Range Extensions and New Host Records of Cymothoid Isopods (Isopoda: Cymothoidae) in the Eastern Pacific Ocean

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For the past few years the author has been studying isopod fish symbionts of the family Cymothoidae, as well as a number of other isopod families from the eastern Pacific region. From these studies, several significant range extensions and new host records have been established. The material upon which these data are based, with the exception of *Nerocila californica*, are deposited in the Crustacea collections of the Allan Hancock Foundation, University of Southern California. Specimens of *N. californica* are deposited at the National Museum of Natural History, Smithsonian Institution. I have attempted to present accurate specific as well as common names for all host fishes mentioned. In this regard I have considered the following three documents as sources of spellings and vernacular names: Thomson and McKibbin (1974), Miller and Lea (1972) and Shiino (1972). Sincere appreciation is extended to Dr. Thomas Bowman (Smithsonian Institution) for the loan of specimens of *N. californica* and for reviewing the manuscript. This research was supported, in part, by grants from Sigma Xi, the National Science Foundation (Alpha Helix Research Program), and the University of Southern California.

Lironeca panamensis Schioedte and Meinert, 1884

Former known range.—Mazatlán, Sinaloa, Mexico to Panama.

New records.—Numerous locations in the Gulf of California and the west coast of Baja California. Northernmost records are the delta of the Colorado River and Bahía San Quintin, Baja California Norte; ovigerous females collected in January, February and May. Considerable morphological overlap occurs between *L. panamensis* and the temperate species *L. vulgaris* Stimpson 1857 and the two may eventually be shown to be synonymous.

Host records.—No positive association has been made between this isopod and its host fish(es). For nearly 100 years now, the identity of the host(s) of *L. panamensis* has eluded scientists. The reason for this is unknown but perhaps the simplest explanations would be that the adults are (1) very short lived, or (2) have a tendency to abandon their host fish under the least amount of stress. Of the two, the latter seems most likely. Since these isopods are nearly always captured in trawling gear it may be that the simple cessation of swimming activity by the host fish is enough to stimulate its symbiont to detach itself and begin "wandering." This phenomonon has been witnessed numerous times by this author, in other species of cymothoids. It may well be that the isopod is highly sensitive to dissolved oxygen availability and the lack of proper water flow across its pleopods triggers an immediate release reaction. This behavioral pattern of abandoning the stressed (captured or immobilized) host is quite likely a major reason for such

questionable host records for various cymothoids (in the literature) as squid or some of the more unlikely fishes. One should use caution when attempting to determine the proper host fish amongst a full trawl of fishes and wandering or "fugitive" isopods. Two host criteria recommended are: the presence of actual tissue damage suspected to be attributable to the isopod, and repeated occurrences of the isopods on the same species of fish.

Lironeca convexa Richardson, 1905b

Former known range.—Hondurus to the Gulf of Guayaquil, Ecuador.

New records.—Bahía Juanico, west coast of Baja California Norte, Mexico, from a pompano (*Trachinotus* sp.); and, Santa Catalina Island, California; ovigerous females collected in February.

Nerocila californica Schioedte and Meinert, 1881

Former known range.—San Diego, California to Panama, excluding the Gulf of California. Richardson (1905a) listed Pt. Sur (*sic*) as a northernmost record.

New records.—Numerous records from the Gulf of California, Baja California and southern California, north to Los Angeles. One record from La Lagunilla, Peru. Ovigerous females collected in April, May, June and July.

New records of "host fishes.".—*Cetengraulis mysticetis* (anchovy). Extensive tissue damage evident; throughout upper Gulf of California.

Syacium ovale (pleuronectid flounder). Extensive tissue damage evident; upper Gulf of California.

Micrometrus minimus (dwarf surfperch). Tissue damage present; San Diego, California.

Oligoplites mundus (leather jack). Tissue damage present; upper Gulf of California.

Mugil cephalus (striped mullet). Extensive tissue damage present; throughout the Gulf of California.

Sphoeroides annulatus (bullseye puffer). No tissue damage; upper Gulf of California.

Paralabrax clathratus (kelp bass). No tissue damage; San Diego, California.

Umbrina roncador (yellowfin croaker). No tissue damage; San Diego, California.

Embiotoca jacksoni (black surfperch). No tissue damage; San Diego, California.

Atherinopsis californiensis (jacksmelt). No tissue damage; King Harbor, Los Angeles, California.

Stereolepis gigas (giant sea bass). Fish not included with specimen; Cape San Lucas, Baja California Sur, Mexico.

Istiophorus platypterus (sailfish). Fish or notes not included with specimen; Mazatlán, Sinaloa, Mexico.

Cynoscion macdonaldi (totuava). Fish or notes not included with specimen; upper Gulf of California.

Mycteroperca xenarcha (broomtail grouper). Fish or notes not included with specimen; Magdalena Bay, Baja California Sur, Mexico.

Atherinops affinis (topsmelt). Fish or notes not included with specimens; Long Beach, California.

As will be noted above, I have put the heading of this section in quotation marks, the reason being that most of these records are suspect for one reason or another. The only fishes fitting the two host criteria discussed above (under *Lironeca panamensis*) are: *Cetengraulis mysticetis, Syacium ovale, Micrometrus minimus, Oligoplites mundus* and *Mugil cephalus*. All others remain speculative or questionable. It is to be regretted that collectors finding parasitic associations often do not take the time to keep better notes on their observations. Most of these records are from trawl or seine collections, where fugitive isopods are a common occurrence.

Codonophilus gilberti (Richardson, 1904)

Former known range.—Known only from the type locality of Mazatlán, Sinaloa, Mexico (as *Meinertia gilberti*).

New records.—Puerto Penasco, Sonora, Mexico, from the mullet *Mugil hospes*; and, Estero de Punta Banda, Baja California Norte (west coast), from the striped mullet *Mugil cephalus*. Ovigerous females have been collected in December.

Codonophilus gaudichaudii (Milne-Edwards, 1840)

Former known range.—Mazatlán, Sinaloa, Mexico to Chile, including the Galapagos Islands and a single dubious record from New Guinea (Richardson, 1905a).

New records.—Bahía San Juanico, Baja California Sur (west coast), Mexico; from a pompano (*Trachinotus* sp.).

Cymothoa exigua Schioedte and Meinert, 1884

Former known range.—Panama and the Galapagos Islands.

New Records.—Throughout the upper Gulf of California, from El Golfo de Santa Clara, Sonora, to Huatobampito, near Yavaros, Sonora, Mexico. Ovigerous females collected in April, May, July, August and November.

New records of host fishes.—Commonly found associated with the grunt *Orthopristis reddingi*, in the upper Gulf of California; a single record associates this isopod with the flatfish *Etropus* sp., at Puerto Penasco, Sonora (tissue damage present).

This note extends the ranges of *Nerocila californica* northward and into the Gulf of California and south to Peru (approximately 1,600 miles); *Lironeca convexa* northward approximately 2,420 miles; *Lironeca panamensis* northward about 600 miles; *Codonophilus gaudichaudii* northward about 300 miles; and, *Cymothoa exigua* northward approximately 2,650 miles.

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