Mixed colonies of large white-headed gulls in southern Poland

Marcin Faber, Jacek Betleja, Robert Gwiazda and Pawel Malczyk

In the early part of 1999, we discovered a small colony of large white-headed gulls *Larus* at a gravel-pit near Jankowice, on the banks of the Vistula river in southern Poland, about 50 km from Krakow. On 28th February, we observed six pairs of gulls there which showed characteristics of the nominate race of Yellow-legged Gull *L. cachinnans cachinnans* ('Caspian Gull', hereafter referred to simply as *cachinnans*). When engaged in the characteristic long-call display, they adopted the 'albatross posture', with head raised vertically, and wings raised above and behind the body with the hand unbent, which is characteristic of *cachinnans* (Mierauskas *et al.* 1991; Jonsson 1998), while the calls were also lower-pitched than those of 'Northern' Herring Gulls *L. argentatus argentatus* (hereafter referred to simply as *argentatus*). During a subsequent visit to the colony, on 17th April, when the gulls were nesting, we also observed two individuals of the Mediterranean race of Yellow-legged Gull *L. c. michahellis* (hereafter referred to simply as *michahellis*).

At the Jankowice colony, there were 11 occupied nests in May 1999, while some 40 nests were found in both 2000 and 2001. We visited colonies of large gulls elsewhere in southern Poland, including one of about 120 nests (at Tarnow) and two each of about ten nests (at Goczalkowice reservoir and Czorsztyn reservoir), and we estimate the current breeding population of *cachinnans* in southern Poland to be approximately 180 pairs.

During three years of study at Jankowice, Tarnow and Goczalkowice reservoir, we managed to capture 85 gulls, which we ringed, measured and photographed (see plates 287-297), and of which we compiled detailed descriptions. Most (77.6%) showed characters of adult or subadult *cachinnans* (plates 287-289), while five individuals (5.9%) were identified as *michahellis* (plates 290 & 291). We did not find typical *argentatus* in these breeding colonies, but 16.5% of the gulls which we examined in the hand showed features consistent with their being hybrids. Most of those which we believe to have been hybrids exhibited characters that were intermediate between those of *argentatus* and those of *cachinnans* (plates 294 & 295). In addition, two individuals showed features intermediate between *cachinnans* and *michahellis* (plates 292, 293, 296 & 297).

Details of captured gulls

In order to assign individuals to a particular taxon, we used the following key texts: Bakker *et al.* (2000), Garner & Quinn (1997), Garner *et al.* (1997), Jonsson (1996, 1998), Klein & Gruber (1997) and Neubauer & Millington (2000). We also discussed the putative hybrid individuals with a number of gull experts, in particular Detlef Gruber, Ronald Klein, Gregory Neubauer and Rik Winters.

L. c. cachinnans The upperwing pattern was typical of the western, or Black Sea, type, often referred to as *L. c. ponticus*. Biometrics also supported our identification of these birds as *cachinnans*.

Key identification features were as follows. Long, obvious, whitish 'tongue' projecting towards the tip of the inner web of the outermost primaries, forming a clear contrast with the darker mantle. Typically, a wide, complete black band across both webs of P5 (primaries numbered descendently, with the outermost being P10),

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287. Subadult Yellow-legged Gull *Larus cachinnans* of nominate subspecies *cachinnans*, Jankowice, southern Poland, 2nd May 1999. Note the very long and comparatively slender bill, and flat forehead. Orbital ring orange-red, while the iris appears dark at distance (but is yellowish with dense brown spotting at close range).

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288. Wing of adult Yellow-legged Gull *Larus cachinnans* of nominate subspecies *cachinnans*, Jankowice, southern Poland, 2nd May 1999. This individual has a typical '*ponticus*' (Black Sea-type) wing pattern, with a white tip to P10 and extensive white 'tongues' extending into the black wingtip.

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289. Wing of subadult Yellow-legged Gull *Larus cachinnans* of nominate subspecies *cachinnans*, Jankowice, southern Poland, 1st May 1999. Like the individual in plate 288, this has a typical '*ponticus*' wing pattern. On the primary coverts, traces of brown confirm that this bird is not yet fully mature.

sometimes with a black spot on P4, too (plate 288). Only a narrow black band on P10, this lacking altogether in many cases. Mantle paler than *michahellis*, and a similar shade of grey to *argentatus*. Forehead comparatively long and flat, bill slender. Legs pale yellow or greyish-pink. Orbital ring orange-red. Iris generally brown or light brown, but often yellowish with dense, darker brown spotting, causing it to appear dark at a distance (plate 287).

L. c. michahellis Mantle colour dark grey, darker than any other form discussed here, with deep yellow legs and clean, pale yellow iris (plate 290). Primaries with extensive black, covering almost one-third of the hand. Pale tongues on the outer primaries, not showing marked contrast with mantle (plate 291).

'*argentatus* × *cachinnans* hybrids' 12 individuals showed features intermediate between these two forms, although we cannot be absolutely certain that they are true hybrids, rather than simply less typical *cachinnans*. These birds typically showed the following features:

In general, biometrics not typical of *argentatus* or *cachinnans* (*BWP*; Mierauskas *et al.* 1991; see Appendix 1 on page 534). Rounded head shape, with high forehead, favouring *argentatus*, as did the iris colour (very pale, yellow, finely spotted brown; appeared pale at a distance). Leg colour intermediate between the two, greyer than typical flesh-pink of *argentatus*. Upperwing primaries showed a typical pattern for western *cachinnans*, with very obvious whitish tongues on the outermost primaries,

showing a marked contrast with the darker mantle. Mantle colour of similar shade of grey to *cachinnans*.

One individual is shown in plates 294 & 295. The biometrics of this individual are typical for *argentatus* (*BWP*; Mierauskas *et al.* 1991), with the exception of the bill, which was comparatively long and slender. Wings relatively short, and tarsi relatively short and wide, similar to *argentatus*. In addition, this individual, when examined on 1st May 1999, differed from all the *cachinnans* handled on that date in that it was the only one which had not yet begun primary moult. All the gulls diagnosed as pure *cachinnans* had commenced moult, having lost two or three innermost primaries.

'*michahellis* × *cachinnans* hybrids' Two adult males showed features intermediate between these two forms. They were characterised by a comparatively dark mantle, darker than that of a typical *cachinnans*, with a broad black band on P5. One of them had dark grey longitudinal spots on P4 and P3, while the primaries had very small apical spots. A large extent of black on the primaries covered approximately one-third of the hand (plates 292 & 297). Both had a relatively steep forehead, and the bill was long and, particularly, deep. Leg colour of one individual was pale yellow, and that of the other pale pink. The irides were yellow with some brown spotting (plates 293 & 296). These two individuals had biometrics closer to *cachinnans* than to *michahellis*, the only marked difference (from *cachinnans*) being in bill depth (see Appendix 2 on page 534).

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290. Adult 'Mediterranean' Yellow-legged Gull *Larus cachinnans michahellis*, Jankowice, southern Poland, 1st May 1999. Note the dark grey mantle, deep yellow legs and plain, pale yellow iris.

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291. Wing of adult 'Mediterranean' Yellow-legged Gull *Larus cachinnans michahellis*, Jankowice, southern Poland, 1st May 1999. This form shows a great deal of black on the primaries, extending across about one-third of the hand. The grey 'tongues' on the outer primaries do not differ sharply in colour from the mantle.

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292. Wing of adult gull thought to be hybrid between nominate and Mediterranean forms of Yellow-legged Gulls *Larus cachinnans cachinnans* and *L. c. michahellis*, Jankowice, southern Poland, 1st May 1999. The grey 'tongues' do not contrast with the dark mantle; there is a broad black band on P5 and dark grey longitudinal spots on P4 and P3, while there are just very small apical spots on the primaries. See text for further discussion.

Discussion

In recent years, large white-headed gulls have shown an increase in numbers and an expansion of range in many parts of Europe (Snow & Perrins 1998). In Poland, *argentatus* began to nest in the early 1970s, since when a steady rise in numbers and an extension of the area occupied have been observed (Tomia≥ oj© 1990). Currently, this subspecies occurs mainly in northern Poland (Hagemeijer & Blair 1997).

Large gulls with yellow legs were first recorded breeding in southern Poland in the 1980s, in the central part of the Vistula river basin (Dubois *et al.* 1990), where small numbers still breed. The subspecific identity of these gulls has caused a great deal of debate (Chylarecki & Sikora 1991; Dubois *et al.* 1990; Eigenhuis 1990; Mierauskas & Greimas 1992; P. Chylarecki *in litt.*), although Jonsson (1998) claimed that all three forms (*argentatus*, *cachinnans* and *michahellis*) are present at this site. Away from this area, breeding by yellow-legged gulls was recorded in 1998 in Malopolska, near Przemysl (Walasz & Mielczarek 1992), and on the Mietkowski reservoir, in Silesia, where two pairs of *michahellis* nested within a colony of *cachinnans* in 2001 (T. Stawarczyk *in litt*). Until recently, this was the only confirmed Polish record of yellow-legged gulls which had been confidently identified to subspecies. Now, new colonies of nesting large gulls are discovered in southern Poland every year. At Jankowice, we have confirmed that individuals of the forms *michahellis* and *cachinnans* are nesting side by side. We cannot be absolutely certain that the two forms are mixing, although the appearance of gulls with intermediate features would suggest that this is the case.

In conclusion, although the identification of adult *michahellis* is, in our opinion, relatively straightforward, our experience

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293. Head of putative hybrid between nominate and Mediterranean forms of Yellow-legged Gulls *Larus cachinnans cachinnans* and *L. c. michahellis*, Jankowice, southern Poland, 1st May 1999. Note the long bill (more similar to *cachinnans*), but which is also deep, and the steep forehead (both more similar to *michahellis*). The iris is yellow but with plenty of brown spots, intermediate between the two forms.

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294. Adult gull thought to be hybrid between nominate Yellow-legged Gull *Larus cachinnans cachinnans* and 'Northern' Herring Gull *L. argentatus argentatus*, Jankowice, southern Poland, 1st May 1999. The head shape is rounded, with a high forehead, while the tarsus is short and quite thick (favouring *argentatus*). The bill is long and comparatively slender, favouring *cachinnans*. The legs are pale, greyish-flesh, while the iris colour is pale, yellow, but spotted brown, both features which are intermediate between typical examples of the two forms.

suggests that the positive identification of adult *cachinnans* in this part of Europe can be extremely tricky. The occurrence of putative hybrids, or of individuals which are intermediate in appearance between *cachinnans* and *argentatus*, means that observers should be cautious in assigning individuals to this taxon in the field, at least without extremely detailed observations or an analysis of photographs.

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295. Wing of putative hybrid between nominate Yellow-legged Gull *Larus cachinnans cachinnans* and 'Northern' Herring Gull *L. argentatus argentatus*, Jankowice, southern Poland, 1st May 1999. The mantle is very pale grey, with a typical '*ponticus*' wing pattern showing a very long white 'tongue' on P10. All biometric features are, however, typical of *argentatus*.

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296. Head of adult putative hybrid between nominate and Mediterranean forms of Yellow-legged Gulls *Larus cachinnans cachinnans* and *L. c. michahellis*, Jankowice, southern Poland, April 2000.

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297. Wing of adult putative hybrid between nominate and Mediterranean forms of Yellow-legged Gulls *Larus cachinnans cachinnans* and *L. c. michahellis*, Jankowice, southern Poland, April 2000.

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Appendix 1. Biometrics of *Larus cachinnans cachinnans* from the Black Sea and of *L. argentatus argentatus* from the Baltic Sea (Mierauskas *et al.* 1991), together with biometrics of 12 Polish gulls showing intermediate characters between those two taxa. All measurements are in mm.

	Sex	*cachinnans* Black Sea			*argentatus* Baltic sea			Twelve Polish gulls		
		Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.	No.
Head+bill length	M	133.6	0.5	35	131.0	1.0	16	132.2	0.5	5
	F	122.9	0.3	71	120.5	0.6	26	123.0	2.7	7
Bill length	M	62.1	0.4	34	57.6	0.7	16	59.8	1.7	5
	F	56.3	0.3	71	51.9	0.4	26	56.2	1.6	7
Bill depth (at gonys)	M	19.5	0.2	35	19.6	0.2	16	20.2	0.5	5
	F	17.2	0.1	71	17.6	0.1	26	17.2	0.6	7
Bill length/bill depth at gonys	M	3.18			2.94			2.96	0.1	5
	F	3.27			2.95			3.26	0.1	7
Tarsus	M	72.3	0.4	35	68.2	1.0	16	72.6	2.1	5
	F	66.9	0.3	71	64.9	0.7	26	65.8	2.2	7
Wing	M	464.6	1.6	35	452.0	2.4	16	460.6	11.3	5
	F	440.8	1.0	71	434.0	1.9	26	431.7	12.5	7

Appendix 2. Biometrics of *Larus cachinnans michahellis* from the Mediterranean and of *L. c. cachinnans* from the Black Sea (G. Neubauer & M. Zagalska, unpublished data), together with biometrics of two Polish gulls showing intermediate characters between those two taxa. All measurements are in mm, and all refer to males.

		Head+bill length	Bill length	Bill depth (at gonys)	Bill depth (at nostril)	Bill length/ bill depth at gonys	Tarsus	Wing
michahellis Mediterranean	Mean	131.7	57.0	20.1	18.1	2.9	69.6	454.6
	S.D.	4.1	3.2	1.1	1.0	0.1	2.8	7.7
	No.	13	15	16	16	14	11	11
cachinnans Black Sea	Mean	136.5	62.5	19.8	18.5	3.2	73.6	454.3
	S.D.	4.0	2.9	0.9	1.0	0.1	2.1	11.2
	No.	23	24	24	24	24	22	23
Two Polish gulls	1	135.2	61.2	20.1	18.5	3.04	79	465
	2	142	64.4	21.1	19.2	3.05	76	477
	Mean	138.6	62.8	20.6	18.9	3.05	78	471

Marcin Faber, Przybosia 5, PL-91-170 Lodz, Poland; e-mail: marfaber@poczta.onet.pl (corresponding author)

Jacek Betleja, Department of Natural History, Upper Silesian Museum, Sobieskiego 2, PL-41-902 Bytom, Poland

Dr Robert Gwiazda, Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, S≥awkowska 17, PL-31-016 Kraków, Poland

Pawel Malczyk, Graniczna 1, Psary, PL-32-545 Karniowice, Poland