



Food and Agriculture  
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# Top 10 species groups in global aquaculture 2020

FAO Fisheries and Aquaculture Division



This factsheet presents the top 10 species groups in 2020 world aquaculture production (Table 1) and compares species diversity in different species groups (Figure 1). The ranking of all 67 species groups in world aquaculture 2020 is illustrated in Figure 2 on the back cover. More information about the top 10 species groups at regional and national levels can be found in a more comprehensive factsheet as [supplementary materials](#) (FAO, 2022). The comprehensive factsheet also elaborates on the species grouping methodology used in the ranking exercise.

### Top 10 species groups in world aquaculture 2020

In 2020, a total of 448 ASFIS species items<sup>1</sup> were farmed in 197 countries or territories with 123 million tonnes of world production, an increase of 2.8 million tonnes (2.32 percent) from the 2019 level (Table 1). There has been no significant change on the list of top 10 aquaculture species groups between 2019 and 2020 (Table 1). The only change was *Oysters* moving up from #7 to #5, overtaking the two species groups, *Tilapias and other cichlids* and *Catfishes*, whose production declined in 2020 (Table 1). For *Tilapias and other cichlids* (#6), the ~260 000 tonnes of decline in world production primarily reflected production drops in Indonesia and Egypt, which were, respectively, the second and third largest producers that accounted for nearly 40 percent of world production in 2020. Similarly, Viet Nam and Indonesia (i.e. the two largest catfish farming countries that accounted for nearly half of world production) were the main cause of the ~254 000 tonnes of decline in world aquaculture production of *Catfishes* (#7) in 2020.

Besides the two species groups with declined production in 2020, *Red seaweeds* (#2) and *Brown seaweeds* (#3) were another two species groups with below-average growth (Table 1). The other six species groups grew faster than the world average 2.32 percent, including *Marine shrimps and prawns* (#4) and *Salmons, trouts, smelts* (#9) whose growth rates in 2020 (5.46 percent and 4.66 percent, respectively) were more than twice of the world average for all species (Table 1). Other species (including 258 ASFIS species items) accounted for 15.64 percent of world aquaculture production in 2020; their average 4.88 percent growth in 2020 was more than twice of the world average for all species (Table 1).

TABLE 1: Top 10 species groups in terms of production volume, 2020

Top 10 species groups (ranked by production volume)		World aquaculture production, 2020					2020 production compared to 2019		
Species group	ISSCAAP division	Number of ASFIS species items in the group farmed in world aquaculture		Number of countries <sup>f</sup> worldwide farming the species group	World aquaculture production of each species group (live weight; tonnes)	Share of world aquaculture production of all species (%)	Ranked by quantity in 2019 <sup>g</sup>	Change in quantity (tonnes)	Change in percentage (%)
		Total	ENS <sup>e</sup>						
1. Carps, barbels and other cyprinids <sup>a</sup>	Freshwater fishes	42	9.9	95	30 568 763	24.94	#1	790 889	2.66
2. Red seaweeds <sup>a</sup>	Algae	11	4.0	34	18 123 262	14.78	#2	102 889	0.57
3. Brown seaweeds <sup>a</sup>	Algae	9	2.2	13	16 841 615	13.74	#3	366 613	2.23
4. Marine shrimps and prawns <sup>b</sup>	Crustaceans	15	1.8	63	6 863 413	5.60	#4	355 033	5.46
5. Oysters <sup>a</sup>	Molluscs	13	1.6	46	6 260 194	5.11	#7	143 745	2.35
6. Tilapias and other cichlids <sup>a</sup>	Freshwater fishes	17	2.2	124	6 104 312	4.98	#5	-260 002	-4.09
7. Catfishes <sup>c</sup>	Freshwater fishes	34	5.9	91	6 019 881	4.91	#6	-254 395	-4.05
8. Clams, cockles, arkshells <sup>a</sup>	Molluscs	25	2.3	24	5 742 807	4.68	#8	242 391	4.41
9. Salmons, trouts, smelts <sup>a</sup>	Diadromous fishes	23	2.6	81	4 035 973	3.29	#9	179 526	4.66
10. Freshwater fishes nei <sup>d</sup>	Freshwater fishes	1	1.0	71	2 854 069	2.33	#10	223 113	8.48
<i>Other species</i>		258	<i>n.a.</i>	<i>n.a.</i>	19 165 898	15.64	<i>n.a.</i>	891 148	4.88
<b>All species</b>		<b>448</b>	<b>47.5</b>	<b>197</b>	<b>122 580 187</b>	<b>100.00</b>	<b>n.a.</b>	<b>2 780 951</b>	<b>2.32</b>

Data source: FAO Fishery and Aquaculture Statistics. Global aquaculture production 1950–2020 (FishStatJ). March 2022.  
[www.fao.org/fishery/statistics/software/fishstatj/en](http://www.fao.org/fishery/statistics/software/fishstatj/en)

Notes: <sup>a</sup>Identical to ISSCAAP group of the same name; ISSCAAP = International Standard Statistical Classification of Aquatic Animals and Plants. <sup>b</sup>Same as the ISSCAAP group “Shrimps, prawns”. <sup>c</sup>Subgroup of the ISSCAAP group “Miscellaneous freshwater fishes”, including freshwater fishes of the order of Siluriformes. <sup>d</sup>ASFIS species item that represents a group of miscellaneous freshwater fishes; ASFIS = Aquatic Sciences and Fisheries Information System and “nei” = not elsewhere included. <sup>e</sup>ENS = Effective Number of Species<sup>2</sup>, which is a diversity measure discussed in the next section. <sup>f</sup>Including non-sovereign territories. <sup>g</sup>The 2019 ranking here is slightly different from the one presented in a previous factsheet on *Top 10 species groups in global aquaculture 2019* ([www.fao.org/3/cb5186en/cb5186en.pdf](http://www.fao.org/3/cb5186en/cb5186en.pdf)) because the FAO aquaculture production statistics have been updated.

### Species diversity in world aquaculture 2020

The 123 million tonnes of world aquaculture production in 2020, spreading across 448 ASFIS species items notwithstanding (Table 1), was concentrated on a much lower number of species items – 46 species items contributed 90 percent of the production. The uneven species composition was reflected by the 47.5 effective number of species (ENS) in world aquaculture production 2020 (Table 1). As opposed to the total number of species measuring only richness, the ENS is a diversity measure that captures both the richness and evenness of species composition<sup>2</sup>.

1. ASFIS = Aquatic Sciences and Fisheries Information System. ASFIS species items could refer to either individual species, hybrids or groups of related species, such as families (when identification to species is impossible). [www.fao.org/fishery/collection/asfis/en](http://www.fao.org/fishery/collection/asfis/en)
2. The ENS here is calculated by  $e^{-\sum_{i=1}^n s_i \ln(s_i)}$ , where  $s_i$  denotes the share of species  $i$  in the total production of a species group; and  $n$  represents the total number of species in the group. Defined as such, the ENS is essentially equivalent to, yet more intuitive than, the Shannon-Wiener-Weaver (entropy) index. Ranging between 1 and  $n$ , the ENS would be equal to  $n$  when the production is evenly distributed across all species, whereas it would be closer towards 1 as the lower bound when the distribution of production across species becomes more concentrated. For example, when aquaculture production is evenly distributed between two species, the effective number of species would be 2, which is equal to the total number of species. When aquaculture production is dominated by one species with a trivial contribution from the other species, the effective number of species would be close to 1, which reflects that the production is effectively contributed by one species. More technical details can be found in Cai *et al.* (2022).

**Freshwater fishes (13 species groups; 39.3 percent of total production)**

Carp, barbels and other cyprinids (#1) was the number one species group in terms of both production magnitude and species diversity (Figure 1). Other freshwater fish groups with relatively high species diversity (ENS above 3) include Characins (#26), Catfishes (#7) and Bony tongues (#50). The production of Tilapias and other cichlids (#6) was similar to Catfishes (#7), yet its species diversity was much lower. Freshwater fish groups with medium species diversity (ENS between 2 and 3) include Freshwater perch-like fishes (#17), Snakeheads (#20) and Gouramies (#30) (Figure 1).

**Marine fishes (14 species groups; 2.8 percent of total production); Diadromous fishes (7 species groups; 4.8 percent)**

Marine perch-like fishes (#14) was the largest marine fish group and the second most diverse group among all 67 species groups (Figure 1). Flounders, halibuts, soles (#32) was the only other marine fish group with an ENS above 3, whereas Jacks and pompanos (#27), Tunas, bonitos, billfishes (#39) and Puffers and filefishes (#44) are the only three marine fish groups with ENS between 2 and 3 (Figure 1). Diadromous fish groups appear to have lower species diversity than freshwater or marine fish groups (Figure 1). The ENS of the largest, most diverse diadromous fish group (i.e. Salmon, trouts, smelts; #9) was only 2.58. Sturgeons, paddlefishes (#35) contained eight species items, yet its ENS was only 1.06. Milkfish (#15), a diadromous fish “group” with production over 1 million tonnes, nevertheless includes only one species (Chanos chanos).

**Crustaceans (9 species groups; 9.2 percent of total production); Molluscs (10 species groups; 14.5 percent)**

Crabs, sea-spiders (marine) (#22) was the only crustacean group with ENS above 3 (Figure 1). The production of Marine shrimps and prawns (#4) was greater than that of Tilapias and other cichlids (#6) or Catfishes (#7) yet its ENS (1.81) was lower. The ENS of Freshwater shrimps and prawns (#21) was 2.45, whereas that of Crayfishes (#11) and Freshwater crabs (#19) was, respectively, 1.003 and 1. The 1.63 ENS of Oysters (#5) was lower than most of the other top 10 species groups (Table 1). The 4.25 ENS of Mussels (#12) was the highest among molluscs groups, whereas Clams, cockles, arkshells (#8) and Abalones, winkles, conchs (#23) were the other two molluscs groups with ENS between 2 and 3 (Figure 1).

**Algae (6 species groups; 28.6 percent of total production); Miscellaneous aquatic animals and animal products (MAA in short; 8 species groups; 0.9 percent)**

The ENS of Red seaweeds (#2) and Brown seaweeds (#3) were, respectively, 3.95 and 2.24, whereas that of a smaller seaweed group, Green seaweeds (#47) was higher (Figure 1). None of the MAA groups had ENS above 2 (Figure 1). The ENS of the two largest MAA groups, i.e. Turtles (#24) and Sea cucumbers, sea urchins and other echinoderms (#31), were, respectively, 1.47 and 1.23.

**References**

Cai, J.N., Yan, X. and Leung, P.S. 2022. Benchmarking species diversification in global aquaculture. *FAO Fisheries and Aquaculture Technical Paper No. 605*. Rome, FAO. <https://doi.org/10.4060/cb8335en>  
 FAO. 2022. Top 10 species groups in global, regional and national aquaculture 2020. Supplementary materials to the factsheet on Top 10 species groups in global aquaculture 2020. *World Aquaculture Performance Indicators (WAPI) factsheet*. [www.fao.org/3/cc0681en/cc0681en.pdf](http://www.fao.org/3/cc0681en/cc0681en.pdf)

**FIGURE 1: Comparison of species diversity in different species groups, 2020**

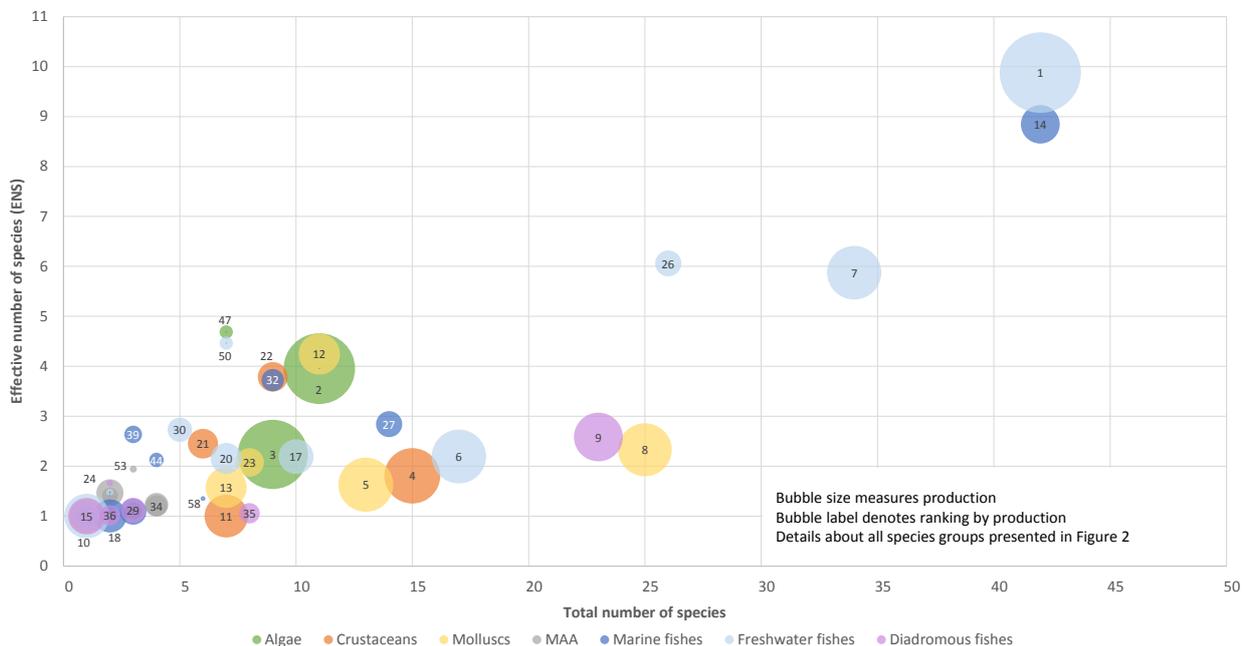
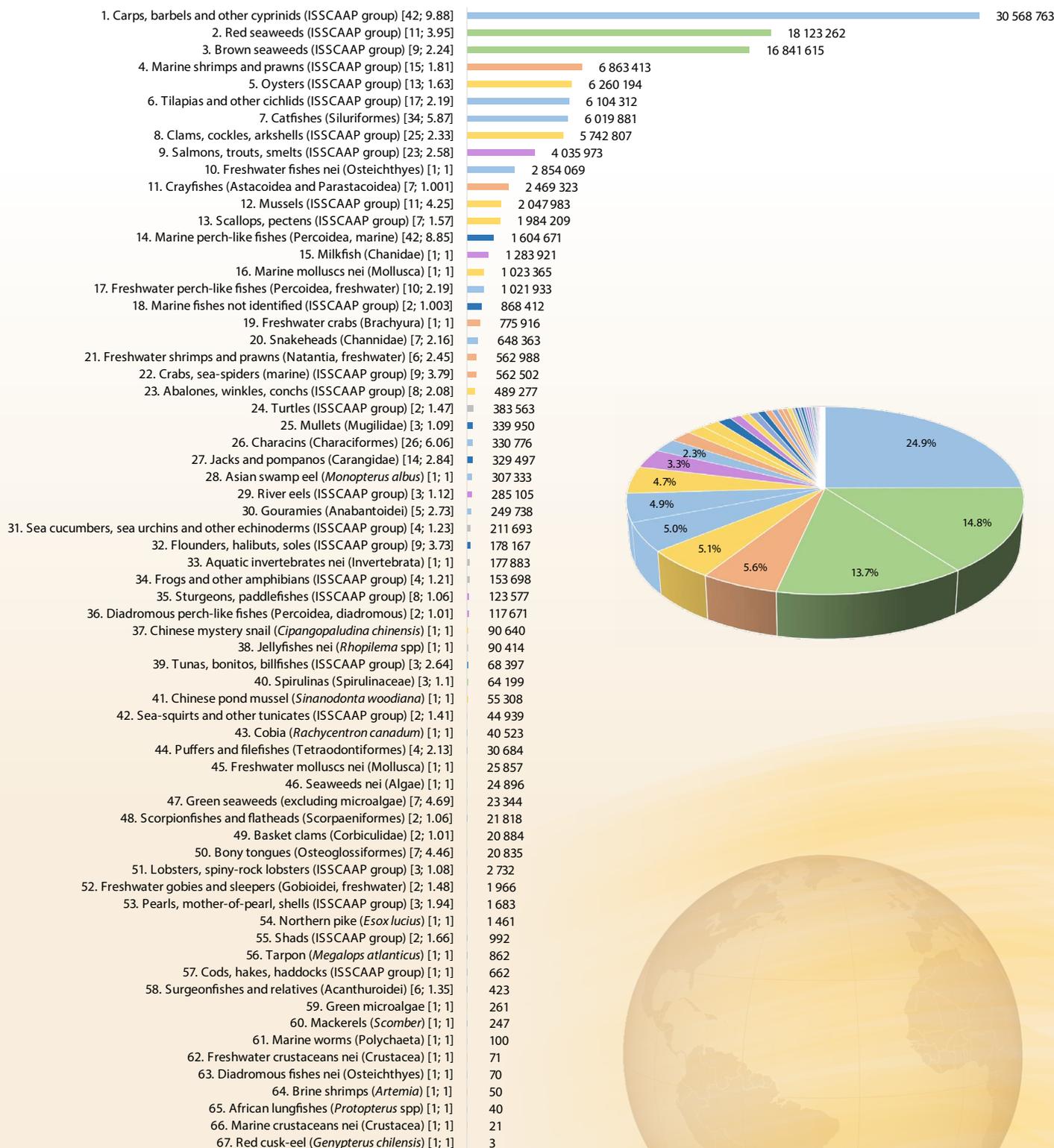


FIGURE 2: World aquaculture production (2020): 122 580 187 tonnes



Note: The two numbers in a bracket represent, respectively, the “total number of species” and the “effective number of species (ENS)” in the species group; see footnote 2 for more information about ENS.

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