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NASTY NEIGHBORHOOD: KLEPTOPARASITISM AND EGG PREDATION OF SWIFT TERNS BY HARTLAUB'S GULLS

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The Swift Tern *Thalasseus bergii* is a seabird widespread to the coasts of the Indian Ocean and west-central Pacific Ocean. The nominate race of this species, the Swift Tern *T. b. bergii*, is endemic to southern Africa and breeds at several localities between Swakopmud, Namibia and Stag Island, Algoa Bay, South Africa. In the Western Cape of South Africa, Swift Terns breed in colonies ranging in size from a single pair, usually amongst other seabirds, to large aggregations of several thousand pairs (Crawford 2003, 2009). They frequently breed in association with Hartlaub's Gulls *Chroicocephalus hartlaubii* (Uys 1978; Maclean 1985) and Crowned Cormorants *Phalacrocorax coronatus* (Crawford 1997).

Why exactly Swift Terns choose to breed with other seabirds and the benefits or costs of these associations are poorly understood. In Australia, SwiftTerns often breed in association with Silver Gulls *Larus novaehollandiae* (Del Hoyo et al. 1996), which may prey on the eggs of and steal fish from the terns (Langham and Hulsman 1986).
The Hartlaub's Gull is an ecological similar congener of the same size as the Silver Gull. However, according to previous observations,

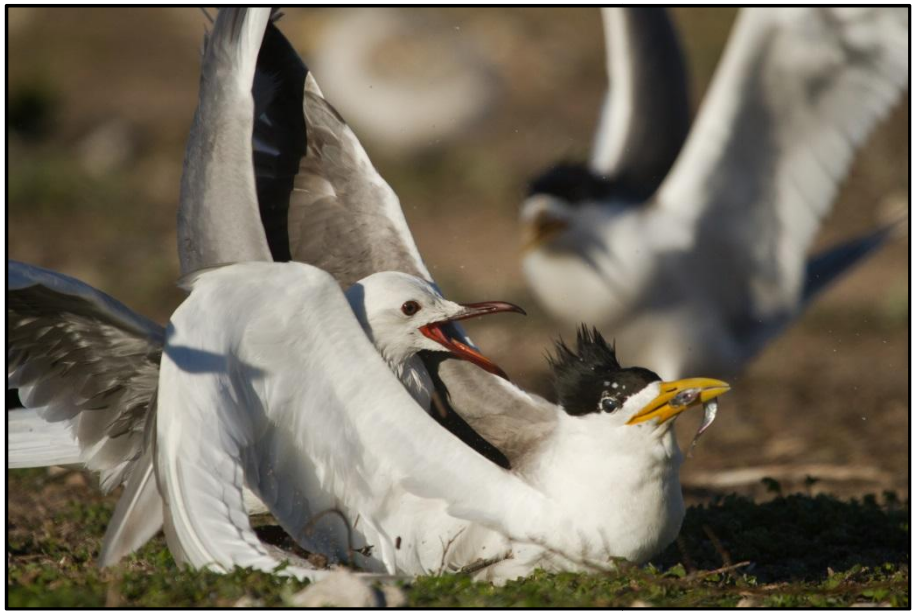

Fig 1 – Attempted kleptoparasitism by a Hartlaub's Gull on a Swift Tern adult.

Hartlaub's Gulls have not been noted engaging in similar negative interactions as the Silver Gulls in Australia (Crawford 2003, Crawford *et al.* 2005). Hartlaub's Gulls and Crowned Cormorants generally target different prey to that of Swift Terns (Williams and Cooper 1983; Walter 1984; Ryan 1987; Crawford *et al.* 1991) and the main reasons for large multi-species associations at breeding sites are usually related to greater protection from predators (e.g. Götmark and Andersson 1984; Crawford *et al.* 2005), although such benefits may vary depending on the predator involved and environmental conditions (e.g. Ashbrooke *et al.* 2010). In South Africa, Swift Tern eggs are susceptible to predation by Kelp Gulls *Larus dominicanus vetula,* Sacred Ibis *Threskiornis aethiopicus* (Urban 1986) and Common Egg-eater Snakes *Dasypeltis scabra* (Underhill *et al.* 2009) if adults leave the nest.

Between January and April 2013, we carried out routine monitoring on two sub-colonies of ca. 9 000 and ca. 3 000 breeding pairs on Robben Island (S 33°48', E18°22'), Western Cape, South Africa. The birds in the larger colony (of ca. 9 000 pairs) did not breed in association with any other seabirds, but the colony was ca. 100 m from a colony of ca. 1 400 Kelp Gulls (Makhado *et al.* 2013). We noted several events of predation by Kelp Gulls, mainly on abandoned eggs and small chicks at the larger colony. The smaller sub-colony (of ca. 3 000 pairs) was associated with breeding Hartlaub's Gulls and was ca. 2 km from the Kelp Gull colony. During the breeding season we only noted a Kelp Gull flying over the smaller colony on one occasion, and it was immediately chased away by a Hartlaub's Gull. Other potential predators observed close to the smaller sub-colony in 2013 included Rock Kestrel *Falco rupicolus* and Black-headed Heron *Ardea melanocephala*. Both species have occurred regularly on Robben Island in recent years (Sherley *et al.* 2011) and are usually mobbed and chased repeatedly by Hartlaub's Gulls when close to their breeding colonies (RBS, *pers. obs*.).

In addition, we noted Hartlaub's Gulls pecking at Swift Tern eggs on several occasions as soon an individual adult tern left the nest. The Hartlaub's Gulls would break open the eggs and eat the yolk, a rich source of nutrients (Fig 2). We also noted, very frequently, events of interspecific kleptoparasitism (food theft) on either adults flying back with fish in their bill (Fig 1) and/or many attempts to kleptoparasitise small chicks that had just been fed by their parents (Fig 3). Kleptoparasitism is a relatively common strategy amongst the Laridae (Shealer *et al.* 2004 and references therein). Where klepto-parasitism is facultative, it may enhance fitness of the kleptoparasitic individual (Shealer *et al.* 2004) and reduces fitness for the parasitised individual.

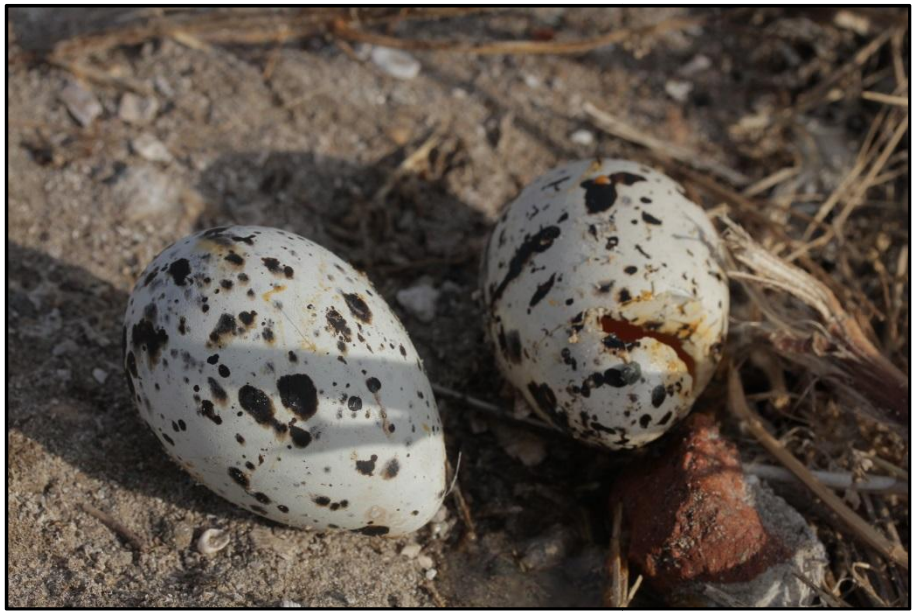

Fig 2 – Swift Tern's eggs pecked by Hartlaub's gull

For example, in Sandwich Terns *Thalasseus sandvicensis*, kleptoparasitism by Black-headed Gulls *Chroicocephalus ridibundus* influenced chick growth and survival especially in unfavourable weather conditions (Stienen *et al*. 2001). Both inter and intraspecific kleptoparasitism of Swift Tern prey has been recorded previously; Kelp Gulls have been recorded stealing prey from immature birds in Namibia (Crawford *et al.* 2005) and Duffy (1987) recorded kleptoparasitism amongst Swift Terns in South Africa, with multiple prey loads lost more often than single prey loads. However, if Hartlaub's Gulls regularly kleptoparasitise Swift Terns within breeding colonies, it appears to have gone unnoticed until now.

These observations only cover one sub-colony during one field season, but they seem to indicate that Hartlaub's Gulls can have

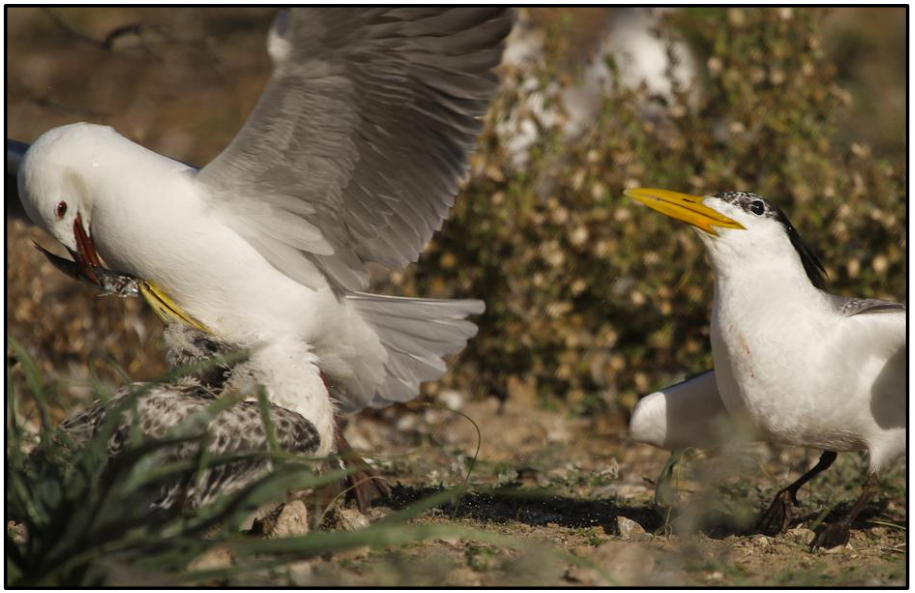

Fig 3 – Hartlaub's Gull stealing a fish from a Swift Tern chick that had just been fed.

both a negative and positive influence on the breeding success of Swift Terns.

Predation on eggs and fish theft will impact negatively on the breeding success of the terns (Stienen *et al.* 2001), but at the same time their aggressive behaviour may remove the threat of other potential avian predators. The benefits and costs to animal of aggregating at high density continue to be debated and both the rate of kleptoparasitism (e.g. Oro 1996) and predation (e.g. Ashbrooke *et al.* 2010) in seabird colonies are known to vary with prey availability. Further studies are warranted to gain a better understanding of how relationships between species may shift from being mutualistic (benefitting both parties) to parasitic or predatory under changing environmental conditions.

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