



Hybridisation between Lesser Crested and Sandwich Terns in Valencia, Spain, and plumage of offspring

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ABSTRACT Lesser Crested Terns *Sterna bengalensis* have been recorded regularly and in increasing numbers in the Valencian region of eastern Spain since 1989, and hybridisation with Sandwich Tern *S. sandvicensis* was recorded from 1994. The plumage of the hybrid juveniles is described, and compared with other descriptions.

The Lesser Crested Tern *Sterna bengalensis* breeds on sandy or coral islands and low-lying coasts of Libya, the Red Sea, the Persian Gulf, Pakistan, the Maldive Islands, and from Sulawesi to New Guinea and northern Australia (del Hoyo *et al.* 1996). The Mediterranean race *S. b. emigrata* is currently known to breed regularly only off the Libyan coast, with a recent estimate of over 1,700 pairs, and most winter off West African coasts, mainly in Guinea-Bissau (Meininger *et al.* 1994). During migration, this race moves along the shores of North Africa, crossing the southern Mediterranean Sea, mainly from May to June and from August to October (Lewington *et al.* 1991).

During the breeding season, the Lesser Crested Tern is very scarce, though regular, at various localities in the northwest Mediterranean, including the

Camargue in southern France (Blondel & Isenmann 1981), Valli di Comaccio in northeast Italy (Bricchetti & Foschi 1990), and the Ebro Delta in northeast Spain (Martinez-Vilalta & Motis 1989). It is recorded especially in nesting colonies of Sandwich Terns *S. sandvicensis*, a species which commenced breeding in the Mediterranean only in the 1950s (Ferrer & Martinez-Vilalta 1993), and the two have interbred and produced hybrid young on several occasions (e.g. Rogers *et al.* 1993; del Hoyo *et al.* 1996).

The first record of Lesser Crested Tern for the Valencian region of eastern Spain (provinces of Castellón, Valencia and Alicante) was in 1989, since when the species has been recorded annually (Dies & Dies 1990-1995). Table 1 (see page 169) lists accepted Valencian records since 1989. During 1994-97, Lesser Crested Terns were present in a ternery in the Racó de l'Olla, a 64-ha saltmarsh reserve within the Albufera de Valencia Natural Park, and hybridisation with Sandwich Terns was confirmed.

Hybridisation records

In 1994, in a Sandwich Tern colony of 44 pairs, an adult male Lesser Crested Tern paired with a female Sandwich Tern. A single egg was laid, and the two parents shared incubation from 4th to 18th July. Thereafter, the male showed no interest in incubation, was seen to copulate with other females, and remained in the colony until last recorded on 13th August. The female continued to incubate until, following long daily absences to forage and feed, she deserted on 15th August. Two adult Lesser Crested Terns, the second in advanced moult, were observed at the same time on 14th July.

In 1995, the colony held 160 pairs of Sandwich Terns. Although at least one adult Lesser Crested Tern was recorded from 27th May, this species showed no indication of breeding until 12th July, when an adult was observed with a flightless juvenile; both were last recorded on 18th July. While there was no direct evidence, hybridisation seemed distinctly possible: the plumage of the juvenile differed from that of fledged juvenile Sandwich Terns, and matched that of a hybrid juvenile in 1996 (described below). Two adult Lesser Crested Terns were observed in the colony on 9th June (Carlos Oltra, verbally).

During 1996, the colony tripled in size, reaching a total of 471 breeding pairs of Sandwich Terns and spilling over on to a second island. A Lesser Crested Tern was first seen on 29th April, and during May formed a pair with a Sandwich Tern (respective sexes not determined). The nest was not seen, but this pair was observed with a whitish, yellowish-billed downy chick on 13th June. The chick was fed by a parent of each species until fully fledged, and was last recorded on 3rd July. The 'overspill' colony held a second hybrid pair from 30th May 1996, the Lesser Crested being a female, which began to lay on 2nd June. Unfortunately, the nest was deserted or preyed upon on 18th June, after a single night-time visit by a mammal (possibly a Fox *Vulpes vulpes*) which caused a small number of casualties. There were very few subsequent sightings of Lesser Crested Terns in this subcolony, the last being of an adult on 27th June.

During 1996, up to five adult Lesser Crested Terns were present in the reserve on 7th June, with several observations of two or three together on other

dates, but only the two in mixed pairs described above were known to have bred.

In 1997, the Sandwich Tern colony reached 552 breeding pairs, occupying three islands, and held two mixed pairs. The first Lesser Crested Tern was recorded on 8th April, displaying courtship behaviour in the colony area, and pair-bond formation with a Sandwich Tern was evident on 14th May. A single egg was laid on 21st May, but this appeared to be infertile as it was incubated for 50 days, by both parents, until finally deserted on 10th July. At the beginning of May, on a different island, a second hybrid pair laid a single egg, which hatched on 26th May; the chick fledged successfully and was last recorded on 27th June. The latest observation of an adult Lesser Crested Tern in 1997 was made on 23rd July.

The description and drawing of hybrid young (fig. 1, on page 168) are based mainly on the 1996 and 1997 offspring, since hybridisation appeared proven in these cases.

Identification of adult Lesser Crested Terns and hybrid offspring

Adults

Lesser Crested Terns have been present in the Racó de l'Olla reserve since 1994, and one of the first tasks was to confirm its identification. This was particularly important in view of the presence of Elegant Tern *S. elegans* in France in the years 1970-88 (Dubois *et al.* 1990), and of a record of that species in the Llobregat Delta in Catalonia, only a few hundred kilometres from the reserve, on 24th-30th April 1993 (Gutierrez *et al.* 1995; *Ardeola* 44: 119-141).

The various key characters given by Malling Olsen & Larsson (1995) were checked on every occasion, and, furthermore, there was no reason to believe that any of the birds observed were themselves hybrids.

All the adult Lesser Crested Terns were similar in size to Sandwich Tern. They had an orange-coloured bill, turning yellowish at the tip through summer, and appearing a little stouter than Sandwich Terns' bills and with an obviously broader base. They were all uniformly coloured above, with the grey rump concolorous with the back and tail; the upperparts were pale grey, similar to those of Sandwich Tern when viewed in direct sunlight, but noticeably darker when in shadow. Elegant Tern was ruled out in all cases by the stout and relatively short bill, the lack of a long drooping crest, and the uniformly grey upperparts lacking any rump contrast.

Hybrid young

The three hybrid offspring observed in 1995, 1996 and 1997 were similar to each other. They were studied at medium distances, and were compared with recently fledged Sandwich Terns. The 1996 hybrid showed a whitish forehead fading into a dark crown just behind the eye (whereas the forehead of recently fledged Sandwich Terns appeared spotted black); the nape was white, hardly contrasting with the mantle; the upperparts were pale, with only a trace of brownish-grey on the centre of the mantle and scapular feathers (unlike the scaled appearance and dark/grey contrast present on the upperparts of recently



Fig. 1. Three-week-old hybrid Lesser Crested *Sterna bengalensis* \times Sandwich Tern *S. sandvicensis* (left) and pale Sandwich Tern chick of similar age, Valencia, Spain (f. Ignacio Dies)

fledged Sandwich Terns); the tertials were uniformly patterned, dark-centred and pale-edged (on Sandwich Tern these were barred pale and dark); brown-grey wingbars were visible on the lesser, median and greater coverts, while the primaries were darker than on Sandwich Tern; and the underparts were white. The bill was pale yellow, with a hint of orange at the base. The legs were noticeably fleshy-grey in colour, while those of fledged Sandwich Terns appeared to be blackish.

The 1997 hybrid showed a similar pattern: whitish forehead, with a sandy colour on the crown, dark rear crown, and white nape; pale grey mantle and scapulars with scattered small arrowhead markings; tertials dark-centred and pale-edged; wing-coverts pale grey, showing three brown-grey wingbars; underparts pure white, lacking any hint of the dark breast-band evident on most Sandwich Tern fledglings; bill yellow, with pale tip and reddish base; legs dark grey.

Fig. 1 shows a direct comparison between a three-week-old hybrid chick and a pale Sandwich Tern chick of similar age, drawn from field sketches.

Discussion

The hybrid-fledgling plumage described here does not differ much from that given for fledged Lesser Crested Terns (see, e.g., Malling Olsen & Larsson 1995), and mixed features were not found. It partly matches the description of a hybrid juvenile given by Steele & McGuigan (1989), and the general pattern (pale grey upperparts, dark spots on scapulars, blackish-grey tertials with white edges, grey bars on wing-coverts, dark primaries and white underparts) is the same; but Steele & McGuigan's individual appears to have been somewhat more strongly marked and darker, and in particular with a darker forehead, whereas the Valencian hybrid showed a whitish forehead fading into a dark crown. Other differences relate to the bare parts: dirty yellow bill and black legs in Steele & McGuigan's description, against pale yellow bill (with hint of orange at base) and fleshy-grey or dark grey legs of the Valencian hybrid.

Future observations will shed light on how the adult hybrids will look, if and when they return to the reserve in forthcoming years. In this respect, it is instructive to note the description of a hybrid ringed in a Sandwich Tern colony in Northumberland, England, in summer 1997 and subsequently observed in its first autumn, on 23rd September 1997, on the west coast of France (Jiguet 1997).

Although Lesser Crested Terns were present in the Albufera de Valencia at least in the summers of 1989 and 1990, there was no suitable breeding habitat until the restoration of the Racó de l'Olla reserve from 1992. The creation of flat sandy islands in shallow hypersaline lakes led to an expansion of the local ternery, with Common Terns *S. hirundo* moving from traditional colonies on

reedbed islands (with turf-like substrate) to the newly created islands in the reserve, and increasing from 250 pairs in 1992 to 1,650 pairs in 1996. It also encouraged Sandwich Terns to colonise and breed for the first time in 1993, and this, together with regular breeding by Lesser Crested Tern in the Ebro Delta 100 km to the north, could have attracted the latter species to the reserve.

In south Alicante, the Santa Pola salt pans seem to be a potential breeding site for the species, and several observations, including a winter record from the neighbouring Cape Cervera, have been made along its coast and at the salt pan edges (see table 1). Its potential is reinforced by the presence of Sandwich Terns, of which a breeding attempt by about 30 pairs in 1993 failed only because of the lack of a secure nesting area (Ramos & Aragonese 1995). It is only a matter of time before conservation efforts afford a safe nesting place in the Santa Pola salt pans.

Table 1. Chronological records of Lesser Crested Terns *Sterna bengalensis* in the Valencian provinces (Castellón, Valencia and Alicante) of eastern Spain.

Records for 1989-93 listed in Dies & Dies (1990-1995); those for 1994 and later unpublished.

Locality	Date(s)	No.	Observer(s)
Albufera de Valencia	20.8.89	1 ad.	B. Dies & J. I. Dies
Albufera de Valencia	21.8.89	1 imm.	B. Dies & J. I. Dies
Albufera de Valencia	10-29.6.90	1 ad.	several observers
Valencia Harbour	28.10.90	1 ad.	M. Verdú, F. J. García & F. Catalá
Cape Cervera	31.1.91	1 imm.	A. J. Ramos
Santa Pola salt pans	1.8.92	1 ad.	A. J. Ramos & A. Saiz
Santa Pola salt pans	9.6.93	1 ad.	A. J. Ramos
Albufera de Valencia	4.7-13.8.94	1-2 ads.	J. I. Dies, C. Oltra & B. Dies
Santa Pola salt pans	9.9.94	1 ad.	A. J. Ramos
Santa Pola salt pans	3.5.95	1 ad.	A. J. Ramos
Albufera de Valencia	27.5-18.7.95	1-2 ads.	several observers
Albufera de Valencia	29.4-4.7.96	1-5 ads.	J. I. Dies
Albufera de Valencia	8.4-23.7.97	1-2 ads.	several observers

It remains to be seen whether the mixed pairs recorded at the Albufera de Valencia and the increasing number of Lesser Crested Terns present there each year will result in the species establishing itself as a regular breeder, or, on the other hand, the low number of individuals will remain the same, despite the increasing breeding numbers of other tern species.

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References

- BLONDEL, J., & ISENMANN, P. 1981. *Guide des Oiseaux de Camargue*. Paris.
 BRICHETTI, P., & FOSCHI, U. G. 1990. Valli di Comaccio: situazione Laridae e Sternidae 1989-1990. *Riv. Ital. Orn.* 60: 199-200.
 CRAMP, S. (ed.) 1985. *The Birds of the Western Palearctic*. vol. 4. Oxford.

- DEL HOYO, J., ELLIOTT, A., & SARGATAL, J. (eds.) 1996. *Handbook of the Birds of the World*. vol. 3. Hoatzin to Auks. Barcelona.
- DIES, J. I., & DIES, B. (eds.) 1990-1995. *Anuario Ornitológico de la Comunidad Valenciana 1989 . . . 1990 . . . 1991 . . . 1992 . . . 1993*. Estació Ornitològica l'Albufera, Valencia.
- DUBOIS, P. J., & LE COMITÉ D'HOMOLOGATION NATIONAL. 1990. Les observations des espèces soumises à homologation national en France en 1989. *Alauda* 58: 245-266.
- FERRER, X., & MARTINEZ-VILALTA, A. 1993. In: AGUILAR, J. S., MONBALLIU, X., & PATERSON, A. M. (eds.), *Estatus y Conservación de Aves Marinas*. Actas del II Simposio de Aves Marinas del Mediterráneo, Calviá. SEO/BirdLife-MEDMARAVIS.
- GUTIERREZ, R., ESTEBAN, P., & SANTAUEFEMIA, F. X. 1995. *Els Ocells del Delta del Llobregat*. Barcelona.
- JIGUET, F. 1997. Appearance of a first-autumn hybrid Lesser Crested × Sandwich Tern. *Birding World* 10: 427-428.
- LEWINGTON, I., ALSTRÖM, P., & COLSTON, P. 1991. *A Field Guide to the Rare Birds of Britain and Europe*. Jersey.
- MALLING OLSEN, K., & LARSSON, H. 1995. *Terns of Europe and North America*. London.
- MARTINEZ-VILALTA, A., & MOTIS, A. 1989. *Els Ocells del Delta de l'Ebre*. Barcelona.
- MEININGER, P. L., WOLF, P. A., HADoud, D. A., & ESSGHAIER, M. F. A. 1994. Rediscovery of Lesser Crested Terns breeding in Libya. *Brit. Birds* 87: 160-170.
- RAMOS, A. J., & ARAGONESES, F. 1995. [A new colony of Slender-billed Gulls *Larus genei* and Sandwich Terns *Sterna sandvicensis* in Alicante, east Spain.] *Boletín del Grupo Ibérico de Aves Marinas, GLAM* 19: 3-4.
- ROGERS, M. J., & THE RARITIES COMMITTEE. 1993. Report on rare birds in Great Britain in 1992. *Brit. Birds* 86: 447-540.
- STEELE, J., & MCGUIGAN, C. 1989. Plumage features of a hybrid juvenile Lesser Crested × Sandwich Tern. *Birding World* 2: 391-392.

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