NOMENCLATURE, REVISION, AND REFERENCES OF THE ASFIS LIST

(Version 2024)

GENERAL TERMINOLOGY AND CONVENTIONS OF THE ASFIS LIST

ISSCAAP group: This refers to the FAO 'International Standard Statistical Classification for Aquatic Animals and Plants' (ISSCAAP), which divides aquatic species into 50 groups on the basis of their taxonomic, ecological and economic characteristics. The ISSCAAP group code is assigned to all the species items included in the ASFIS list, with the exception of sea birds and the sea snakes as these animals are not included in the ISSCAAP classification.

3-alpha-code: Inter-agency 3-alpha code. This is a code developed for tabulations, questionnaires and publications in which the lack of space may impede the use of adequate descriptors in all the languages required. It is assigned to a species item permanently (it is, thus, a permanent reference to that species item). During the first years of compilation of the ASFIS list, the three letters of the 3-alpha code were assigned based on the scientific or English name of the species items, while currently the three letters are assigned at random. The three letters are capitalised.

Taxonomic code: The taxonomic code is mostly a twelve-digit alphanumerical code assigned for classificatory purposes. Three additional digits are added to species items representing special cases (e.g., hybrids, aggregated taxa, or disaggregated taxa in two different ISSCAAP groups). The structure of the taxonomic code uses the following scheme:

	FAO functional group	Higher taxa	Family	Genus	Species
Digits	1st digit	2nd–4th digits	5th–7th digits	8th–10th digits	11th–12th digits
Example	1	031	020	010	03
	These codes correspond to:				
	Pisces	HEXANCHIFORMES	HEXANCHIDAE	*Heptranchias*	*Heptranchias perlo*

The seven functional groups are: 1. Pisces, 2. Mollusca, 3. Crustacea, 4. Mammalia, 5. Amphibia-Reptile-Aves, 6. Invertabrata aquatica, 7. Plantae aquaticae

Scientific name: The column called “scientific name” can contain different taxa (i.e., Species, Genus, Family, higher taxa). The species is the lower level of classification, as the ASFIS list does not include subspecies. The scientific name of a species is binomial (i.e., two names), the first name is the genus and the second is the specific name. The genus name always commences with an upper-case letter, while the specific name never has an upper-case letter. In certain cases, when it is deemed important, the subgenus is inserted in parentheses between the genus and the specific name. Like the genus name, the subgenus name is capitalized. The genus and specific name are conventionally written in italics (or other contrasting typeface) to distinguish the name from surrounding text. The scientific name of a genus contains the genus name starting with a capital, followed by the term “spp”. The Family names of animals end with the suffix "-idae", while the Family names of plants and algae end with the suffix "-aceae". FAO FishStat statistics are associated to the Genus, Family, or higher taxa when not elsewhere included (NEI), i.e. when the taxa are not reported at species level.

Family and higher taxa: the content in the columns “Family” and “Higher taxa” has all letters capitalised.

Authorship: The author’s name follows the scientific name without intervening mark or punctuation, except when a species name is combined with a different genus name than what was originally designated; in such cases, the author’s name is places in parentheses. Author(s) is followed by date without comma between them. This style follows the convention of the Eschmeyer’s Catalog of Fishes: “*The code of Zoological Nomenclature does not require a comma between the author and date, only a suggestion. In fact, we consider that confusing as that is traditionally used to show a cited reference in journal publications and not a species authorship and date”.*

Common names: FAO collect statistics of aquatic species at a global level, therefore names selected to become FAO names should be recognizable as much as possible at both local and international levels. FAO names assigned are not intended to replace local species names, but they are considered by FAO necessary to overcome the potential confusion caused, in some cases, by the use of a single name for many different species, or several names for one species. The abbreviations NEI (not elsewhere included) is added to the species items to facilitate the collection and reporting of the statistics only available at higher group levels.

The ASFIS list can be sorted by seven main groups (1. Pisces, 2. Mollusca, 3. Crustacea, 4. Mammalia, 5 .Amphibia-Reptile-Aves, 6. Invertabrata aquatica, 7. Plantae aquaticae), higher taxa, Family, Genus, and Species. Each scientific name in its higher level (= genus) is ordered alphabetically; each genus in its higher level (= Family) is ordered alphabetically, while the position of the Family in its higher level (=higher taxa) usually depends on its taxonomic classification. When released, the ASFIS list is sorted by ISSCAAP group and taxonomic code.

REVISION OF THE ASFIS LIST

The ASFIS list is updated annually, using a pragmatic and conservative approach. Changes of scientific names and creation of new species are only included when such changes have been recognized by the majority of taxonomists, practitioners in fisheries and aquaculture matters and, in particular, fishery and aquaculture statistics. The 2024 edition of the ASFIS list shows a major revision of the classification following a process of a few years, as illustrated below.

The greatest changes concern the columns of taxonomic code, Family, higher taxa and, to a lesser extent, scientific names. The amendments of the 3-alpha-codes are minimal and include species items that were deleted due no longer being valid, assigned a different scientific name, or new species items added in 2024.

Revision of the classification

For the 2024 revision, the first step was the selection of the relevant references for the higher taxa classification. A preliminary compilation of the classification (e.g. Phylum, Class, Order, Family) helped in the selection of the proper contents of the column called “higher taxa”, representing a functional group associated to the Family, which is based on a standard taxonomic revision. Some terminologies, even if not valid anymore from a taxonomic revision, were retained in the ASFIS list because of their historical meaning for fisheries resources classification (e.g., Natantia and Reptantia are currently taxonomically not valid, but their names were retained and associated to the new suggested classification, not to cause a disruption of the old statistical time series).

In general, references and criteria for the selection of the higher taxa might be different depending on the main FAO functional groups described below. Generally speaking, higher the diversity in species, genus, and families of some groups, the greater the need for a more detailed classification. Decisions were made on the main references of the groups, respecting the historical and common use of the term. A summary list of the references for the different functional groups is provided below:

1. **Pisces**: the column "higher taxa" corresponds to the Order. In certain Orders, due to the high numbers of species, more details are provided including the suborder, for example: Carangiformes (Pleuronectoidei).
2. **Crustacea**: the items in the column " higher taxa " is selected based on the necessity to differentiate the species items. For example, Copepods are grouped in the Class Copepoda, while the Order Decapoda is further divided in Subfamilies.
3. **Mollusca**: this group is divided in major Classes (e.g., Gastropoda, Bivalvia, Cephalopoda). In the case of gastropods, the order Nudibranchia is separated from generic gastropods; while cephalopods are divided in cuttlefishes, squids, and octopuses.
4. **Mammalia**: the column “higher taxa” contains Orders and Infraorders (e.g., Order Carnivora, Infraorder Pinnipedia; Infraorder Cetacea), following The Society for Marine Mammalogy (2024).

5. **Amphibia**, **Reptilia**, and **Aves**: “higher taxa” corresponds to Order.
6. **Invertebrata aquatica**: the “higher taxa” for this heterogenous group can be the Phylum, with further details on Subphylum and Class for certain groups, for example Cnidaria (Anthozoa) Octocorallia.
7. **Plantae aquaticae**: “higher taxa” for seaweeds correspond to Phylum and Class.

Revision of the species items

For the 2024 revision, once the classification of higher taxa and families was finalized, matching with the species items followed the taxa hierarchy (i.e., the corresponding higher taxa, families, and genera with the addition of the missing taxa).

The matching of scientific names included in the ASFIS list with the current valid names was carried out by consulting different tools, specific references and following the advice from experts. The main reference for the fishes is the Eschmeyer's Catalog of Fishes, and in January 2022 the contributors of the catalogue helped with the automatic matching of the scientific names. The reference for marine mammals is the List of Marine Mammal Species and Subspecies proposed by the Society for Marine Mammology. The classification of amphibians was conducted with reference to the Amphibian Species of the World, an online resource edited by the American Museum of Natural History of New York. The main reference for reptiles is the Reptile Database of the Zoological Museum of Hamburg, and for birds the Handbook of the Birds of the World and BirdLife International Digital Checklist of the Birds of the World, edited by the BirdLife Taxonomic Working Group. There are several references for the plantae aquaticae. For all other remaining groups, the scientific names were revised by applying the tool "match taxa" on the portal of the World Register of Marine Species (WORMS), in conjunction with the relevant references. In case of inconsistencies that might be due to misspelling, the species items were revised individually. To facilitate the consultation, the list of references is presented below associated with each of the main groups.

Revision of the scientific names causing duplications

The ASFIS list has a different objective compared to a strictly taxonomic list. Any revisions to the ASFIS list are applied retroactively to the entire series recorded for capture and aquaculture production. Therefore, the rationale for any changes should be transparent and a cautionary approach always taken, taking into consideration the implications on the historical time series. This can include merging of catches, previously reported separately under now redundant species codes.

Particular care is taken when amendments result in potential duplications in the ASFIS list. This can happen when two or more species result in the same scientific name, i.e., when the species names are synonymous, or when one species results to be valid with a scientific name already present in the list. Any duplications in scientific name are usually resolved by deleting one or more species items and their associated 3-alpha-codes. The criteria for deciding on which species item to be deleted, and the combination (scientific name + 3-alpha-code) that should be preserved, is as follows:

- The duplicates are first evaluated with respect to the presence of time series associated to their 3-alpha-codes in the FAO FishStat statistics. In case that two or more species items are used in the statistics and correspond to species of high commercial importance, the relevant experts are consulted to evaluate if the taxonomic change is already accepted, and the implications to the potential revisions to the ASFIS list are also assessed. In cases where the amendments are potentially problematic, the species items are preserved. An example of this circumstances is the case of *Istiophorus albicans* and *Istiophorus platypterus*: taxonomists consider *Istiophorus albicans* a symonym of *Istiophorus platypterus*, but this is not accepted by experts working in the framework of Regional Fisheries Management Organizations (RFMOs) that prefer to maintain the two taxa separately.

- In case the species items causing duplications have an associated FAO FishStat statistical time series, and the change in the scientific name has been implemented recently (i.e., less than five years), the duplications are not amended and a note to the record is added for potential revisions in the future.
- When the amendment of the duplications appears not to have any implications, and the change of name happens more than five years ago, the oldest species item that has been added to the ASFIS list is the generally given priority and its 3-alpha-code is preserved.
- In case of any doubts about the implication of the amendment of the scientific name, a note to the record of the species is added for a future revision.

Revision of the taxonomic codes

Higher taxa and Family are ranked respecting the main references of the group, usually taxonomically. The Genera within the Family, and the Species within the Genera, are ranked alphabetically. Once the ASFIS list was revised to respect the classification of the different groups, the corresponding taxonomic codes was revised accordingly.

Common names

The source of common names were originally the FAO publications on species identification. The authors of the FAO guides select the common names, usually in consultation with local experts. Currently, the FAO Statistics Team of the FAO Fisheries and Aquaculture Division assigns the common names by consulting the main references and experts for the relevant species groups. Unfortunately, it is not always possible to assign appropriate names in all languages. The common names selected and considered to be appropriate to that species should be unique in the ASFIS list. In 2024, minor amendments were carried out to avoid duplications in the English, French and Spanish common names. Moreover, the abbreviations NEI (not elsewhere included), NEP (no especificado en otra parte), and NCA (non compris ailleurs) were formatted in upper cases.

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