

Hybrid gulls in Belgium – an update

Peter Adriaens, Harry J. P. Vercrujssse and Eric W. M. Stienen

Abstract This paper provides an update on interbreeding by three species of large white-headed gull at a colony in Zeebrugge, Belgium. Mixed breeding in the colony was studied in detail in 2010, and this account documents some of the known hybrids and their offspring. The results have particular significance for the identification of Yellow-legged Gull *Larus michahellis* in western Europe, in terms of record assessment in areas where the species is still a rarity, and also in terms of measuring the continuing range expansion of that species.

Interbreeding among large white-headed gulls in the Low Countries has been documented by various authors, including Tinbergen (1929), van Dobben (1931), Voous (1946), Cottaar & Verbeek (1994), Vercrujssse (1995) and Cottaar (2004) in the Netherlands, and Vercrujssse *et al.* (2002a,b) and Adriaens (2003) in Belgium. Eight years have now passed since the last paper on the subject, during which time more research has

been carried out and colour-ringing projects have produced a wealth of new information. In this paper, we describe the current situation in Zeebrugge, Belgium, and document several colour-ringed hybrids and backcrosses in various plumages. This information is particularly relevant in terms of the identification of Yellow-legged Gull *Larus michahellis* in areas where that species is still rare (which includes large parts of northern

Table 1. Numbers of pairs of breeding gulls at Zeebrugge, Belgium, since 2001 (based on Vercrujssse *et al.* 2002b, Adriaens 2003, Stienen *et al.* 2007, Courtens *et al.* 2008, 2009, 2011, Adriaens *et al.* 2012, and own data INBO). In 2011, one pair of Yellow-legged Gulls was present, but did not nest. The number of hybrid gulls each year is almost certainly underestimated, since particular attention was paid to this subject only in 2010.

	Number of breeding pairs					
	Herring Gull	Lesser Black-backed Gull	Yellow-legged Gull (pure)	Interbreeding Yellow-legged × Herring/LBB/hybrid gull	Interbreeding hybrid gull × Herring/LBB Gull	Interbreeding Herring × LBB Gull
2001	1,184	2,695	0	1	>3	0
2002	953	3,404	2	2	>3	0
2003	1,479	4,164	1	2	>3	0
2004	1,986	4,515	1	2	>3	0
2005	1,872	4,321	1	3	>3	1
2006	1,732	4,573	1	3	>2	0
2007	1,315	3,995	0	3	>4	0
2008	1,755	4,243	1	3	>5	0
2009	2,417	4,484	2	4	>5	0
2010	2,433	4,385	1	3	9	0
2011	2,336	4,760	0	1	>6	0

Britain at least) and mapping out the species' range expansion in western Europe.

Mixed pairs of Herring *L. argentatus* and Lesser Black-backed Gulls *L. fuscus* have always been rare in Belgium, with the last known cases of interbreeding in 1998 (when one mixed pair raised three young; D. Vange-luwe pers. comm.) and in 2005, when a mixed pair was observed on the nest and photographed (W. Courtens pers. comm.). Despite intensive research in the Zeebrugge colony since 1999, no other mixed pairs of Herring/Lesser Black-backed Gull have been found. However, Yellow-legged Gulls have recently made a significant entry into the picture – or rather the genetic pool – at Zeebrugge. Numbers of pure pairs of Yellow-legged Gulls are still very low (0–2 per year; plate 311), but the species interbreeds regularly with the abundant Herring and Lesser Black-backed Gulls (table 1). In addition, some offspring of these mixed pairs have returned to the colony and produced young (backcrosses). Table 2 gives an overview of the mixed pairs recorded at Zeebrugge in the 2010 breeding season, with their respective rings. That year, one pure pair of Yellow-legged Gulls also bred (unsuccessfully), and four unringed hybrids were present in the colony (in addition to five or six ringed birds; see table 2). Thus, more Yellow-legged Gulls were breeding in mixed (three) than in pure (one) pairs, while pure Yellow-legged Gulls were outnumbered by hybrids (9–10 individuals), making identification of 'michahellis types' in the colony quite challenging. A similar situation has been described in the Netherlands (Cottaar 2004).

We have little information about the

reproductive success of the birds in table 2, but we know that the mixed pair MLAT × LZAP raised one young (i.e. a backcross) in 2010, fitted with blue NPAP (see plates 299–301). The pairs KRAP × DKAG and H112111 × MNAZ also produced chicks, which were metal-ringed but not seen subsequently and may have died.

Notes on individual birds

Here, we present general information on the ringed hybrids observed in 2010–11. Field identification of these birds is discussed in the captions to the plates.

Blue GJAL (plates 285–287)

This female gull (plate 285; 'bird A' in Adriaens 2003) is usually present in the Zeebrugge area year-round, with occasional visits to Maine-et-Loire, France. It was ringed as a chick at Rotterdam, the Netherlands, in June 1992, as a Herring × Yellow-legged Gull, although the ringer could not exclude the possibility that the 'Yellow-legged Gull' was in fact a hybrid (N. D. van Swelm pers. comm.). Its dark grey upperparts (much darker grey than Herring, even darker than Yellow-legged Gull) are remarkable, and reason to believe that the other parent may have been a hybrid (e.g. Yellow-legged × Lesser Black-backed).

In 2001, this bird's primary pattern was characterised by two white mirrors on both wings: a large, prominent one on the outermost primary (P10), largely merging with the white primary tip, and a smaller one on P9, restricted to the inner web (see photo 2 in Adriaens 2003). However, in 2007, the white mirror on P9 had become distinctly smaller,

Table 2. Mixed pairs of gulls in the Zeebrugge colony in 2010, with information about their rings and offspring (if colour-ringed).

Taxon (colour-ringed)	Ring	Paired with	Ring	Offspring
Yellow-legged Gull	blue FLAT	× Herring Gull	blue GFAU	
Yellow-legged Gull	metal H132902	× LBB Gull	blue LBAS	
Yellow-legged Gull	metal H112111	× hybrid YLG × HG	blue MNAZ	
hybrid YLG × LBBG	blue MLAT	× LBB Gull	blue LZAP	blue NPAP
hybrid	blue GHAM	× LBB Gull	—	
hybrid LBBG × HG	blue KRAP	× LBB Gull	blue DKAG	
unknown	blue FLAF	× LBB Gull	blue KRAY	
hybrid (HG × unknown)	blue GJAL	× Herring Gull	—	

and was even absent in the right wing altogether (plate 286). In 2010, the P9 mirror of the left wing had returned to its original size in 2001, but the one in the right wing was still decidedly smaller (though no longer absent; plate 287). As far as we know, such obvious

year-to-year variation in primary pattern has not been described previously in a large gull.

Each year between 1998 and 2008, GJAL was paired with the same (colour-ringed) Lesser Black-backed Gull. In 2009, it switched to a Herring Gull from a neighbouring terri-

Peter Adriaens



285. Blue GJAL – adult female hybrid Herring Gull *Larus argentatus* x unknown – with its partner, a Herring Gull, Zeebrugge, 18th May 2010. GJAL is very similar to a pale Lesser Black-backed Gull *L. fuscus* of race *graellsii*, but with larger white primary tips, all-white mirror and tip on P10, and subtly more bluish-grey upperparts. Compared with Yellow-legged Gull *L. michahellis*, note broader white tertial crescent, slightly darker upperparts, and petite head.

Wouter Courtens



286. Blue GJAL, 4th June 2007. The white mirror on P9, present in at least 2001 and 2010, has disappeared (cf plates 285 & 287 and see text).

Peter Adriaens



287. Blue GJAL, Zeebrugge, 18th May 2010. Grey tongues on the underside of the primaries are more extensive than in most Yellow-legged and Lesser Black-backed Gulls, in which the wing-tips typically appear more extensively 'dipped in ink'.

tory (while its former partner bred with another Lesser Black-backed). From then on, some of GJAL's bare parts (such as gape and orbital ring) became noticeably less bright; could bare-part colour vary from season to season to match that of the partner?

Blue KRAP (plates 288–290)

Blue KRAP ('bird B' in Adriaens 2003) was ringed as a chick at Zeebrugge in June 1992, the offspring of a mixed Lesser Black-backed Gull × Herring pair.

288. Blue KRAP, adult male Lesser Black-backed x Herring Gull hybrid, Zeebrugge, 14th May 2010. Compared with Yellow-legged Gull, note slightly shorter primary projection, broader white tertial crescent, subtly different shade of grey on upperparts, and more elongated head profile with long, sloping forehead.



Peter Adriaens

289. Blue KRAP, Zeebrugge, 14th May 2010. Note fairly long grey tongues on primaries, and rather broad white trailing edge to secondaries.



Peter Adriaens

290. Blue KRAP, Zeebrugge, 14th May 2010. Note fairly long grey tongues on primaries, and rather broad white trailing edge to secondaries.



Peter Adriaens

Metal HI46307 (plates 291 & 292)

This bird was ringed as a chick at Zeebrugge in June 2006, the offspring of a male Yellow-legged Gull and female Herring Gull. It bred

at Zeebrugge in 2011, when it appeared to be a male, and was paired with a Herring Gull. It is not known whether the pair raised young.

Harry J. P. Vercruijssse



291. Metal HI46307 – adult male Yellow-legged Gull x Herring hybrid – with its partner, a Herring Gull, Zeebrugge, 30th March 2011. A big, powerful gull, which differs from Yellow-legged Gull in its shorter primary projection, broader white tertial crescent, slightly paler upperparts, and greenish tinge on legs.

Peter Adriaens



292. Metal HI46307, Zeebrugge, 12th May 2011. The primary pattern is similar to that of Yellow-legged Gull, though with a little more grey at the base of P9 than average, while the white trailing edge to the secondaries is slightly wider than in Yellow-legged Gull.

Blue MNAZ (plates 293 & 294)

Blue MNAZ was ringed as a chick at Zeebrugge in July 2004. It was first noted in

the Zeebrugge colony as an adult in 2008, when it bred very close to a mixed pair (Yellow-legged and Herring Gull) and is most

Table 3. Biometrics of blue MNAZ, with mean values of adult male *argenteus* (from Cramp & Simmons 1983 [1] and Olsen & Larsson 2003 [2])

	Blue MNAZ	Adult male <i>argenteus</i> (mean values)
Length of head	131.5 mm	
Bill	55.2 mm	53.2 [1]
Bill depth at gonys	21.0 mm	19.9 [2]
Tarsus	69.3 mm	65.2 [1]
Wing length	451 mm	425 [1]
Weight	1,284 g	977 g [1]
		(max. 1,186 g; own data)

likely an offspring of this pair; morphologically, it is very similar to metal HI46307. It was caught in May 2010 (table 3); this was a particularly big, heavy bird – heavier than any *argenteus* Herring Gull on record. It appeared to be a male, and was paired with the same Yellow-legged Gull in 2008–10.

293. Blue MNAZ (right) – adult male Yellow-legged x Herring Gull (before it was colour-ringed) with its partner, a Yellow-legged Gull, Zeebrugge, 13th April 2010. Note how, in the hybrid gull, the white tertial crescent is more prominent and continues as a white ‘skirt’ below the greater coverts; also note the shorter primary projection (with slightly larger white primary tips), subtly paler grey upperparts, paler legs with greenish tinge, and paler orbital ring.



Harry J. P. Vercruijsse

294. Blue MNAZ, Zeebrugge, 21st May 2010. The primary pattern is more similar to that of Herring Gull. The inner secondaries are all white, creating a very wide trailing edge.



Peter Adriaens

Blue FLAF (plate 295)

Blue FLAF, ringed as an adult at Zeebrugge in June 2006, was considered to be a male Yellow-legged Gull when ringed. It is very similar to that species, but there are some reasons to suspect a hybrid or backcross

origin. It shows a migration pattern more typical of Lesser Black-backed Gull, spending the entire winter near Valencia, Spain, until early March. Although there is intra-population variation in migratory strategies of most taxa, territorial Yellow-legged Gulls normally

295. Blue FLAF – adult male gull *Larus* sp., Zeebrugge, 20th May 2010. This bird is extremely similar to Yellow-legged Gull, but the orbital ring is slightly paler, with a rather more orange lower half, and the gonys spot is rather pale too. In direct comparison, the upperparts are subtly darker than in Yellow-legged Gull, but the difference is very small.



Peter Adriaens

return to the Zeebrugge colony in December. In addition, it shows some morphological traits which are not entirely typical of Yellow-legged Gull (see plate 295). This bird has bred in the Zeebrugge colony since 2000, and was paired to a Herring Gull each year until 2004,

when it mated with a Lesser Black-backed Gull, which it has remained faithful to since then.

Blue MLAT (plates 296–298)

First ringed as a chick at Zeebrugge in June

Peter Adriaens



296. Blue MLAT – adult male Yellow-legged x Lesser Black-backed Gull hybrid, Zeebrugge, 10th May 2010. It differs from Yellow-legged Gull in its broader white tertial crescent and slightly darker grey upperparts – quite similar to a pale *graellsii*, but upperparts with more of a bluish tinge, and contrasting more strongly with the black wing-tips.

Peter Adriaens



297. Blue MLAT, Zeebrugge, 11th May 2010. The pattern on the upperwing is basically similar to that of Yellow-legged Gull.

Peter Adriaens



298. Blue MLAT, Zeebrugge, 10th May 2010. On the underwing, grey tongues on the outer primaries are slightly longer than on an average Yellow-legged Gull, though the pattern certainly overlaps.

2002, this is a hybrid Yellow-legged × Lesser Black-backed Gull that was colour-ringed in May 2010. It appears to be a male, and has always paired with a Lesser Black-backed Gull, successfully raising young in several years.

299. Blue NPAP – juvenile backcross [Yellow-legged × Lesser Black-backed Gull (blue MLAT)] × Lesser Black-backed Gull, Zeebrugge, 11th July 2010. This bird is extremely similar to a juvenile Lesser Black-backed Gull and there are probably no useful differences, but note that dark bars on the central greater coverts are slightly more widely spaced than on an average juvenile Lesser Black-backed Gull.



Peter Adriaens

300. Blue NPAP, Zeebrugge, 11th July 2010. It is effectively inseparable from Lesser Black-backed Gull.



Peter Adriaens

301. Blue NPAP, Valdoviño, A Coruña, Spain, 13th December 2011. In its second winter, this backcross still looks identical to Lesser Black-backed Gull.



Antonio Gutierrez

Blue TBAC (plates 302–304)

Blue TBAC is an offspring of blue FLAF (see above) and a Lesser Black-backed Gull, hatched at Zeebrugge in 2011. It was last seen at the Zeebrugge colony on 17th August

2011, but the next day it was recorded at Dungeness, Kent. In February and April 2012 it was sighted in France and on 11th May 2012 it revisited the Zeebrugge colony.



Peter Adriaens

302. Blue TBAC – juvenile hybrid or backcross, [blue FLAF] x Lesser Black-backed Gull, Zeebrugge, 22nd July 2011. Both the wing and the tail pattern are similar to those of Lesser Black-backed Gull.



David Walker

303. Blue TBAC, Dungeness, Kent, 18th August 2011. Now that the bird is at rest, the juvenile plumage perhaps appears most similar to Yellow-legged Gull.



Harry J. P. Vercrujse

304. Blue TBAC, Zeebrugge, 11th May 2012. The plumage of this bird, which is now approaching one year old, most resembles that of Lesser Black-backed Gull, though a few black-and-white rear scapulars are present, which recall Yellow-legged Gull.

Unringed (plates 305 & 306)

This unringed juvenile is a backcross of blue MLAT (see above), a Yellow-legged × Lesser

Black-backed Gull hybrid, with a Lesser Black-backed Gull, hatched at Zeebrugge in 2011.

305 & 306. Unringed juvenile backcross of [Yellow-legged × Lesser Black-backed Gull (blue MLAT)] × Lesser Black-backed Gull, Zeebrugge, 22nd July 2011. Wing and tail like Lesser Black-backed Gull; strongly scalloped edges to lower scapulars.



Peter Adriaens



Peter Adriaens

Green – no code (plates 307–309)

This is a hybrid Lesser Black-backed × Herring Gull hatched in a private collection

in Belgium in 2008, the product of an ‘accidental’ pairing between two injured birds in captivity.

307. Third-cycle Lesser Black-backed × Herring Gull hybrid, Belgium, 13th August 2010. Compared with a typical Yellow-legged Gull of the same age, note the duller leg colour and pale brown (not blackish) tertial centres.



Peter Adriaens

Peter Adriaens



Peter Adriaens



308 & 309. Third-cycle Lesser Black-backed x Herring Gull hybrid, Belgium, 13th August 2010. In flight, it differs from Yellow-legged Gull of the same age in having an extensive brown tail-band (thinner, blacker and more clear-cut in Yellow-legged Gull). Note also rather solid brown axillaries (usually paler in Yellow-legged Gulls of the same age).

Conclusions

Of almost 7,000 breeding pairs of large gulls at the Zeebrugge colony in 2010, at least 12 were mixed pairs (i.e. about one in 570 pairs was mixed). Most of these consisted of a hybrid gull interbreeding with a pure species,

but a few Yellow-legged Gulls were also found mixing with Lesser Black-backed (one) and Herring Gulls (one). At least one juvenile was successfully raised (blue NPAP), but the real number of fledged juvenile hybrids and backcrosses is surely higher. The young can easily

be missed as they leave the nest early and hide in dense vegetation or rabbit burrows, making it very difficult for researchers to assign them correctly to their parent species. Clearly, hybrids are more frequent in the colony than pure Yellow-legged Gulls. Most of the adult hybrids can be recognised by a careful assessment of mantle colour, the width of the white tertial edges and white trailing edges to the wing, colour of bare parts and primary pattern. A few adults, such as blue FLAF, and many juveniles seem virtually impossible to identify correctly, though. Most of the hybrids spend a large part of the year in or near the Zeebrugge area, but some have been observed in France (on several occasions), England and Spain.

Acknowledgments

For further information on ringed birds and/or mixed breeding we would like to thank Wouter Courtens, Volker Dierschke, Sönke Martens, Filip De Ruwe, Norman D. van Swelm, Marc Van de walle and Didier Vangeluwe. Marc was also an invaluable help in the field. Wouter Courtens, Antonio Gutierrez, Filip De Ruwe and David Walker provided us with photographs. Special thanks go to all of those people who read our rings and report them.

References

Adriaens, P. 2003. Hybrid gulls breeding in Belgium: www.surfbirds.com/ID%20Articles/adriaensgulls1203.html

—, Stienen, E. W. M., Courtens, W., Van de walle, M., Vanermen, N., Verstraete, H., & Verbelen, D. 2012. Eindrapport monitoring SBZ-V 'Kustbroedvogels te Zeebrugge-Heist' en SBZ-V 'Poldercomplex' – resultaten van het zevende jaar (2011–12). INBOR.2012.27. Instituut voor Natuur- en Bosonderzoek, Brussel.

Cottaar, F. 2004. Geelpootmeeuwcomplex van IJmuiden: in hoeverre zijn geelpootmeeuwen echte Geelpootmeeuwen? *Dutch Birding* 26: 36–42.

— & Verbeek, K. 1994. Geelpootmeeuw *Larus michahellis* gepaard met Kleine Mantelmeeuw *Larus fuscus* broedend te IJmuiden. *Dutch Birding*

16: 231–232.

Courtens, W., Stienen, E. W. M., Verbelen, D., & Van de walle, M. 2008. Eindrapport monitoring SBZ-V 'Kustbroedvogels te Zeebrugge-Heist' en SBZ-V 'Poldercomplex' – resultaten van het derde jaar (2007–2008). INBOR.2008.28. Instituut voor Natuur- en Bosonderzoek, Brussel.

—, —, Van de walle, M., Verbelen, D., Adams, Y., & Daemen, E. 2009. Tussentijds rapport monitoring SBZ-V 'Kustbroedvogels te Zeebrugge-Heist' en SBZ-V 'Poldercomplex' – resultaten van het vijfde jaar (2009–2010). INBOR.2009.59. Instituut voor Natuur- en Bosonderzoek, Brussel.

—, —, Adriaens, P., Van de walle, M., Verbelen, D., & De Bie, J. 2011. Eindrapport monitoring SBZ-V 'Kustbroedvogels te Zeebrugge-Heist' en SBZ-V 'Poldercomplex' – resultaten van het zesde jaar (broedseizoen 2010). INBOR.2011.30. Instituut voor Natuur- en Bosonderzoek, Brussel.

Cramp, S., & Simmons, K. E. L. (eds.) 1983. *The Birds of the Western Palearctic*. Vol. 3. OUP, Oxford.

Olsen, K. M., & Larsson, H. 2003. *Gulls of Europe, Asia and North America*. Christopher Helm, London.

Stienen, E. W. M., Vanermen, N., & Courtens, W. 2007. Veranderingen in het broedbestand van Zilvermeeuw en Kleine Mantelmeeuw te Zeebrugge in het verleden en te verwachten veranderingen in de nabije toekomst. Adviesnota INBO.A.2007.69. Instituut voor Natuur- en Bosonderzoek, Brussel.

Tinbergen, N., 1929. A breeding pair of Herring Gull (*Larus a. argentatus* Pont.) x Lesser Black-backed Gull (*Larus fuscus* subsp.). *Ardea* 18: 1.

van Dobben, W. H. 1931. Einzelheiten über Farbe und Brutbiologie der auf Terschelling nistenden Heringsmöwen (*Larus fuscus* subsp.). *Ardea* 20: 143–147.

Vercrujssse, H. J. P. 1995. In Frankrijk geringde Geelpootmeeuw (*Larus cachinnans michahellis*) gepaard met Zilvermeeuw (*Larus argentatus*) op Neeltje Jans in 1992–94. *Dutch Birding* 17: 246–247.

—, Stienen, E. W. M., & van Waeyenberge, J. 2002a. First pure pairs of Yellow-legged Gull *Larus [cachinnans] michahellis* along the North Sea coasts. *Atlantic Seabirds* 4: 127–129.

—, — & — 2002b. Geelpootmeeuw *Larus michahellis* als nieuwe broedvogel in België. *Natuur.oriolus* 68: 120–122.

Voous, K. H. 1946. Sur un cas d'hybridation naturelle entre *Larus fuscus* L. et *Larus argentatus* Pont. dans les Pays-Bas. *Alauda* 14: 21–32.

Peter Adriaens and Eric W. M. Stienen, Research Institute for Nature and Forest, Kliniekstraat 25, 1070 Brussels, Belgium
 Harry J. P. Vercrujssse, Girostraat 38, 5038 DN Tilburg, The Netherlands



Peter Adriaens works as an ornithologist at the Flemish Research Institute for Nature and Forest, where his main task is to survey breeding birds around the ever-expanding port of Zeebrugge. He also monitors local gull and tern colonies and gulls are now his main ornithological focus. Eric Stienen is a senior marine ornithologist at the Flemish Research Institute for Nature and Forest. He has studied terns in the North Sea since 1990. Other research topics include the monitoring of gull and tern colonies in the ports of Zeebrugge and Rotterdam and various other seabird monitoring projects. Harry Vercrujssse has been involved in colour-ringing projects since the 1980s, and his phenomenal memory and avid reading of colour-ringed gulls greatly contribute to many projects. His research on the breeding ecology of Herring Gulls in the Netherlands was published in *Zilvermeeuwen uit de duinen van Schouwen* in 1999.

Harry J. P. Vercrujisse



310. Yellow HC83 – a first-cycle backcross of [Lesser Black-backed x Herring Gull] x Lesser Black-backed Gull – was ringed as a chick on Helgoland, Germany, in July 2010 and is shown here at Blaringhem, France, on 17th February 2011. Superficially similar to Yellow-legged Gull, this shows a tertial pattern and greater coverts more similar to those of a Herring Gull. Note also that the vent is more extensively marked than that of an average Yellow-legged Gull. In flight, this bird showed a rather pale window on the inner primaries, and a tail pattern more similar to that of Herring Gull. Given its ancestry, it is surprising that the bird can readily be told from Lesser Black-backed Gull in the field.

Harry J. P. Vercrujisse



311. Pair of adult Yellow-legged Gulls (blue CYAM and unringed), Zeebrugge, Belgium, 13th April 2011. Because the wings are drooped, the unringed bird shows a white 'skirt' below the greater coverts, but note that it is not continuous with the tertial crescent.