters being contrastingly grey. The tertials are either all adult-like or have some brown patches. The outer primary coverts and the alula also retain extensive, blackish-brown marks (plate 82). The secondaries of some birds have small, neat brown centres forming a broken bar. The tail pattern is extremely variable. Frequently there is an obvious vestigial tail band created by isolated black spots, rather like that of second-winter Ring-billed Gull *L. delawarensis*; such tail bands also occur in *michahellis* but are very rare in third-winter Herring Gulls. Some third-winter *cachinnans*, however, have a wholly white tail.

Although not yet the full adult pattern, the third-generation primaries of *cachinnans* offer useful identification clues. There is a broad, complete black band across P5 and usually some black on P4, either on both webs or just the outer. Third-winter birds that have limited or no black on P5 are unlikely to be *cachinnans* or *michahellis*. The white mirror on P10 can be a useful distinction from *michahellis*: in terms of size and prominence, the P10 mirror of most third-winter *cachinnans* matches that of an adult *michahellis* (much larger than on third-winter *michahellis*, which have either no mirror or only a small one). Most third-winter *cachinnans* also show a white mirror on P9, unlike *michahellis* (but see plate 84). Third-winter Herring Gulls can also show a reasonably large mirror on P9 and P10; *argentatus* can show a long white tip to P10, with only a small dark subterminal smudge (plate 86). Thus, the patterns on P9 and P10 are not diagnostic of third-winter *cachinnans* and are more useful for ruling out *michahellis* than Herring.

On some third-winter *cachinnans*, the middle primaries (P6–P8/P9) have black that extends further up the outer web than the inner; this gives the impression of grey 'tongues' cutting into the black of the wing-tip, a pattern that develops more strongly in adults. This is very different from *argenteus* Herring Gulls and especially *michahellis* (plate 84), both of which show a solid, triangular black wedge across the wing-tip. Not all *cachinnans* have the distinctive tongued pattern, and so match *michahellis* and Herring Gull. Both *cachinnans* and *michahellis* show dark marks on the alula and primary coverts, which tend to be blacker and more clearly defined than in Herring Gull.

The head of *cachinnans* tends to be clean white, lacking distinct streaking. In autumn and early winter, a relatively neat half-collar of dark streaks is usually visible on the hindneck and can make *cachinnans* distinctive even at a distance. This streaking wears away as the winter progresses. Herring Gulls have more widespread, diffuse and blotchy head and neck streaking. The head streaking of 3CY–4CY *michahellis* in winter is often concentrated around the face rather than restricted to the hindneck.

In the summer of their fourth calendar-year, the third complete moult brings in fourth-generation primaries. Once this is complete, birds are generally regarded as being fully adult, although some retain dark markings on the bill and black in the primary coverts and at the tip of P10. Confident ageing of such birds is difficult, however, since dark marks in the primary coverts and small areas of black in the bill are occasionally retained well into full adulthood. The

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79. 3CY (2S–3W) Caspian Gull, Lithuania, 10 Sep 2009. This bird is near to the end of its moult into 3W plumage (the outer primaries are not quite fully grown). A number of subtle features, used collectively, make 3W Caspian Gulls rather distinctive, but as all are found from time to time in Herring Gulls, none are diagnostic. This bird and those in plates 80 & 81 show 'lead shot' eyes, contrasting with a clean white head, greeny-yellow bill and grey-flesh legs.

Chris Gibbins

80. 4CY (3W) Caspian Gull, Latvia, 10 Apr 2009. The extent of any brown remaining in the wing of this age group is variable – this bird has rather a lot of dark in the coverts, but none in the tertials.

Chris Gibbins

81. 4CY (3W) Caspian Gull, Latvia, 8 Feb 2010. A bird with soft, grey-brown patterning in the coverts and some brown remaining in the tertials. All the plumage features and bare-part colours visible in this bird can be found from time to time in Herring Gulls, so it illustrates nicely the fact that identification of birds in this age group should be supported by structure and, ideally, voice.

Chris Gibbins

82. 3CY (3W) Caspian Gull, Lithuania, 10 Sep 2009. The primary pattern of this bird is beginning to take on some of the features of adults – note the grey tongues eating into the black wing-tip. The outer primary coverts and the alula retain extensive, blackish-brown marks.

Chris Gibbins

83. 3CY (3W) Herring Gull, North-east Scotland, 2 Nov 2008. This bird shows an extensive brown wash to its wings, a well-streaked head, has only limited black on P5 and (already) a very pale eye. Individually and collectively, these features make confusion with *cachinnans* unlikely. 3W *argenteus* Herring Gulls regularly show a complete, deep black band across P5, unlike this *argentatus*, which has isolated dark smudges. So, the presence of a black band on P5 is not a key feature at this age. Note that P10 is not yet fully grown.

Chris Gibbins

84. 3CY (3W) Yellow-legged Gull, Spain, December 2006. Birds of this age are variable. This one has a rather large mirror in P10 but on others it is much smaller or even lacking. It has a clean white tail but many retain vestigial dark marks. The extensive blackish-brown primary coverts contrast with the otherwise grey upperwing. The black of the primaries forms a solid wedge on the outer wing. Note the asymmetrical wing-tip pattern – there is a mirror on P9 on the left wing but not the right wing. Such asymmetry is not unusual in gulls; consequently, where a particular feature is critical for identification, it is always worth making sure that both wings have the correct pattern.

fourth-generation primaries of *cachinnans* are similar to those of adults, with a long white tongue on the underside of P10 and grey tongues eating into the black wing-tip on the upperside of P8–P10.

Bare parts

The third-winter bill has a mix of blackish brown and paler areas. Black is usually confined to the gonys region as a diffuse 'thumbprint', with a paler tip and basal third to the bill. Some isolated darker smudges are often present closer to the base, and many have a little black bleeding along the cutting edge from the gonys. The pale parts of the bill are most frequently a dull greeny yellow, typically with a strong grey cast. Some have rather more yellow-toned bills. Red is not prominent in the gonys of *cachinnans* of this age. The legs are invariably a rather colourless, dead-flesh grey, compared with the pinker legs of Herring Gulls. The legs of third-winter *michahellis* are usually greeny-yellow or grey-yellow, with some having clear yellow tones; they can, however, occasionally be dull flesh-coloured as in *cachinnans.* The eyes of most *cachinnans* still look dark brown, but slightly paler irides may develop from this age onwards. Most but not all *michahellis* and Herrings of this age have paler (greeny- or greyish-yellow) eyes. It is rare for *cachinnans* of this age to have very pale (cream or yellow) eyes, and such birds should be scrutinised closely. Eye-ring colour tones of third-winter birds also begin to reflect those of adults (see below).

Pitfalls

Despite often looking distinctive, third-winter and third-summer birds have no truly diagnostic plumage features. In essence, the distinctive features of younger birds have been lost, while the adult wing-tip pattern has not developed sufficiently for it to be considered critically important. Identification should be based on a careful assessment of structure, in combination with indicative plumage features listed above, and the absence of anomalies.

Some *cachinnans* of this age can be particularly tricky to separate from *michahellis*. Near-adult *michahellis* often have dark eyes and smaller individuals can have bill shape and overall jizz reminiscent of some *cachinnans.* Some *cachinnans* lack grey tongues in their third-generation primaries and so overlap with *michahellis;* however, they should have larger mirrors than *michahellis*. Long call and associated posture are the best way to separate the more difficult individuals.

Experienced gull-watchers are unlikely to mistake third- and fourth-winter Herring Gulls for *cachinnans*, but others should be aware of the problem posed by *argentatus*. Some late-winter *argentatus* are clean-headed and share some aspects of the *cachinnans* wing-tip pattern – with a long white tip to P10 and grey tongues that invade the black wing-tip. While the irides of most Herring Gulls will be rather pale by their third winter, a significant proportion retain dark eyes: a clearly pale eye in a near-adult gull is not good for *cachinnans* but a dark eye does not automatically rule out Herring Gull.

Adults

Adult Caspian Gulls are best located in gull flocks by a combination of their peculiar jizz, and relatively dark, small-looking eyes that contrast with the white head (plate 86). Identification can then be confirmed by detailed study of bill proportions, primary pattern, bare-part colours and upperpart tone. The following sections deal with these features in turn; plates 87–96 show a selection of adult *cachinnans, michahellis* and Herring Gulls.

Plumage

Fig. 2 shows the range of adult upperpart tones for *cachinnans* and similar taxa, at least in a British context. The figure uses the Kodak Grey Scale, a scale that has numbered increments from 0 (white) to 20 (black). The scale itself is not reproduced here and most gull-watchers will not go into the field armed with a copy of it; fig. 2 simply compares the upperpart tones among the various taxa and shows the degree of overlap between them.

For grey-tone comparisons to be reliable, other taxa should be directly alongside or nearby. Observers also need to be aware of the effects of light and viewing angle on the perception of tone. Diffuse sunlight or overcast conditions are best: strong direct sunlight tends to bleach out subtle differences.

Another problem is that the grey tone may appear to change on the same individual as it faces in different directions relative to the observer; upperparts tend to look darkest when the bird is facing obliquely towards or away from the observer. Thus, a slightly darker-backed gull in a flock might just be facing in a different direction from the others. Any apparent difference should be confirmed by seeing the bird in a variety of positions.

The tone (darkness) of the pure grey upperpart feathers of adult and near-adult gulls is of quite limited value in *cachinnans* identification, because it overlaps extensively with that of other species. Nonetheless, it can be useful when looking for the species among paler-mantled *argenteus* in Britain (although most darker birds will turn out to be *argentatus* or *michahellis*, depending on location and season). To the practised eye, *cachinnans* can be located in flocks of *michahellis* by their subtly paler upperpart tone. Common Gull is usually a close match for *cachinnans* and, when alongside, can be used as a tonal marker.

Regardless of tone, there is a subtle difference in colour hue between the upperparts of *cachinnans* and Herring Gull, when seen in good light and in direct comparison. That of *cachinnans* is a more neutral, silky grey, with less of a bluish hue than either *argentatus* or *argenteus*. The upperparts of *michahellis* are more of a slate-grey. The human eye is a perceptive tool and it is certainly possible to see the differences in colour hue between these species in direct comparison. However, because of differences between how observers perceive and describe colour, it is difficult to articulate the differences here, in words.

Wing-tip pattern

Adult *cachinnans* have a characteristic wing-tip pattern and, particularly when multiple features in the wing-tip are used simultaneously, this can be a good means of identification (fig. 1 and plate 49). However, the wing-tip pattern is not truly diagnostic, because of a degree of overlap with *argentatus* Herring Gull.

The outermost primary (P10) of *cachinnans* is black, except for a long, pale 'tongue' on the inner web (grey on the upperside of the feather, white on the underside) and a long white tip. The black separating the tongue from the white tip is narrower than the length of white tip. This pattern is never seen in *michahellis* and is very rare in *argenteus;* however, it is common in *argentatus*. The details of the P10 pattern may be difficult to see well on flying birds (except, of course, in photographs) but can often be seen on a standing or swimming bird by viewing the underside of the folded wing.

Occasional variations in the P10 pattern of *cachinnans* include cases where the pale tongue breaks through the black to merge with the white tip – a pattern typical of

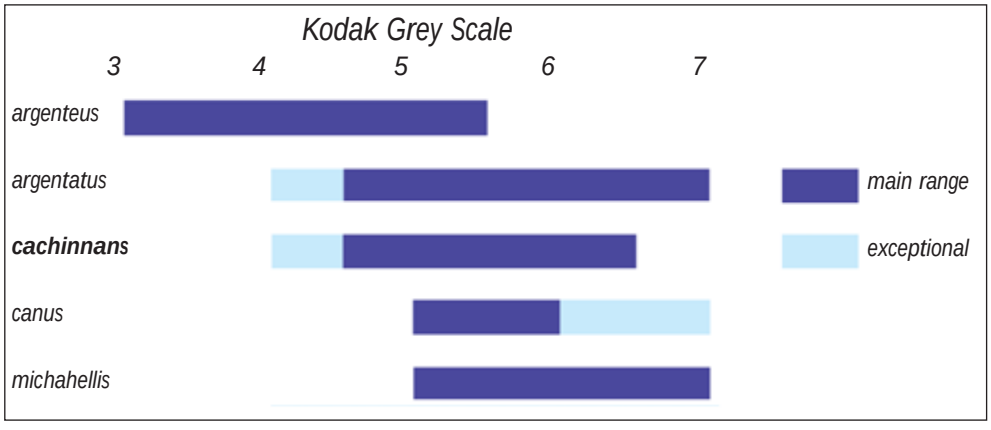

Fig. 2. Upperpart grey tones as represented on the Kodak Grey Scale for *cachinnans* and similar taxa. Common Gull *Larus canus* is included as a good tonal match for *cachinnans*; values are for nominate *canus*. The *michahellis* values exclude the Atlantic island populations (*atlantis*), which have darker grey tones (from 7–7.5) than Iberian and Mediterranean birds. Values are based on Malling Olsen & Larsson (2003) and Jonsson (1998).

Chris Gibbins

85. 5CY (4W) Caspian Gull, Latvia, 13 Apr 2009. The extensive dark areas on the primary coverts, dark grey wash on the outer webs of P5–P7 and the black band across the tip of P10 suggest that this is not a fully adult bird.

Chris Gibbins

86. Adult Caspian Gull (centre left) with Herring Gulls, Latvia, 14 Aug 2008. This photograph allows direct comparison of jizz, bare-part colours and grey tones of the two species.

Steve Arlow

87. Adult Caspian Gull, Essex, 7 Feb 2009. This bird's eye is at the dark end of the range.

Chris Gibbins

88. Adult Caspian Gull, Romania, August 2006. The bill is particularly weak and has a fleshy tone to its basal portion. The eye of Caspian Gull is normally described as being dark, but rather few have truly dark eyes. Most have a speckled iris, which in the field varies in colour from pale amber to brown, depending on the density of speckling. The eye of this bird is medium amber.

Chris Gibbins

89. Adult (or near-adult) Caspian Gull, Romania, August 2006. This bird may be a female: it looks rather compact, the bill is not noticeably long and the head is high and rather peaked. Because of the dark eye, many such presumed female *cachinnans* are surprisingly reminiscent of a Common Gull. The broad black band across P5 is visible below the tertials. Brown tones to some greater coverts and tail feathers suggest that this bird may not be fully mature.

Chris Gibbins

90. Adult Herring Gull, North-east Scotland, 23 Nov 2008. As well as the compact jizz, note the extensive soft streaks across the head, neck and upper breast, the pale eye and yellowy-orange eye-ring. This bird has black across both webs of P5; this is not uncommon in Herring Gulls.

Hannu Koskinen

91. Adult *argentatus* Herring Gull, Tampere, Finland, 21 Apr 2006. C435 was ringed as a pullus in June 1998 c. 30 km SE of Tampere and represents a potential trap for the unwary. It has a complete black band across P5, a long white tip to P10, yellowy legs and a reddish orbital ring; its bill is rather slender-based and its upperparts are a good match for *cachinnans*. However, the head retains the typical bulk of Herring Gull, its iris is unmarked yellow, and the bill has a rather sharply curved culmen and a marked gonydeal angle.

Chris Gibbins

92. Adult Yellow-legged Gull, Portugal, 15 Jun 2005. A typically menacing-looking bird, with a staring pale eye set off against the deep red orbital ring. In this species, the vivid red of the gonys regularly spreads extensively onto the upper mandible, unlike the more restricted gonys spot of *cachinnans* and Herring Gull.

Chris Gibbins

93. Adult Herring Gull, North-east Scotland, 28 Feb 2009. Note the pale upperparts, black band across the tip of P10 and the limited black on P5. This is a typically compact and short-billed *argenteus*.

Chris Gibbins

94. Adult Yellow-legged Gull, Spain, 7 May 2009. A typically large, robust and long-winged bird. Note the broad black band across P5 and the small mirror on P9.

Chris Gibbins

95. Adult Yellow-legged Gull, Spain, 8 May 2009. The underside of P10 is visible here and shows a triangular wedge (not a square tongue) extending only halfway down the exposed feather. The huge bill suggests this is a male. The gape is bright red, similar in tone to the orbital ring.

Hannu Koskinen

96. Adult Herring Gull *L. a. argentatus*, Finland, 30 Mar 2007. The P10 pattern of this bird is similar to that of *cachinnans* – it has a long grey tongue, visible here on the underside, and a long white tip to the feather. Coincidentally, it also has a red orbital ring and a dark-looking eye, both also features of *cachinnans*. Its bill, however, is robust and it has very limited black on P5. This bird illustrates the problems posed by some Baltic *argentatus*; careful assessment of the full range of features is needed for correct identification.

Thayer's Gull *L.* (*glaucoides*) *thayeri*. An example of this from Ukraine is shown by Liebers & Dierschke (1997, plate 289), while CG has seen such birds in Romania (Lake Histria, September 2006). These locations suggest that the '*thayeri* pattern' occurs occasionally in pure *cachinnans*, rather than being indicative of introgression with Herring Gull. Some birds show a small amount of black within the long white tip of P10: of 31 adult *cachinnans* examined in the hand by Liebers & Dierschke (1997), 11 showed a subterminal black band (complete or incomplete) across the tip of P10. There is also variation and overlap among the taxa with respect to the exact shape of the pale tongue, especially between *cachinnans* and *argentatus* (Gibbins 2003). To reiterate, the P10 pattern is not diagnostic.

Long, pale grey tongues are also present on the inner webs of P7–P9 of *cachinnans* and, collectively, these give the impression of pale wedges eating into an otherwise black wing-tip. This pattern is very different from that of *michahellis* (which has a solid black wing-tip) but is seen on many *argentatus*. Black extends inward as far as P5 on *cachinnans* and on some (16%; Jonsson 1998) also to P4. Ideally, a candidate *cachinnans* should have a black band extending unbroken across both webs of P5, typically slightly less deep than that of *michahellis*. However, there is considerable variation in the pattern of black on P5 of all the taxa. Around 10% of *cachinnans* lack a complete black band on P5 (Jonsson 1998): such birds may have isolated marks on both the inner and outer webs of the feather (plate 49) or have black restricted to the outer web. Herring Gulls may lack black on P5 altogether (e.g. many Norwegian *argentatus*), have black only on the outer web (frequent in *argenteus*) or have black on both webs. When black is present on both webs of P5 in Herring Gull, it may be as an isolated black spot on each (usually larger on the outer web), or as a complete band (plate 90). When present, the band is usually much narrower than on *michahellis*, but it matches many *cachinnans*. Black on both webs of P5 is a surprisingly common feature in eastern Baltic populations of Herring Gull (Malling Olsen & Larsson give a value of 30%), so these birds are a real cause of confusion. Overall, the variability in P5 pattern means that it is difficult to give definitive criteria regarding its value in identification. Like *cachinnans*, Herring Gulls can have black extending inwards as far as P4, though this is rare.

Some have argued that eastern and western populations of *cachinnans* differ with respect to primary pattern (e.g. Stegmann

1934). Adults from eastern populations normally have a less extreme wing-tip pattern, where the long white tip of P10 is regularly interrupted by small black spots on each web, sometimes merging to form a subterminal band. A significant proportion show black on P4 (50%; Jonsson 1998). Compared with western birds, eastern *cachinnans* may also show shorter pale tongues invading the black of the upperwing, but these still break up the black of the outer primaries in a way that *michahellis* never shows. More research is needed to determine whether eastern and western *cachinnans* deserve formal subspecies status.

Head pattern

The head of adult *cachinnans* normally appears unmarked (plate 87). Any streaks are extremely fine, often confined to the lower rear neck, and usually only apparent at close range for a limited period in autumn (plate 88). In *michahellis*, streaking is also usually apparent only in the autumn but is concentrated around the face and ear-coverts. On average, this streaking is clearer than shown by *cachinnans* at this time. Streaking disappears in late autumn, as feathers wear. From early autumn to mid/late winter, the vast majority of Herring Gulls show a variable but usually obvious degree of dusky streaking and/or blotching on the head and neck (plate 90). There are exceptions and it is possible (though uncommon) to find clean-headed *argenteus* and *argentatus* before January, just as it is possible to find the odd Black-headed Gull *Chroicocephalus ridibundus* with a full hood in midwinter.

Bare parts

Outside the breeding season, the bill of *cachinnans* is normally a rather weak, greenish-yellow, fading to grey-green basally. There are frequently some dark marks (small spots or crescents) in the gonys, while the red is usually less bright than for either *michahellis* or Herring Gull. Thus, in general, the bill of *cachinnans* in winter stands out as being duller than that of the other species. However, as many *argentatus* have washed-out, greeny-yellow bills in winter, bill colour and pattern is merely a supportive feature.

The bill becomes a richer yellow in late spring and, during the breeding season the bill coloration of *cachinnans* overlaps with that of Herring Gull. Neubauer *et al.* (2009) argued that, unlike the orbital ring (see below), bill tones do not differ consistently between *cachinnans* and Herring Gull in breeding plumage. The bill of *cachinnans* is distinctly duller than the bright, orange-toned bill of *michahellis*; moreover, the red gonys spot of *michahellis* is extremely bright and regularly spreads extensively onto the upper mandible.

In the field, most adult *cachinnans* appear dark-eyed; in fact, the iris is not wholly dark, but peppered by dark brown spots. Depending on the density of these spots, the iris may appear dirty amber-yellow or uniformly dark brown, but never completely black. Eye colour varies enormously in *cachinnans*: Jonsson (1998) suggested that c. 75% of adult *cachinnans* appear 'medium- to dark-eyed' in the field, whereas Liebers & Dierschke (1997) found that 48% of birds in one Ukrainian colony and 62% in another were 'pale-eyed'. Much depends on how 'dark' is defined. Most birds do look darker-eyed in the field than typical Herring Gulls or *michahellis* and truly pale (clean yellow) eyes are rare in *cachinnans* (<10% Jonsson 1998; 2–5% Hannu Koskinen pers. comm.). Note also that some apparently adult Herring Gulls have dark peppering in the iris and some look genuinely dark-eyed in the field (plate 96); anyone checking large numbers of Herring Gulls should expect to find dark-eyed birds with moderate regularity.

The orbital ring of *cachinnans* varies from pale orange to red (Liebers & Dierschke 1997; Neubauer *et al.* 2009). That of Herring Gull varies from yellow (typical *argenteus*), through pure orange to orangey red; that of some Baltic *argentatus* looks deep red and thus approaches *michahellis*. Orbital ring colour in Herring Gulls has been shown to differ among birds breeding in the same colony (Muusse *et al.* unpubl.). Thus, while orbital-ring colour is a useful feature for *cachinnans* (orange to red is acceptable, yellow is a problem), it is merely one of a number of features that combine to make the species distinctive but which are not individually diagnostic. Liebers & Dierschke (1997) reported a correlation between iris and

orbital ring colour – pale-eyed *cachinnans* having pale orange orbital rings and dark-eyed birds having redder orbitals – and this relationship is clearly worth further study.

The leg colour of adult *cachinnans* varies seasonally and individually. In winter, the legs are typically pale, greyish-flesh; some have a weak, greenish-yellow tint. In spring and early summer, the legs of many adults become distinctly brighter and yellowish. The proportion showing truly yellow legs during the breeding season is uncertain and may vary among populations and even from year to year (perhaps linked to diet). The leg colour of an individual bird can vary during the course of the breeding season, probably as a function of physiological condition (Neubauer *et al.* 2009). There is complete overlap in leg colour between *cachinnans* and the Herring Gulls of the eastern Baltic (from pure pink to lemon yellow) so this feature is of limited value. However, *cachinnans* rarely matches the rich yellow of the legs of *michahellis*.

Pitfalls

The most likely problem is confusion with a Herring Gull from the eastern Baltic. These are quite unlike the Norwegian *argentatus* that we are familiar with in the UK and can have upperpart tones, bare-part colours and wing-tip patterns that are virtually identical to those of *cachinnans*. The potential for confusion is increased by the fact that these *argentatus* may look slightly longer-winged, longer-legged and longer-billed than *argenteus* (although less obviously so than *cachinnans*). The occasional dark-eyed bird can create real problems.

Concluding remarks

The aim of part 1 of this paper has been to describe the appearance of typical Caspian Gulls. The birds featured in the plates are all rather typical and should not pose any identification problems. Variability is a feature of large gulls, however, and observers should not expect all *cachinnans* to look identical. Nonetheless, there is what might be regarded as normal or typical variation (that outlined above) and that which is extreme or atypical. In part 2 we shall deal with the extremes and discuss birds that sit in the overlap zones between the species. We shall also consider hybrids; this is a very real problem given that hybridisation is occurring in Poland, for example, and that hybrids originating there have been recorded in Britain. Before becoming embroiled in debates about the more difficult individuals, it is important that birders are familiar with the identification of typical birds. We hope that part 1 has provided this familiarisation.

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97. Unidentified adult gull, Lithuania, 10 Sep 2009. This striking bird has a confusing mix of characters. Its dark iris, red orbital ring and upperpart grey tones match cachinnans. However, its legs and bill are extremely bright for *cachinnans*, especially at that time of year, and the red of the gonys spreads extensively onto the upper mandible; it also has a rather well-streaked head for typical *cachinnans*. The bill and leg colours are reminiscent of *michahellis*, but any thoughts of that species are dispelled by the 'thayeri pattern' visible on the underside of P10 (and of course the dark eye is wrong too). While the P10 pattern matches some *argentatus* Herring Gulls, the leg, bill and eye colours make this option seem unlikely. Is it simply an extreme *cachinnans*, should it be considered a likely hybrid or is it best left unidentified? Fascinating birds such as this are the focus of part 2 of this paper.

Appendix 1. Summary of key differences between typical Caspian *Larus cachinnans*, Yellow-legged *L. michahellis* and Herring Gulls *L. argentatus*. It is important to note that these highly simplified statements should be read in conjunction with the main text. Features are given for each age group and in approximate order of importance/value for field identification; shaded blocks indicate the reliability of individual features, as detailed in the key.

- Diagnostic – not found/known to occur in other species
- Extremely indicative – should not be used in isolation, but any bird showing this feature *plus* one or two others should prove to be *cachinnans*
- Indicative – very useful, but only in conjunction with other features
- Supportive – should be used only to support details of other, more reliable, features
- Of no real value – overlaps completely with other species or is perhaps based on misconception

Structure and behaviour	Caspian (*cachinnans*)	Yellow-legged (*michahellis*)	Herring	Comments
Long call and long-call posture	Rapid, nasal laughing call with wings raised and head vertical (90°)	Deep, guttural, single and clearly separated notes delivered more slowly than *cachinnans*, with wings closed and head raised to 90°	Call structure similar to *michahellis* but less guttural and pitch higher; delivered with wings closed and head raised to 45°	Together, long call and associated posture are diagnostic; i.e. a bird with correct call and long-call posture should prove to be *cachinnans*. All other structural features vary individually and between the sexes, but assuming that key plumage features match, then non-calling birds can be identified using head and bill shape; other structural features vary and so are less important
Bill shape	Typically long, slim and evenly tapering; little or no expansion at gonys	Deep and long in males; females overlap with Herring. Curves strongly at tip with marked gonys angle	Unremarkable, but with clear gonys angle	
Head shape	Generally pear-shaped and snouty; small for body. Some (females?) can have high rounded crowns and some larger birds (males?) have square, more solid heads	Head typically large and square. Females overlap with Herring and Lesser Black-backed. Rarely as snouty as *cachinnans* but some are similar	Unremarkable: even shape, neither snouty nor square, but some *argentatus* can match male *cachinnans*	
Leg length	Typically long and thin but can look unremarkable in some (females?)	Can overlap in length with *cachinnans*, but normally thicker and more robust-looking	Relatively short, robust-looking	
Body shape	Very attenuated rear end; ventral bulge clear on many	Attenuated but ventral bulge lacking or less pronounced	Relatively short rear end, lacking ventral bulge	
Tertial step	Normally lacking	Can be clear or lacking	Usually pronounced	
Stance	Often upright, with high chest; bill held downward when resting	Normally more horizontal, but when alert can look very *cachinnans*-like	Normally more horizontal	Varies hugely depending on what the bird is doing so is of limited practical value

Appendix 1. *continued*

Juv and 1st-winters (Aug–Apr)	Caspian (*cachinnans*)	Yellow-legged (*michahellis*)	Herring	Comments
Underwing	Normally distinctly pale; appears silvery or creamy-white at distance on the most striking birds	Dark and heavily barred but (rarely) can overlap with darker *cachinnans*	Dark, though more uniform than *michahellis*	
Second-generation scapulars	Pale grey ground colour (silvery) in classic birds, each feather with a simple dark shaft streak and narrow subterminal anchor. Some are more heavily patterned	Strongly marked, with heavy anchor pattern and heavy blackish-brown bars across basal part of each feather	Variable; most have pattern similar to *michahellis*, but with crossbarring and subterminal anchors weaker	
Tail and rump	Striking white rump and tail, with relatively narrow black tail band	Very similar to *cachinnans*	Browner, deeper and less clear-cut tail band. Less contrast between tail band and the more densely marked rump and tail base	*Cachinnans* is distinct from Herring but very similar to *michahellis*
Greater coverts	Uniform dark base and pale terminal area forming clear bar, like Nike 'swoosh'. Pale fringes simple, lacking strong notches	Typically heavily notched, particularly on inner feathers; but extremely variable and some have simple fringes that resemble *cachinnans*	Extremely variable, but normally well notched across all coverts; birds matching *cachinnans* are extremely rare (<1/1,000)	Extremely useful but should not be used in isolation
Head and body colour	Typically clean-looking (whitish) with minimal streaking. Often has neat half collar of fine streaking around rear neck	Overlaps with *cachinnans*, but more frequently has obvious dark eye mask and less pronounced collar	Normally extensively covered with diffuse streaks and blotches	
Colour of upperparts (juvs only)	Soft, greyish-brown	Dark, chocolate brown, with contrasting pale areas	Mid brown, intermediate between the other two	
Inner primary window	Less prominent than Herring, slightly more so than *michahellis*. Often with Venetian-blind pattern. Pale lozenge-shaped patches frequently present on outer webs near tips of P2–4/5	Inner webs of inner primaries only fractionally paler than outers, so virtually no window. Generally lack pale lozenges on P2–4/5	Prominent window, with complex patterning on feather tips of P1–4/5	

Appendix 1. *continued*

1st summers (Apr–Sept)	Caspian (*cachinnans*)	Yellow-legged (*michahellis*)	Herring	Comments
Structure, call and call posture are especially critical during this period, as wear, moult and individual variation in the patterns on newly arriving second- and third-generation feathers make plumage features of limited value.				
Underwing	Whiter than the other species, although moult may produce a blotchy pattern.	Extremely variable, some with variegated pattern of light and dark.	As *michahellis*, but less contrasting	
Greater coverts	Second-generation feathers in typical birds have uniform dark base and pale terminal bar.	Second-generation feathers usually well marked with contrasting light and dark bars. But, some like *cachinnans*, others like Herring Gull	Pattern often intermediate between *cachinnans* and *michahellis*, but individuals can match either. Normally more barred than *cachinnans*	A useful average difference, but there is overlap between the species so this feature is not diagnostic
Mantle and scapulars	Extremely variable. Some acquire a high proportion of adult-type grey feathers, others show most feathers with dark anchors	Extremely variable. Many acquire mainly pure grey adult-like feathers while others have boldly patterned feathers, with contrasting anchors	Grey feathers are rare on birds of this age: most acquire third-generation feathers with a pattern of mid-brown bars on a creamy background	A useful feature for separating Herring Gull from the other two species.
Tertials	Typically shows a blackish basal third to new second-generation tertials, with diffuse pale tip (reminiscent of first-generation feathers)	Often strongly barred (matching greater coverts) but others match the simpler pattern of *cachinnans*	Most have an irregular barred pattern on second-generation tertials, but pattern usually weaker than on most *michahellis*	Each species has a typical pattern (i.e. a pattern shown by most birds) but there is enough variation to limit the value of this feature
Head and body	Variable; many are extremely white, but others can have fine streaks on face and rear neck	As *cachinnans*	Wear and fading can make some look much paler than first-winter birds, but rarely do they look as clean as typical *cachinnans*	

Appendix 1. *continued*

2nd winters (Oct–Apr)	Caspian (*cachinnans*)	Yellow-legged (*michahellis*)	Herring	Comments
Overall, the clean white head and body and the extensive grey in the mantle and wings make typical *cachinnans* of this age look older and more striking than typical second-winter Herring. However, this plumage pattern overlaps with *michahellis*. Despite the very arresting appearance of some birds, no single feature is diagnostic, so identification should be based on multiple character traits.				
Inner primaries	Strong contrast between pale grey inner webs and blackish outer webs, creating Venetian-blind effect on some birds	Lacks Venetian-blind pattern	Lacks Venetian-blind pattern	Venetian-blind pattern not present on all *cachinnans*, but when present it is a very useful feature
Underwing	Normally strikingly white	Contrasting dark bars over whitish base colour	Typically rather dirty-looking, with much brown spotting	
Rump and tail	Striking white rump and tail contrasting with black tail band	As *cachinnans*	Tail band thicker, browner and less clean-cut; less contrast with tail base and rump	Pattern of *cachinnans* distinct from typical Herring, but overlaps with *michahellis*
Mantle and scapulars	In most, the scapulars are dominated by clean, grey feathers, with limited brown, but some retain more brown/spotted feathers	As *cachinnans*	Variable mixture of grey and brown feathers, but predominant tone is usually brownish. Often heavily marked with brown bars. Small proportion show extensive grey saddle	Generally, the scapular pattern (coupled with coverts and white head) makes *cachinnans* look older than Herrings of this age
Eye colour	Dark brown	Normally pale-looking but dark on some	Normally pale but dark on sizeable proportion	A pale eye would suggest that a bird is not *cachinnans*, but all three species can show dark eyes at this age

Appendix 1. *continued*

Older immatures (3rd-/4th-winters)	Caspian (*cachinnans*)	Yellow-legged (*michahellis*)	Herring	Comments
At this age several features need to be used in conjunction as individually they are of only limited value. No one feature is appreciably more valuable than the others.				
Black band on P5 & P4	Should show a thick (deeper than wide), unbroken, black band on P5; many also have black on P4	As *cachinnans*	May show a complete black band on P5 but rarely as deep as in *cachinnans* and *michahellis*. Black on P4 less frequent than *cachinnans*	Birds of this age lacking a complete black band on P5 are unlikely to be *cachinnans* or *michahellis*
Primary coverts	Most have extensive sharp black streaks, contrasting with otherwise grey wing	As *cachinnans*	Streaks browner, diffuse and contrast much less with rest of upperwing, which, especially in *argentatus*, can retain a brownish tinge to the grey	Useful for separating Herring from the other species, but overlap between *cachinnans* and *michahellis*
Primary tongues	Many have pattern that mirrors adult's, with grey tongues eating into the black wing-tip; others lack this and so the wing-tip resembles that of the other two species	Lacks tongues and so appearance is of an extensive and solidly black wing-tip	Less extensive black than *michahellis*, but *argenteus* lack tongues; some *argentatus* show tongues but these are normally less contrasting than on *cachinnans*	The presence of tongues eliminates *michahellis*, but other features needed to rule out *argentatus*
Upperpart grey tone	A neutral, Common Gull *L. canus* grey, but often looks more silvery at this age and so can appear to have paler upperparts than adults	Averages slightly darker than *cachinnans*: tone ranging from Common Gull to Kittiwake *Rissa tridactyla* grey	Paler in *argenteus*, but *cachinnans* sits within the range of *argentatus*. Slight bluish tint not seen in the other species	Useful for locating *cachinnans* among *argenteus*; *cachinnans* can be picked out in *michahellis* flocks by their subtly paler tone
Primary mirrors	Most frequently has large mirror on P10 and often a small one on P9	No mirror, or only a small one on P10	*L. a. argentatus* overlaps with *cachinnans; argenteus* typically has smaller mirrors	Useful only for separating *cachinnans* from *michahellis*
Leg colour	Grey flesh	Normally strong yellow tones, or at least greeny-grey	Flesh or pink	
Bill coloration and pattern	Pale yellow, often with a weak greenish tinge; variable dark mark/smudge behind bill tip	Often rather bright, especially in summer: yellowish with black in gonys and some scarlet red. Others duller and overlap with other species	Pattern normally intermediate, but can match either	Overlap complete, but typical *cachinnans* has dull bill with dark gonys smudge
Eye colour	Looks dark in the field in most	Normally pale (greeny, yellow or greyish-white) but some retain dark eyes	As *michahellis*	Overlap means this is of no real value at this age, but a very pale-eyed bird is unlikely to be *cachinnans*

Appendix 1. *continued*

Adults	Caspian (*cachinnans*)	Yellow-legged (*michahellis*)	Herring	Comments
Wing-tip pattern	Combination of long white tip to P10, pale grey tongues eating into black of P7–P10, clear and sharply demarcated white tongue visible on the underside of P10, and (in most) solid black band on P5 is extremely indicative	Lacks tongues and only rarely has fully white tip to P10; broad black band across P5	Typical *argenteus* has black subterminal bar across P10 (not a long white tip), black on only the outer web of P5, a short diffuse tongue on the underside of P10, and no tongues on the upperside of P7–P10; however, some *argentatus* overlap completely with *cachinnans*	Primary pattern diagnostic between Caspian and Yellow-legged and between Caspian and *argenteus* but not between Caspian and *argentatus* Herring
Colour of eye and orbital ring	Typically (>50%) dark-eyed with an eye-ring that ranges from pale orange to red; pale eyes are not uncommon, however	Pale yellow (even whitish) with deep red (scarlet) orbital, giving a staring, aggressive look	Pale yellow with yellow (*argenteus*) to red (some *argentatus*) orbital	Although eye colour is key to giving *cachinnans* their characteristic look, apparently adult Yellow-legged and Herring Gulls can retain dark eyes, while pale eyes can appear dark in poor light or at a distance (good views are essential)
Leg colour	Highly variable: in winter, the majority have greyish-flesh legs; in breeding season many are weakly yellowish, some stronger yellow	Typically a rich yellow, sometimes with a faint orange element (like *graellsii*) lacking in most Baltic *argentatus*	Variable: flesh-pink in *argenteus*, but *argentatus* range from flesh-pink through grey-yellow to bright yellow	A bird in midwinter with bright yellow legs is unlikely to be *cachinnans*, but otherwise leg colour is of limited value
Bill coloration	In winter, typically duller (greeny-yellow) than for other species, reddish gonys weak and restricted; in summer, overlaps with Herring, less bright than *michahellis*	Bright yellow with a strong red gonys spot, that frequently extends onto the upper mandible	Overlaps with *cachinnans* in summer; in winter, most *argenteus* have brighter bills than *cachinnans*, but *argentatus* overlap	As with leg and eye colour, while there is a typical *cachinnans* 'look', there is also complete overlap with Herring Gull