

The Association of Echeneids with Bottlenose Dolphins (*Tursiops truncatus*) in the Indian River Lagoon, Florida, USA

Wendy D. Noke

Hubbs-SeaWorld Research Institute, 6295 Sea Harbor Drive, Orlando, FL 32821-8043, USA

Abstract

Fish belonging to the remora family (Echeneidae) attach to other bony fishes, elasmobranchs, sea turtles, manatees, ships, and other floating objects. Echeneids also associate with several cetacean species. Recently, two occurrences of echeneids associating with bottlenose dolphins (*Tursiops truncatus*) in the Indian River Lagoon in Florida, USA, were documented. The first occurrence was of an unidentified echeneid observed at close range (< 2 m) attached to a long-term, photo-identified bottlenose dolphin. The second case involved a sharksucker (*Echeneis naucrates*) attached to a moderately decomposed dolphin. While echeneids associate with several cetacean species, there are few published reports of close-range focal observations of dolphin-echeneid associations. Additionally, occurrences of sharksuckers on moderately decomposed, stranded bottlenose dolphins are not often reported. This paper documents the first published reports of bottlenose dolphin-echeneid associations in the Indian River Lagoon.

Key Words: Remora; sharksucker; *Echeneis naucrates*; bottlenose dolphin; *Tursiops truncatus*; Indian River Lagoon, Florida

Introduction

Remoras belong to the family Echeneidae and all but one of these eight species is cosmopolitan in distribution (Cressey & Lachner, 1970). Echeneids have a dorsal disc, formed from modified spines, that creates a powerful suction which, when pressed against the host, makes the echeneid very difficult to dislodge. While remoras are good swimmers, the fish lack a swimbladder, creating a dependence on other marine species and objects for transportation, as well as a suite of benefits derived from the association (Moyle & Cech, 1988). Echeneids rely on hitchhiking behavior to varying degrees and can be found attached to other bony fish, sharks, rays, cetaceans, manatees,

and even ships or other inanimate floating objects (Hoese & Moore, 1977; Mignucci-Giannoni et al., 1999). While some species of remoras exhibit strong host specificity, *Echeneis naucrates* is less particular and can be found free-swimming or attached to larger fish and boats (Hoese & Moore, 1977; O'Toole, 2002). Echeneids are considered commensal organisms, benefiting from its host in many ways, including transportation, protection from predators, increased foraging opportunities, and increased courtship and reproductive potential (Alling, 1985; O'Toole, 2002; Strasburg, 1959). While remoras commonly are found attached to a variety of marine organisms, there are few published incidents of remoras attaching to cetaceans (Fertl & Landry, 1999; Guerrero-Ruiz & Urban, 2000), and there are no published records of remora-cetacean associations in the Indian River Lagoon (IRL), Florida.

Results

On 13 August 1999, focal observations of a previously photo-identified IRL bottlenose dolphin (*Tursiops truncatus*) were made from a commercial crab boat (28° 9.5' N, 80° 37.9' W). The animal with an attached echeneid was observed, photographed, and videotaped. The fish was observed in association with the dolphin for 15 min while the animal remained within 2 m of the fishing boat. Calm sea states (Beaufort sea state = 0), close proximity, and water clarity (~60 cm visibility) allowed the echeneid to be readily observed. The fish was approximately equivalent in length to the base of the dolphin's dorsal fin, and based on existing morphometric data (Tolley et al., 1995), the fish was estimated to be 30 cm in length. The fish had a distinct white border on dorsal, caudal, and anal fins and a distinct light stripe from the snout through the eye that are characteristic of the sharksucker (*Echeneis naucrates*) (Boschung et al., 1995; Hoese & Moore, 1977). As Fertl & Landry (1999) indicated, remote observations cannot be used to positively identify echeneids. The animal was speculated to be a



Figure 1. A 35-cm sharksucker (*Echeneis naucrates*) found attached to a stranded bottlenose dolphin in the Indian River Lagoon on 19 November 2001; the fish was identified based on the distinct white border on the dorsal, caudal, and anal fins, and by counting the disc lamellae.

sharksucker based on physical characteristics and because the species is a known inhabitant of the IRL (Gilmore, 1977).

On 19 November 2001, a sharksucker was found attached to an emaciated juvenile male bottlenose dolphin (181.8 cm in total length) that stranded dead along the shore of the IRL (28° 16.454' N, 80° 36.480' W), approximately 40 h prior to the exam. The 35-cm sharksucker (total length) (*Echeneis naucrates*) was discovered attached at the lower left jaw on the ventral side of the animal, and was still alive. The species was identified based on the following characteristics: distinct white border on dorsal, caudal and anal fins, the number of disc lamellae ($n = 23$), elongate body, depth 9.2% of standard length, disc length 29.6% of standard length, pectoral fin pointed, and a lower jaw with a fleshy flap (Boschung et al., 1995; Hoese & Moore, 1977; Stevenson, 1914) (Figure 1).

Discussion

Remoras typically benefit from host associations by feeding on scraps of food left over from the meals of their hosts (Boschung et al., 1995; Strasburg, 1957, 1959) and by feeding on sloughing epidermal tissue and feces of the host (Alling, 1985; Fertl & Landry, 2002). Echeneids also are known to prey on small fishes, using their host as transportation to the feeding grounds, where echeneids then detach and actively pursue their prey (Strasburg, 1959).

Echeneid associations with dolphin carcasses clearly provide no transportation benefits, therefore it is suggested that this association may provide foraging opportunities. Although the dolphin carcass had been reported stranded for nearly two days, and was moderately decomposed, the sharksucker was firmly attached, indicating that the fish could have associated with the dolphin carcass for many hours. Recent observations of echeneids associating with other bottlenose dolphin carcasses in the IRL (pers. obs., 2003) suggest that these associations may occur more frequently than initially suggested. Collection of echeneids associating with stranded cetaceans and the stomach content analysis of these fish may allow further insight into bottlenose dolphin-remora associations and provide information on foraging opportunities the association may provide.

Few reports of various species of suckerfish have been published on bottlenose dolphins (Fertl & Landry, 1999; Mahnken & Gilmore, 1960; Shane, 1978). While echeneids were seen in association with live-captured IRL dolphins (1979, 1980, 1981) (D. Odell, pers. comm.), this paper provides the first two published cases of echeneids in association with IRL dolphins.

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