

# *Ornithodoros (Alectorobius) capensis* Neumann (Acari: Ixodoidea: Argasidae), a Parasite of Seabirds, Established Along the Southeastern Seacoast of the United States

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**ABSTRACT** *Ornithodoros (Alectorobius) capensis* Neumann, an ectoparasite of seabirds found circumglobally in the tropics and subtropics, has become established along the southeastern seacoast of the United States. The tick has been found feeding primarily on brown pelicans, *Pelecanus occidentalis*, but also has been found on the laughing gull, *Larus atricilla*, and the American oystercatcher, *Haematopus palliatus*. We report here the presence of *O. (A.) capensis* from New Hanover and Brunswick counties (near the mouth of the Cape Fear River) in North Carolina, to the Charleston Harbor area of South Carolina and thence south to Cumberland Island (a barrier island) in Camden County, Georgia, just north of the Florida state line.

**KEY WORDS** Arachnida, *Ornithodoros capensis*, southeast United States

In October 1985, we received a single female *Ornithodoros capensis* (RML 117974) collected from a dead American oystercatcher, *Haematopus palliatus*, on Battery Island at the mouth of the Cape Fear River, Brunswick County, N.C. Two other collections of *O. capensis* were found on North Pelican Island, New Hanover County, N.C. The first collection, from nest material of the brown pelican, *Pelecanus occidentalis*, consisted of one late-stage nymph (RML 120382; C. Apperson and M. Browne, 26 July 1991). The second collection, from a nestling brown pelican, contained 25 nymphs, 17 larvae (RML 120381; M. Browne, 5 July 1991). A third collection of two males, three females, five nymphs, and two larvae of *O. capensis* (RML 120380) was found in the nest material of brown pelicans on Ferry Slip Island, New Hanover Co., N.C. (C. Apperson and M. Browne, 26 July 1991).

In July 1987, we received several specimens of an *Ornithodoros* species, later identified as *O. capensis* (RML 118572), from abandoned brown pelican nests at Bird Key Stono, a small island located in a South Carolina bird sanctuary at the mouth of the Stono River, Charleston County, S.C. Brown pelicans have been nesting on Bird Key Stono since 1980, and it is now the largest brown pelican nesting site on the east coast of the United States. The tick specimens, collected by Philip Wilkinson and Steve Kyles, were causing nest desertion by the pelicans. A newspaper account of the phenomenon indicated that a brown pelican breeding population of 3,000 in May 1987 had plummeted to 500 by late June

and just 25 by mid-July (Langley 1987). A subsequent tick collection, originally from Bird Key Stono and reared at Georgia Southern University to obtain the larval stage, showed unmistakably that the ticks causing nest desertion were *O. (A.) capensis* (RML 118625). In addition, nest desertion caused by parasitism by *O. capensis* was occurring on Marsh Island in Bull's Bay just off the coast of McClellanville, Berkeley County, S.C. This island was inundated by hurricane Hugo, but still has 3,000–3,500 pairs of resident brown pelicans.

In October 1990 and 1991, on three separate occasions, H.J.H. and Carol Ruckdeschel were able to collect a total of five female *O. (A.) capensis* (RML 120004; 120379; 120499) from nest material of *Pelecanus occidentalis* on Cumberland Island National Seashore, Camden County, Georgia. Collection localities of *O. capensis* are shown in Fig. 1.

Since the original collection of *O. (A.) capensis* on Bird Key Stono and Marsh Island in South Carolina, biologists of the South Carolina Wildlife and Marine Resources Department have monitored the status of the tick population. Wilkinson (personal communication) reported that ticks have been on both islands every year since 1987. This includes the period of time when Marsh Island was under 6.5 m of water from the tidal surge created by hurricane Hugo in 1989.

*Ornithodoros (A.) capensis* is a parasite of marine birds and has been distributed around the world to breeding sites throughout the tropics and subtropics. Within the genus *Ornithodoros*,

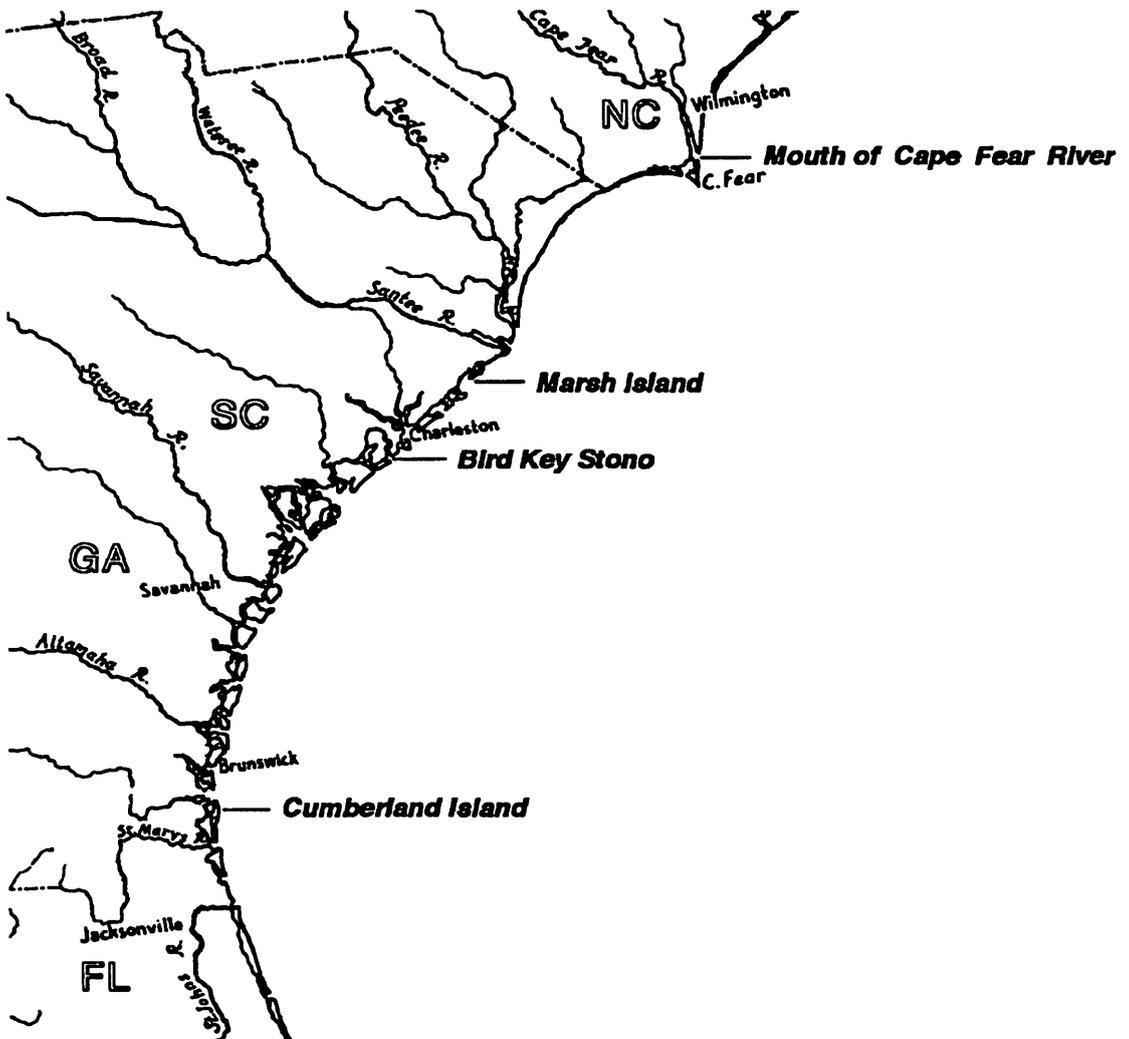


Fig. 1. Collecting sites for *O. (A.) capensis* in North Carolina, South Carolina, and Georgia.

only ticks of the *O. (A.) capensis* group feed on seabirds. Besides *O. capensis*, this group of ticks currently comprises: *O. amblus* Chamberlin, collected around guano deposits of pelicans, cormorants, and boobies on islands off the coast of Peru warmed by the Humboldt current; *O. denmarki* Kohls, Sonenshine & Clifford, on *Sterna fuscata*, *Sula leucogaster*, and *Anous stolidus* in the Dry Tortugas, Florida, Gulf of Baja California, Mexico, and Manana Island, Hawaii; *O. maritimus* Vermeil & Marguet, on numerous species of *Alca*, *Larus*, *Phalacrocorax*, *Rissa*, and *Sterna* in Great Britain, Ireland, France (Corsica), Tunisia, Portugal, Italy (off Sardinia), southwestern USSR, and Senegal; *O. muesebecki* Hoogstraal, on *Sula dactylatra*, *Phalacrocorax nigrogularis*, and *Sterna bergi* on islands in the Arabian gulf; *O. sawaii* Kitaoka and Suzuki, from burrows of *Colonectris leucomelas* on the Amami-Oshima Islands in Japan; *O. spheniscus* Hoogstraal,

Wassef, Hays & Keirans, on the Humboldt penguin, *Spheniscus humboldti*, in Peru; *O. yunkeri* Keirans, Clifford & Hoogstraal, primarily found on *Sula nebouxi* but also on other seabirds in the Galapagos Islands; and an undescribed species closely related to *O. denmarki* on gulls, terns, cormorants, and guillemots on islands off the coast of Oregon (Nuttall et al. 1992). This complex of seabird-feeding species is replaced in colder circumglobal areas by *Ixodes (Ceratiixodes) uriae*.

The first known collection of *O. (A.) capensis* in the United States occurred in late winter of 1940. R. P. Allen collected  $\approx 20$  larval *O. capensis* in a breeding colony of roseate spoonbills, *Ajaia ajaja*, on Carroll Island, one of the second chain of islands in Aransas Bay, Aransas County, Tex. (RML 19654). Kohls et al. (1965) cited this collection as being from an unnamed island, but subsequently J.E.K., while collecting in the area,

was told that Carroll Island was the correct locality for the 1940 collection. A note appended to the collection record by Cornelius B. Philip described nest desertion by the roseate spoonbills: "The young birds were dying in large numbers, and the only noted abnormality was the large number of ticks infesting them. It was believed that the parent birds deserted their young in order to escape the ticks themselves. Thus it may be that the ticks were indigenous to the island, rather than brought to it by the old birds."

King et al. (1977a) also reported nest desertion in Aransas Bay, this time from the nests of brown pelicans, and speculated that the death of nestlings may be caused by a lethal arbovirus in the seabird colonies. Detailed arboviral investigations showed that Soldado virus was present in *O. capensis* from this area, and a new arbovirus of the Upolu serogroup named Aransas Bay virus (Bunyaviridae) was also isolated from these ticks (Yunker et al. 1979). Converse et al. (1975) and Feare (1976) reported nest desertion caused by *O. capensis* ticks infected with Soldado virus (Bunyaviridae) in sooty tern, *Sterna fuscata*, colonies in the Seychelles, whereas a closely related tick species, *O. (A.) denmarki*, has caused nest desertion by brown pelicans on islands in the Gulf of California, Baja California, Mexico (King et al. 1977b).

The presence of *O. (A.) capensis* feeding in large numbers on brown pelicans at Bird Key Stono and Marsh Island, S.C., may be the overriding factor causing nest desertion by these seabirds. However, it would be advisable for researchers to investigate these ticks for the presence or absence of tickborne arboviruses.

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