

## 1. INTRODUCTION

This catalogue includes: (i) all species known to be used for human consumption, (ii) species known to be sold for bait and as sub-products, (iii) species not commercially exploited at present but considered by experts to be of potential commercial value. The last category includes deep-sea forms which during exploratory fishing cruises found to be sufficiently abundant, large enough in size, and sufficiently accessible to fishing gear so that a fishery for them might be profitable. Edible species found in markets as an admixture to the main catch are included, even if they only make up a negligible percentage of the catch.

The present catalogue is largely based on data obtained from the literature. Sometimes it has proved very difficult to evaluate the reliability of published data. It is quite understandable that authors working far away from good library facilities have difficulties in correctly identifying the species they encounter in the field. Moreover, the discovery of new species, the more correct delimitation of known species, or even the introduction of nomenclatorial changes, may cause confusion and lead to the use of scientific names that are incorrect by modern standards, or apply to more than one species. For instance, the name *Metapenaeus mastersii* has been used for four different species, and without additional information (i.e. the locality in this case) it is impossible to decide which of the species is actually meant; *Penaeus merguinsis* has sometimes been mixed up with *P. indicus*, while the names *Penaeus monodon* and *P. semisulcatus* have been interchanged at one period. Although great care was exercised in evaluating the published information used in the catalogue, some misjudgements and incorrect interpretations have undoubtedly occurred.

Another difficulty is that in taxonomic literature (with which I am best acquainted) information on economic importance of species is rather scarce and of a very general nature. Relevant fisheries literature, being less familiar to me, was often difficult to locate, and notwithstanding the great help I received from Dr. W. Fischer and other officials of FAO in obtaining such literature, I may have overlooked important information.

Due to the fact that the preparation of the present catalogue has taken such a long time, some of the information included in it may be outdated, especially when taking into account the very rapid development of shrimp stock appraisal and exploitation in various world areas in the course of the last few decades.

Apart from published data, it was possible to obtain valuable direct information from field workers. To this connection, several FAO fishery project officers, as well as fishery workers from various nations, contributed greatly by filling out and returning questionnaires prepared and distributed by FAO concerning shrimp species of particular areas. These field workers indicated the literature used in the identification of the species and in many instances they also sent me specimens, which permitted confirmation of their identity.

The present catalogue is arranged systematically. The highest category dealt with is the suborder Natantia of the order Crustacea Decapoda to which all shrimps and prawns belong. The heading for each family or species is followed by a reference to the original publication of the family or species name. In the case of categories higher than families (suborders, infraorders and suprafamilies) the heading is followed by a citation of the author who first defined the limits of the group as now accepted. The papers indicated in these references, as well as those of authors given in the synonymies, are not necessarily listed in the bibliography.

The information pertaining to each species is arranged by paragraphs, as follows:

- (1) synonymy, (2) vernacular names, (3) literature, (4) distribution, (5) habitat, (6) size, (7) interest to fisheries, and (8) remarks.

(1) Synonymy: only true synonyms of the valid species name are listed. In a few cases - where pertinent - incorrect identifications are mentioned, but always indicated as such; for example, the specific name *mastersii* in the combination *Penaeus mastersii* Haswell is a synonym of *Metapenaeus ensis* (De Hann), and is listed in the synonymy there; but the name *mastersii* has also been - incorrectly - used for Malayan specimens of *M. moyebi*, for western Australian specimens of *M. dalli*, and for eastern Australian specimens of *M. bennettiae*. The name *mastersii* is therefore not given as a synonym of *M. moyebi*, *M. dalli* and *M. bennettiae* as it has been used for these species only because of incorrect identifications. In such cases, however, usually a short note is added after the list of synonyms, explaining such incorrect identifications that have been widely used.

(2) Vernacular Species Names:

2.1 FAO Names: English, French and Spanish names for each species, to be used primarily within FAO, were selected on the basis of the following criteria: (i) each name must apply to one species only, in a worldwide context; (ii) the name must conform to FAO spelling nomenclature; (iii) the name should not lead to confusion with crustaceans other than shrimps (i.e. the name *langostino* used for some shrimps in Spain and Venezuela was avoided because it also applies to certain lobster and galatheid species). Wherever possible, the denominations selected were based on vernacular names (or parts of names) already in existence within the areas where the species is fished. FAO names are of course not intended to replace local species names, but they are considered necessary to overcome the considerable confusion caused by the use of a single name for many different species, or several names for one species.

2.2 Local Names: these are the names used locally for the species. The country (or countries) where a name is in use, is (are) cited in parentheses; the language of the denomination is only given where this is thought to be of particular interest (e.g. when more than one language is spoken in the country). The catalogue was compiled from many sources, but it is doubtless incomplete and may include some artificial denominations, although these were omitted as far as possible. Where a large number of local names are used for one species in a restricted area, only those better known are included, but in such cases reference is made to relevant literature for the others. When more than one name is used within a country, the official name, or in its absence, the best known, is cited first.

(3) Literature: reference is made to those papers treating the species extensively (e.g. Species Synonyms of FAO, CSIRO, etc.) or given a helpful account of it.

(4) Distribution: the entire known geographic range of the species is given, including areas where it is of no commercial value.

(5) Habitat: the known depth range of the species, and information on types of substrate, salinity and temperature of its habitat are given here. In most instances, this information is rather incomplete.

(6) Size: the known total length, as well as the known carapace length of both males and females are provided where possible. Total length is measured from the tip of the rostrum to the extremity of the telson, but due to the curvature of the body this measurement usually is not very accurate. The carapace length generally includes the rostrum, but very often the actual extent of this length (whether measured from the tip of the rostrum or from the posterior margin of the orbit to the posterior margin of the carapace) is not indicated

in the literature. Where total and carapace lengths are both given, the respective figures do not necessarily pertain to the same specimens but may have been obtained from different sources. As often the available information on the size attained by some species is very meagre, the maximum size cited here may be well below the actual maximum size.

(7) Interest to Fisheries: this paragraph gives an account of the areas where the species is fished and of the nature of the fishery; its importance is either estimated (minor, moderate, major, or potential) or actual figures of annual landings are provided. Data on utilization (fresh, dried, cooked, frozen, canned, etc.) are also given where available. Here too, the quality and quantity of the available information vary considerably with the species.

(8) Remarks: important information concerning the species and not fitting in any of the previous paragraphs is given here. For instance, in some cases the scientific name used in the present catalogue, although nomenclaturally correct, is not the best known. The reasons for such changes (e.g. *Metapenaeus burkenroadi* Kubo, 1954 to *M. moyebi* (Kishinouye, 1896); *Penaeus orientalis* Kishinouye, 1918 to *P. chinensis* (Osbeck, 1765); *Trachypenaeus faoea* Loesch & Avila, 1969 to *T. faoea* Obarrio, 1954) are also given in this paragraph.

Because of the existing confusion in the use of the names "shrimp" and "prawn", it seems useful to draw some attention to this problem. It is impossible to give a short definition of either name, as in different regions these terms are used for different animals or animal groups, and even within a single region the usage is not consistent. Both terms of course have originated in Great Britain. There "shrimp" stands for members of the family Crangonidae (*Crangon crangon* being the "Common Shrimp"), while the term "prawn" is used for species of Palaemonidae (*Palaemon serratus* being the "Common Prawn"). But also Crustacea not belonging to these two families are often indicated as shrimps and prawns, and here the difficulty starts. The term prawn is then usually employed for the larger forms (often those that are more laterally compressed and have a well-developed rostrum), so *Pandalus montagui* Leach is known as "Aesop Prawn" and even *Nephrops norvegicus* (L.) is sometimes indicated as "Dublin Bay Prawn". The term "shrimp" is commonly used for the smaller forms (often dorsoventrally depressed and with a poorly developed rostrum): the name "Opossum shrimps" is given to the Mysidacea, "Skeleton shrimps" to the Caprellidae while for instance Gordon (1958, Nature (Land.), 182:1186) referred to *Thermosbaena* as "a thermophilous shrimp from Tunisia". Even in England the use of the two terms is not consistent, so *Pandalus montagui* is not only referred to as "Aesop Prawn", but sometimes also as "Aesop Shrimp" or "Pink Shrimp", while the mysid *Praunus flexuosus* (O.F. Müller) [the generic name *Praunus* Leach, 1814, itself is a latinization of the word "prawn"], is known both as "Chameleon Shrimp" (e.g. Eales, 1950, Littoral Fauna of Great Britain, ed. 2, p. 122) and "Chameleon Prawn" (e.g. Ingle, 1969, A Guide to the Sea Shore, p. 95).

Summarizing, we may say that in Great Britain the term "shrimp" is the more general of the two, and is the only term used for Crangonidae and most smaller species. "Prawn" is the more special of the two names, it being used solely for Palaemonidae and larger forms, never for the very small ones.

In North America the name "prawn" is practically obsolete and is almost entirely replaced by the word "shrimp", even the species of Palaemonidae, like those of *Palaemonetes* ("Grass Shrimps") and *Macrobrachium* ("River Shrimps"), are usually indicated as shrimps. If the name prawn is used at all here, this seems to be done only for the smaller Palaemonids and Atyids, which, e.g. in Pennak's (1953, p. 451) "Freshwater Invertebrates of the United States", are indicated as "Freshwater prawns". Where in England the word "prawn" denotes the larger Natantia (the English Oxford dictionary defines prawn as "a marine crustacean-like large shrimp"); in America, if used, it refers to the small species (the American Webster dictionary gives as definition of prawn "a small crustaceous animal of the shrimp family"). Although in both Britain and North America, shrimp is the more general term (in America far more strongly so than in Britain), the usage of the term "prawn" is almost the direct opposite in the two regions, denoting in Britain the larger palaemon-like animals, in America the smaller ones.

In South Africa the larger Natantia, starting with *Macrobrachium* and including the Penaeidae are called "prawns", the smaller forms (including *Palaemon* species) are indicated as shrimps. This seems to be more or less also the situation in former British colonies in Asia, where the species of *Macrobrachium* and the Penaeidae are called prawns, and smaller species like *Caridina* and *Acetes* shrimps. A sharp division cannot be made here either, so Chuang (1961, on Malayan Shores, p. 181, pl. 80) used the names "Snapping-prawn" and "Pistol-prawn" for Alpheids.

In Australia and New Zealand the Crangonidae are called shrimps, the Palaemonidae (even the small species) and Penaeidae, prawns. Hale (1927, The Crustaceans of South Australia) listed furthermore the Processidae and Atyidae as shrimps, the Hippolytidae, Alpheidae, Pandalidae and Campylonotidae as prawns. However, several other Australian authors use the name Pistol shrimp for Alpheidae, while also the more prawn-shaped *Stenopus hispidus* is given the name Banded shrimp.

All in all the situation is quite confused, and nowhere a sharp distinction seems to be made between shrimps and prawns. In general one can say that the larger Palaemonidae and Penaeidae (thus the species that are commercially most attractive) are called shrimps in America, and prawns in most of the rest of the English-speaking world. The word shrimp being used almost everywhere for the Crangonidae and other small forms, but many exceptions occur here.

In French, the general term "crevette" is quite generally used for both shrimps and prawns and fortunately causes no problems. In Spanish, the general term for shrimps and prawns is "camaron" (camarao in Portuguese). The word "gamba" is less generally used; in fact it is applied only to a few species. The most confusing Spanish term is "langostino". In Spain, "langostino" is the official name for *Penaeus kerathurus*, in Argentina it is applied to *Pleoticus mülleri*, in Cuba to *Macrobrachium* species, and in Venezuela to various of the larger species of shrimps. Moreover, the term "langostino" is used in Chile for two species of galatheid crustacea (*Cervimunida johni* Porter and *Pleuroncodes monodon* H. Milne Edwards). The similar French word "Langoustine" stands for *Nephrops norvegicus* (L.).

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