Notes on the naming of living organisms

The system of binomial nomenclature used for the naming of organisms was first used by Carolus Linnaeus in the middle of the 18th century. According to the binomial system the lowest level of identification is the species (plural: species). The most commonly used definition of a species is a group of organisms that can interbreed and produce fertile offspring.

In the case of animals the name of a species is referred to as its specific name. Closely related species are placed in the same genus (plural: genera). The name of the genus is referred to as the generic name of an animal. The generic name and the specific names together form the unique binomial name of an animal. The generic name is always capitalized and both names are written in italics when printed and underlined if written by hand. e.g. Pomacanthus imperator

The naming of plants follows a similar pattern.

The system of binomial nomenclature is used throughout the world irrespective of the native language of the writer. Extinct organisms and fossils are also identified using the system. If the species of an organism is not known the abbreviation ’sp.’(plural: ’spp.’) is placed after the generic name e.g. Torpedo sp.

If several species of the same genus are being discussed the generic name is usually not repeated but abbreviated e.g. snappers of the genus Lutjanus would be referred to as L. bengalensis, L. rivulatus etc.

The naming of animal species is regulated by the International Code of Zoological Nomenclature. The right to name a new species is accorded to the person or persons who first describe it. The scientific describer is not necessarily the first person who has recognized the organism as a new species. The name becomes valid when the scientific description is published. The name of the describer/s and the date of publication are usually appended to the name of the organism. e.g. Centricus scutatus, Linnaeus, 1758. (Photo right)

A type specimen called a holotype is deposited in a museum or other scientific institution for every new species. The holotype serves as a physical reference for future identifications.

Animals are sometimes given a new name long after they were first described. This can be because of duplication when the same animal had been given two different names in different parts of the world or because the juvenile form was not recognized as the same as the adult form. It sometimes happens that closer inspection and genetic analysis of members of a species dictate that some members should be reassigned to a different genus. The genus Eleotris is a notable example of this latter case. In the 19th and early 20th centuries there were 176 species in the genus; today there are 30. All the others have been reassigned to different genera. For example, among Oman fishes Eleotris periopthalmus Bleeker, 1853 is now Amblyeleotris periophthalma (Bleeker, 1853). The brackets around the name of the author and the date signify that there has been a name change.

In rare instances a species can be divided into subspecies. Subspecies are distinct subgroups within a species which have developed usually as a result of geographical isolation. The Two-spot wrasse, Macropharyngodon
bipartitus has two subspecies *Macroharyngodon bipartitus marisrubri* from the Red Sea and *Macroharyngodon bipartitus bipartitus* found in the Western Indian Ocean.

Related genera are classified together in a family. The names of animal families always end with 'idae' and are capitalized. Members of the same family share many physical and behavioural characteristics. e.g. Mullidae (Goatfishes) all have sensory barbels under their mouths.

Generic and specific names use Latin grammatical forms even if the stems of the names are not Latin. The gender (i.e. masculine, feminine or neuter) of the two names must be in agreement. This is the reason for some specific names being *maculatus*, others *maculata* or *maculatum* or *lineatus*, *lineata* or *lineatum*.

Generic names are usually descriptive of some physical characteristic. The name of a genus of surgeonfish, *Acanthurus*, is derived from the Greek word for thorn (acanth) referring to the sharp spine in front of its tail.

Specific names are sometimes descriptive but can also be derived from the name of a person connected with the discovery, the place where the species is found, a local common name or even something whimsical. Below is a list of common Latin and Greek root words as well as some other words associated with the names of fishes identified in Reef Fishes of Oman.

### Some commonly used Latin and Greek word stems

<table>
<thead>
<tr>
<th>Latin/Greek Stem</th>
<th>English Meaning</th>
<th>Scientific Name Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>acanth (Gr)</td>
<td>thorn</td>
<td><em>Acanthurus</em> – surgeonfish (caudal spines)</td>
</tr>
<tr>
<td>acumin (L)</td>
<td>taper-pointed</td>
<td><em>Heniochus acuminatus</em> – Longfin butterflyfish</td>
</tr>
<tr>
<td>aetos (Gr)</td>
<td>eagle</td>
<td><em>Aetobatus narinari</em> – Eagle ray</td>
</tr>
<tr>
<td>argentum (L)</td>
<td>silver</td>
<td><em>Monodactylus argenteus</em> – Silver moony</td>
</tr>
<tr>
<td>axilla (L)</td>
<td>armpit</td>
<td><em>Chromis flavaxilla</em> – Arabian chromis (yellow pectoral base)</td>
</tr>
<tr>
<td>cauda (L)</td>
<td>tail</td>
<td><em>Sphyraena flavicauda</em> – Yellowtail barracuda</td>
</tr>
<tr>
<td>chaet (L)</td>
<td>bristle</td>
<td><em>Chaetodon</em> – butterflyfish (bristle-like teeth)</td>
</tr>
<tr>
<td>chrysos (Gr)</td>
<td>gold</td>
<td><em>Pterocaesio chrysozona</em> – Goldband fusilier</td>
</tr>
<tr>
<td>dimidiatus (L)</td>
<td>halved</td>
<td><em>Labroides dimidiatus</em> – Cleaner wrasse (half blue, half black)</td>
</tr>
<tr>
<td>fascia (L)</td>
<td>band</td>
<td><em>Acanthopagrus bifasciatus</em> – Two-bar sea bream</td>
</tr>
<tr>
<td>ferruginus (L)</td>
<td>rusty coloured</td>
<td><em>Scarus ferrugineus</em> – Rusty parrotfish</td>
</tr>
</tbody>
</table>
fuscus (L) brown, dusky Scarus fuscopurpureus – Purplebrown parrotfish
flavus (L) yellow Sphyraena flavicauda – Yellowtail barracuda
fuco (L) to paint Archaemia fucata – Orangefin cardinalfish
gibbus (L) humped Lutjanus gibbus – Humpback red snapper
gramma (Gr) mark, line Diagramma pictum – Painted sweetlips
leptos (Gr) slender Pomacentrus leptus – Slender damselfish
lineatus (L) with lines Pterois lineatus – Lined eel catfish

lunatus (L) crescent shaped Thalassoma lunare – Moon wrasse
macros (Gr) large Cheilodipterus macrodon – Largetoothed cardinalfish
macula (L) spot or mark Parapercis maculata – Harlequin sandperch (spotted)

marga (Gr) pearl Parupeneus margaritatus – Pearly goatfish
margo (L) edge Gymnothorax flavimarginatus – Yellowedged moray
mitra (Gr) head dress Petrocairsis mitratus – Floral blenny
mugilis (L) sea fish, mullet Mugilidae – Mullets
niger (L) dark, black Odonus niger – Redtooth triggerfish (dark teeth)
notatus (L) marked Epinephelus multinotatus – Whiteblotched grouper

odontos (Gr) tooth Cheilodipterus macrodon – Largetoothed cardinalfish
para (Gr) related to Paracheilinus – closely related to genus Cheilinus

pinnula (L) small plume Cirrhitus pinnulatus – Stocky hawkfish (plumed fin spines)
pleura (Gr) ribs, sides Leptojulis cyanopleura – Shoulderspot wrasse (blue spots on sides)
pter (Gr) wing, fin Pterois - scorpionfish (wing-like pectoral rays)

punctatus (L) spotted Chaetodon nigropunctatus – Blackspotted butterflyfish
purpur (L) purple Scarus fuscopurpureus – Purplebrown parrotfish
rubescens (L) becoming red Parupeneus rubescens – Rosy goatfish
scaros (Gr) parrotfish Scaridae – Parrotfish
sinus (L) a curve Torpedo sinuspersici – Marbled electric ray (curved marking on back)

sordidus (L) dirty Abudefduf sordidus – Blackspot damselfish (dull marking)
stigma (Gr) point, mark Lutjanus monostigma – Onespot snapper
striatus (L) striped Ctenochaetus striatus – Striated surgeonfish (many longitudinal lines)
taeniatus (L) striped Scolopsis taeniatus – Blackstreaked bream
thalassa (Gr) sea, marine Thalassoma lunare – Moon wrasse
torpedius (L) to make numb Torpedinidae – Electric rays
xanthos (Gr) yellow Chromis xanthopterygia – Yellowfin chromis
Names derived from names of individuals

There are very few genera named after individuals. One recently created genus of goby *Larsonella* has been named after Helen Larson, an Australian biologist who is a leading authority on gobies.

Examples of species named after individuals are *Trimma winterbottomi* and *Chromis fieldi*

Names derived from local names

*Carangoides bajad* - bajad is an Arabic name for Jack

*Abudefduf* - a genus of damselfish; abu is Arabic for father; the meaning of the rest of the name is unclear

*Pinjalo pinjalo* – pinjalo is the Malay word for fish

Names derived from a geographical location

*Pseudochromis omanensis* - Oman dottyback is endemic to central and southern Oman

*Pseudochromis persicus* – Persian dottyback

Names from other sources

*Amblyeleotris sungami* – Magnus' prawn-goby is named after Professor Magnus with the name spelled backwards.

*Ecsenius pulcher* (pulcher L. beautiful) is indeed a pretty little blenny. (Photo below)