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SHARKSUCKER (*ECHENEIS NAUCRATES*) ON A BOTTLENOSE DOLPHIN (*TURSIOPS TRUNCATUS*) AND A REVIEW OF OTHER CETACEAN-REMORA ASSOCIATIONS

The family Echeneididae (=Echeneidae) contains eight remora species (Lachner 1966), with all but one of these being worldwide in their distribution (Cressey and Lachner 1970, Lachner in Fischer 1978)—*Echeneis neucratoides* is believed to be restricted to the western Atlantic Ocean. All echeneids are marine species, commonly inhabiting tropical and subtropical waters (Lachner 1966). Echeneid fishes attach to elasmobranchs, bony fishes, sea turtles, cetaceans, sirenians, and ships and other floating objects by means of a laminated adhesive disc on the dorsal surface of their head. Suspected benefits of echeneid fishes' association with these hosts include transportation, protection from predators, increased courtship/reproduction potential, enhanced gill ventilation, and expanded feeding opportunities (Strasburg 1957, 1959, 1964; Cressey and Lachner 1970; Alling 1985).

A 259-cm male bottlenose dolphin (*Tursiops truncatus*) with three attached echeneids live-stranded in Galveston, Texas (29°16.4′N, 94°49.1′W) on 29 October 1995. Efforts to rescue the dolphin for subsequent rehabilitation dislodged all but one echeneid. This 119-mm (standard length) specimen was collected and identified (Lachner 1966, Lachner in Fischer 1978, Hoese and Moore 1977, Murdy 1983, Lachner in Whitehead 1986) as a sharksucker (*Echeneis naucrates*) on the basis of the following characteristics: elongate body, its depth 7.8% of standard length; 23 disc lamellae; disc length 26.1% of standard length; 31 dorsal and 32 anal rays; caudal fin lanceolate with middle rays produced; white border on dorsal, anal, and caudal fins; pectoral fin pointed; dark longitudinal band on anterior trunk; and lower jaw with fleshy flap.

Most echeneid-cetacean associations described in the literature are based on visual or photographic observations of a remote, free-swimming host and its passenger(s) rather than on strandings (*e.g.*, Mahnken and Gilmore 1960, Shane 1978, Notarbartolo di Sciara and Watkins 1980). We found reports (most were unpublished) of echeneids associating with 20 cetacean species, as well as a few unidentified cetaceans.[1] *Remora australis* (= *Remilegia australis*) is the only echeneid that has previously been collected and identified from cetaceans, hence its common name "whalesucker." The whalesucker has been collected and identified from the blue whale (*Balaenoptera musculus*) (*e.g.*, Halkett 1913, Follet and Dempster 1960, Rice and Caldwell 1961), sperm whale (*Physeter macrocephalus*) (Krefft 1953, Peterson and Hoggard 1996), sei whale (*B. borealis*) (Rice 1977), fin whale (*B. physalus*),[2] common dolphin (*Delphinus* sp.) (Cadenat 1953, Follett and Dempster 1960, Radford and Klawe 1965), Atlantic spotted dolphin (*Stenella frontalis*) (Lütken, 1875—species identification by Perrin *et al.* 1987), and an "unidentified porpoise" (Smith 1958). Best *et al.* (1984) report collection of echeneids from sperm whales, but these have not yet been identified to species. Unidentified echeneids have been seen on additional cetaceans: northern right whale (*Eubalaena glacialis*),[3] Bryde's whale (*B. edeni*) (*e.g.*, Nicklin 1963—species identification corrected by Morejohn and Rice 1973), minke whale (*B. acutorostrata*) (Minasian *et al.* 1984), humpback whale (*Megaptera novaeangliae*) (*e.g.*, Kaufman and Forrestel 1986), unidentified pilot whales,[4] short-finned pilot whale (*Globicephala macrorhynchus*),[5] killer whale (*Orcinus orca*) (*e.g.*, Lockyer 1979), melon-headed whale (*Peponocephala electra*),[6] rough-toothed dolphin (*Steno bredanensis*),[5] bottlenose dolphin (*e.g.*, Shane 1978), pantropical spotted dolphin (*S. attenuata*) (*e.g.*, Brower and Curtsinger 1979), spinner dolphin (*S. longirostris*) (*e.g.*, Hester *et al.* 1963, Notarbartolo di Sciara and Watkins 1980, Norris *et al.* 1994), striped dolphin (*S. coeruleoabla*),[7] Indo-Pacific hump-backed dolphin (*Sousa chinensis*),[8] Pacific white-sided dolphin (*Lagenorhynchus obliquidens*) (Notarbartolo di Sciara and Watkins 1980), and various unidentified cetaceans (*e.g.*, Townsend 1916, Caldwell 1981).

[1] Additional information on observations and occurrence by region is available from the senior author upon request.

[2] Personal communication, D. W. Rice, National Marine Mammal Lab, National Marine Fisheries Service, 7600 Sand Point Way NE, Seattle, WA 98115, U.S.A., July 1998.

[3] Personal communication, S. Yin, Marine Mammal Research Program, Texas A&M University, 4700 Avenue U, Galveston, TX 77551, U.S.A., June 1997.

[4] Personal communication, I.Visser, The Orca Project, "Aorangi," Matapouri Road, RD 3, Whangarei, New Zealand, June 1997.

[5] Personal communication, W. E. Evans, Center for Bioacoustics, Texas A&M University, 5001 Avenue U, Galveston, TX 77551, U.S.A., June 1997.

[6] Personal communication, D. Perrine, Innerspace Visions, 75-1027 Henry Street #444, Kailua-Kona, HI 96740-3137, U.S.A., May 1998.

[7] Personal communication, R. Petralia, Cetacean Behavior Lab, San Diego State University, San Diego, CA 92182, U.S.A., February 1998.

[8] Personal communication, V. Peddemors, Natal Sharks Board, Private Bag 2, Umhlanga Rocks, 4320 Kwazulu-Natal, South Africa, January 1998.

Several echeneids, such as *Remora brachyptera*, *Remora osteochir*, *Remorina albescens*, and *Remora australis*, are rather host-specific (Lachner 1966, Cressey and Lachner 1970). These are typically offshore, pelagic forms with a specialized morphology consisting of large discs, short stout bodies, and reduced fin size (when compared to inshore counterparts). More commonly reported echeneids are slender-bodied, inshore forms such as *Echeneis naucrates* that are least particular about their hosts (Hoese and Moore 1977).

The whalesucker's preference for cetaceans may lead observers to assume that any remora spotted on a cetacean is of this species. As is shown here, other echeneids may associate with cetaceans; however, the difficulty in using remote observations or photographs for species identification may limit documentation of other echeneid-cetacean associations. The possibility that small, slender remoras, as well as more stocky echeneids photographed on cetaceans may represent different life history stages of one species further complicates positive identification. Species of *Remora* and *Remorina* are all rather uniformly gray and may not be distinguishable in the field, whereas members of the genera *Echeneis* and *Phtheirichthys* are readily recognizable by their whitish stripes. The sharksucker-dolphin association described here, as well as a photodocumented field observation of a mature sharksucker on a spinner dolphin in Brazil,[9] suggests at least two echeneid species utilize cetaceans as a host. The sharksucker has been reported (Lachner 1966, Cressey and Lachner 1970, Hoese and Moore 1977) to "loosely" associate with a variety of hosts (cetaceans not included). This account represents an expansion of known hosts for the sharksucker.

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[9] Personal communication, L. Lodi, Projeto Golfinhos, Caixa Postal 14521, Rio de Janeiro, RJ, Brazil 22412-970, June 1997.

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A PERIOD OF HUMAN CONTACT BY TWO FREE-RANGING BOTTLENOSE DOLPHINS (*TURSIOPS TRUNCATUS*)

Chronicles of dolphins voluntarily associating with people go back thousands of years and have become entwined in folklore (Alpers 1960, Dobbs 1977, Lockyer 1990, Cochrane and Callen 1992, Kendall *et al.* 1995). Animals of at least ten cetacean species have socialized with humans (Evans 1994), but