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ON THE NAMES OF *PENAEUS SETIFERUS* (L.) AND
PENAEUS SCHMITTI BURKENROAD

by

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Dr. Gordon Gunter, who sent me the manuscript of his paper "Specific Names of the Atlantic American White Shrimp (Family Penaeidae)" for comment was so kind to allow me to have my reactions to it published simultaneously with it. Unfortunately I cannot agree with Doctor Gunter's views on the scientific names that should be used for the two Atlantic species of White Shrimp.

In the first place I believe that Doctor Gunter's suggestion that the northern species should be known as *Penaeus fluviatilis* Say and the southern as *P. setiferus* (L.) instead of respectively *P. setiferus* (L.) and *P. schmitti* Burkenroad, is not in accordance with the International Code of Zoological Nomenclature.

Second I believe it against the interest of stability and uniformity of nomenclature to switch a well-known name from one economically important species to another, as this will inevitably lead to serious confusion, and will especially cause difficulties to non-taxonomists.

In explaining my first point it is necessary to look into the question of the identity of the species which Linnaeus (1767, Syst. Nat. (ed.12)1: 1054, 1055) described as *Cancer setiferus*. Linnaeus' description runs as follows: "setiferus. 78. C[ancer]. manibus nullis, pedibus utrinque sex didactylis, antennis longissimis.

Seb.mus.3. t 17.f.2.

Habitat in Indiis.

Manus ingrassatae nullae. Antennae corpore duplo longiores."

The fact that Linnaeus described six pairs of didactyl legs shows that he had no actual material before him, as all Penaeids have only three pairs of chelate legs. Linnaeus must therefore have based himself exclusively on Seba's figure of "*Astacus fluviatilis, Americanus*", in which indeed all five legs plus the third maxilliped are shown as being didactyl. This figure thus is erroneous in ascribing a didactyl ending to the third maxilliped and to the last two pairs of legs. As Linnaeus' description is exclusively based on Seba's figure, we must consider Seba's specimen to be the holotype of *Cancer setiferus* L. For those authors who think it possible that Linnaeus did have additional type material, I now select the specimen figured by Seba (1761, Locuplet. Rer. not. Thes. 3: pl. 17 fig. 2) to be the lectotype of *Cancer setiferus* Linnaeus, 1767; by this action the question of the type specimen of Linnaeus' species is settled. The figure of Seba's *Astacus fluviatilis, Americanus* shows a large *Penaeus* with short rostral grooves and as such it has been considered by all authors. The fact that all the legs and the third maxilliped are shown to be didactyl is clearly a slip of the artist. It is impossible from

the figure alone to fix the identity of the species. The locality from where the specimen originates might help to narrow down the number of species to which it could be assigned. Linnaeus (1767) gave as the locality "*Habitat in Indiis*", which evidently is an error as Seba himself reported the species from America. The type locality must therefore be considered to be "America", though not too much importance can be attached to this locality indication, as Seba's animals were often incorrectly labelled. However, the figure shows nothing which would make it impossible for Seba's specimen to be one of the American species of the group of *Penaeus* with short rostral grooves and therefore the locality indication should be considered to be correct. Gunter's argument that Seba's specimen most likely belongs to the southern species as at "the time Seba wrote the Dutch had no holdings in North America, but they did have holdings in South America" does not hold very well, as in Seba's time (1687-1736) Amsterdam was an important port which received ships from all over the world and not only from the Dutch possessions. Engel (1937, Svenska Linné-Sällskapetets Årsskrift 20: 80-81) described "how Seba hastened on board the newly arrived ships and selling and distributing medicines among the often exhausted and sick crew, it was an easy thing for him to get from them at very small prices the curiosities they had brought from the Indies, from Africa, America etc.". Furthermore Seba had correspondents in many different countries, who sent him material. So Engel (1937:81) mentioned Seba's connections in Virginia. There is no reason therefore making it impossible for the type specimen of *Cancer setiferus* to have come from the area inhabited by the Northern White Shrimp.

Until 1936 all authors have given the name *setiferus* to what they thought to be the only East American species of *Penaeus* with short rostral grooves. When in 1936 Burkenroad (Annaes Acad. Brasil. Sci. 7(4):315-318) discovered that not one but two species of the *setiferus* group inhabit the Western Atlantic, he had to decide which form should be given the name *setiferus*. Since the information available about the type specimen of *Penaeus setiferus* (L.) (being only Seba's figure, his worthless description, and the locality indication "America") is not sufficient to show its identity with either the Northern or the Southern White Shrimp, Burkenroad as first reviser (i.e., as first zoologist to distinguish between the two species) was perfectly justified to restrict the name *setiferus* to the species he thought best. Personally I believe it a very wise action of Burkenroad to leave the name *setiferus* to the best known of the two species and to give a new name to the rarer species. In 1936 no restriction of the type locality of *Cancer setiferus* L. had been published, no neotype had been selected for the species and no additional information about the type specimen had been brought forward. Not even Burkenroad (1936) did make any of these restricting actions officially, though he clearly intended to restrict the name *setiferus* to the northern species. The first valid action by which the name *setiferus* L. was definitely restricted and linked to one of the two species was Burkenroad's (1939, Bull. Bingham Oceanogr. Coll. 6(6):17) neotype selection for *Cancer setiferus* L. This neotype selection is perfectly valid and fulfills all requirements for neotypes set by Article 75 of the International Code of Zoological Nomenclature. The neotype of *Cancer setiferus* L., 1767, is a male specimen of the northern species from off Matanzas Inlet, Florida (8-10 fathoms, otter-trawl, April 2, 1934, M. B. Bishop); it is now preserved under Reg. No. B.O.C.237 in the collection of the Bingham Oceanographic Collection of Yale University, New Haven,

Connecticut, U.S.A. The specific name *setiferus* L., 1767, thus is the oldest available name for the northern species, the name *fluvialis* Say, 1817, falling as a junior synonym. The locality off Matanzas Inlet, Florida, thus becomes the restricted type locality for the species. This locality falls within the original type locality "America". If Linnaeus' (1767) locality indication "in Indiis" is not considered an error for "America" but a restriction of the type locality meaning either both the East and West Indies or only the West Indies (which in my opinion would be far fetched), then still Burkenroad's type locality restriction to Florida is valid, as the term West Indies formerly was generally employed not only for the Antillean Islands but also for a large part of the American mainland. So in the (1914-1917) Dutch "Encyclopaedie van Nederlandsch West-Indië" (:742) it says that "for many years after the discovery of the new world the name West Indies was used for the continent of America as well as for the group of islands situated between 10° and 28° N" (translation by the present author). Until this day in Dutch the word "West Indië" is used to indicate both the Netherlands Antilles and Suriname. Also in A. Vazquez de Espinosa's "Compendium and Description of the West Indies" (1942, Smithsonian, misc. Coll. 102) Florida is one of the first areas to be dealt with (:106). Therefore I cannot find any valid argument to contest the correctness of Burkenroad's (1939) action to restrict the specific name *setiferus* to the Northern White Shrimp.

My second point concerns the question whether or not it is in the interest of nomenclatural stability and uniformity to have the name *P. setiferus* restricted to the northern species. As shown by Gunter, in the literature both the northern and the southern species were rather sporadically dealt with in taxonomic, and practically not at all in non-taxonomic papers. However, in the course of the 19th century the northern species became the subject of important fisheries, especially in the South Atlantic and Gulf States of the United States. According to Johnson & Lindner (1934, Invest. Rep. U. S. Bur. Fish. 21:3, 4) the annual catch of shrimp in that area fluctuated between 7 and 20 million pounds in the period between 1889 and 1908, but soon rose to become around 100 million pounds a year between 1927 and 1931; it was 150 million pounds in 1943 (cf. Fishery Resources of the United States, 1945, 79th Congress 1st session, Senate Doc. 51:91). Of this catch 95% consisted of *Penaeus setiferus* (L.). Around 1934, the economic importance of the southern species was negligible, being only of some local interest in Brazil (cf. Johnson & Lindner, 1934:68). Therefore practically all the non-taxonomic and most of the taxonomic literature dealing with "*Penaeus setiferus*" before 1936, actually treated the northern species. When Burkenroad in 1936 discovered the specific distinctness of the northern and southern species, his action to leave the name *setiferus* with the northern species was, from a viewpoint of nomenclatural stability and uniformity, a very laudable one. In this way the name *setiferus* was kept for the well known economically very important species about which there existed an extensive literature in which it was always indicated under the name *P. setiferus*, while the new name *P. schmitti* was given to the poorly known southern species, which at that time had hardly any economic importance and about which there was hardly any literature. In recent years the interest in shrimp fisheries in Latin America is greatly increasing and with better fishing facilities it has become possible there to fish more intensively and also to fish in formerly unexploited areas. In the fishery literature on the Southern

White Shrimp, which is rapidly building up, the species is consistently indicated with the name *Penaeus schmitti*. Summarizing, we can say that before the discovery in 1936 of the fact that there are two species of East American White Shrimp, practically all non-taxonomic and the greater part of the taxonomic literature concerned the northern form, which (like the southern) was uniformly indicated as *Penaeus setiferus*. When the literature on the southern form increased due to the increasing economic importance of the species, the name *P. schmitti* had already been introduced for it and at present the species is indicated in all literature with that name.

Concluding I may remark that the well-established current use of the name *Penaeus setiferus* (L.) for the Northern White Shrimp and that of *Penaeus schmitti* Burkenroad for the Southern White Shrimp, according to the International Code of Zoological Nomenclature is the legal nomenclature for these species. Any change in these names therefore would not only upset the uniformity and stability of the nomenclature of these two species, but would at the same time be contrary to a strict application of the Code.