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Relationships of gulls—A reply to Bourne

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Bonaparte's gulls, or did one of them or a common ancestor move south independently and give rise to the Brown-hooded Gull? More evidence is required to elucidate this.—William R. P. Bourne, *Ardgath, Station Road, Dufftown, By Keith, AB55 4AX, Scotland, United Kingdom. E-mail: wrpbourne@yahoo.co.uk*

Literature Cited

Aplin, O. V. 1894. On the birds of Uruguay. Ibis (6th Series) 6:149–215.

Bourne, W. R. P. 2002. The evolution of pipits and finches. British Birds 95:143–144.

Bourne, W. R. P., and G. Bundy. l990. Records of Brown-headed Gull *Larus brunnicephalus* and Grey-headed Gull *L. cirrocephalus* around Arabia. Sandgrouse 12:37–42.

Cramp, S., and K. E. L. Simmons, Eds. 1983. Handbook of the Birds of Europe, the Middle East and North Africa: The Birds of the Western Palearctic, vol. 3. Waders to Gulls. Oxford University Press, Oxford.

Given, A. D., J. A. Mills, and A. J. Baker. 2005. Molecular evidence for recent radiation in Southern Hemisphere masked gulls. Auk 122: 268–279.

Hellmayr, C. E. 1932. The Birds of Chile. Field Museum of Natural History, Zoölogical Series, Publication 308, Chicago, Illinois.

Johnstone, R. E. 1982. Distribution, status and variation of the Silver Gull *Larus novaehollandiae* Stephens, with notes on the *Larus cirrocephalus* species-group. Records of the Western Australian Museum 10:133–165.

Murphy, R.C. l936. Oceanic Birds of South America, vol. 2. American Museum of Natural History, New York.

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Relationships of gulls—A reply to Bourne.—All the authors of Given et al. (2005) were trained first and foremost as field ornithologists, and collectively have logged more than 50 field seasons studying southern masked gulls. We also have encountered or collected all the other species, except Brown-headed Gull (*Larus brunnicephalus*). Our purpose in bringing molecular data and methods of phylogenetic inference to bear on the relationships and biogeography of these gulls is that most workers, including Bourne, have tried to infer relationships using morphological similarity as the criterion. As we pointed out, and as Bourne (2006) has acknowledged, this can be fraught with problems because of convergent and parallel acquisition of character states, as well as hybridization (Pereira and Baker 2005). Therefore, we used mitochondrial DNA (mtDNA) sequences because they are informative at this phylogenetic depth and because hybrid transfer of an mtDNA genome into another species is easy to spot, as we have demonstrated elsewhere in our studies (Given 2004).

Unfortunately, we were not able to acquire DNA from *L. brunnicephalus*, which Bourne suggests is more closely related to the small southern gulls than to *L. maculipennis*, which branched basally off the "southern" masked clade in our figure 2 (Given et al. 2005). Using sequences from the control region and part of the cytochrome-*b* gene, Pons et al. (2005) placed *L. brunnicephalus* as sister to the Northern Hemisphere *L. ridibundus*, and this clade was nested as a sister group to the clade (*L. cirrocephalus*, *L. hartlaubii*) within the southern masked gull clade. In other words, these first two species evolved after their Southern Hemisphere common ancestor dispersed into the Northern Hemisphere and could have colonized recently into Asia, including the Tibetan plateau. Why Bourne finds this amazing is hard to understand, because these species migrate annually to these regions from more southerly wintering sites. However, we agree with Bourne that the Australasian species may be derived by a sequential colonization of a South American ancestral form through Africa to Australia and New Zealand; but this depends critically on substantiating the tree topology in figure 1 of Pons et al. (2005) with a larger sequence data set and stronger nodal support.

Although Bourne believed we had ignored critical forms and, thus, had left them out of our "version of Hamlet," it seems we were closer to Shakespeare than he could have imagined. Pons et al. (2005) showed convincingly that *L. relictus*, *L. melanocephalus*, *L. ichthyaetus*, and *L. saundersi* are grouped in a well-differentiated sister clade to the southern masked gulls, thus ruling out Bourne's speculation that they should be included in the play. Furthermore, our studies and those of Pons et al. (2005) reject Bourne's additional speculations about *L. brunnicephalus* moving back north to give rise to *L. ridibundus*, *L. genei*, and *L. philadelphia*, or that one of these species or their common ancestor gave rise to *L. brunnicephalus*. We agree that *L. genei* and *L. philadelphia* are descendents of a common ancestor, most likely from the Northern Hemisphere, but we do not know how Bourne deduced this from our table 2 (Given et al. 2005), which lists our polymerase chain reaction and sequencing primers. Although it is easy to propose biogeographic scenarios of how supposedly closely related birds evolved on the basis of their appearance, this is no replacement for hypothesis-testing science with phylogenetic analysis of large data sets, inference of ancestral areas and, hence, likely dispersal routes.—Allan J. Baker, *Department of Natural History, Royal Ontario Museum, Toronto, Ontario M5S 2C6, Canada, and Department of Zoology, University of Toronto, Toronto, Ontario M5S*

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Literature Cited

Bourne, W. R. P. 2006. Relationships of the masked gulls. Auk 123:905–906.

Given, A.D. 2004. Phylogenetics and population genetics of the Australasian Silver Gull. Ph.D. dissertation, University of Toronto, Ontario.

Given, A. D., J. A. Mills, and A. J. Baker. 2005. Molecular evidence for recent radiation in Southern Hemisphere masked gulls. Auk 122: 268–279.

Pereira, S. L., and A. J. Baker. 2005. Multiple gene evidence for parallel evolution and retention of ancestral morphological states in the shanks (Charadriiformes: Scolopacidae). Condor 107: 514–526.

Pons, J.-M., A. Hassanin, and P.-A. Crochet. 2005. Phylogenetic relationships within the Laridae (Charadriiformes: Aves) inferred from mitochondrial markers. Molecular Phylogenetics and Evolution 37:686–699.

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