



Food and Agriculture
Organization of the
United Nations

Top 10 species groups in global aquaculture 2019



This factsheet presents the top 10 species groups in 2019 global aquaculture production (Table 1) and features seaweeds that are recently receiving increasing global attention as potential restorative aquaculture species (Table 2).¹ The ranking of all 68 species groups in global aquaculture 2019 is illustrated on the back cover. More information about the top 10 species groups at regional and national level can be found in a more comprehensive factsheet as [supplementary materials](#).² The comprehensive factsheet also elaborates on the species grouping methodology used in the ranking exercise.

Top 10 species groups in world aquaculture 2019

In 2019, a total of 443 ASFIS³ species items were farmed in 196 countries or territories with 120 million tonnes of world production, an increase of 4.3 million tonnes (3.74 percent) from the 2018 level (Table 1).

There has been no significant change on the list of top 10 aquaculture species groups between 2018 and 2019 (Table 1).⁴ The only change was *Catfishes* moving up from #7 to #5, thanks to its 8.61 percent growth that was much higher than that of *Tilapias and other cichlids* (2.63 percent) and *Oysters* (2.13 percent). The growth in *Catfishes* primarily reflected the 13.62 percent growth in striped catfish (*Pangasianodon hypophthalmus*), which, in 2019, accounted for 42.82 percent of world catfish aquaculture.

Four of the top 10 species groups grew faster than the average 3.74 percent growth for all species between 2018 and 2019: *Brown seaweeds* (#3; 9.43 percent); *Catfishes* (#5; 8.61 percent); *Salmons, trouts, smelts* (#9; 8.53 percent); and *Marine shrimps and prawns* (#4; 8.42 percent). The growth in *Brown seaweeds* reflected significant growth in all major brown seaweed species (i.e. *Laminaria/Saccharina* 6.74 percent and *Undaria* 10.43 percent); the same occurred in *Salmons, trouts, smelts* (i.e. *Salmo salar* 7.84 percent; *Oncorhynchus mykiss* 7.42 percent; and *Oncorhynchus kisutch* 32.87 percent). The growth in *Marine shrimps and prawns* mainly reflected the 8.76 percent growth in *Penaeus vannamei*, which accounted for 83.08 percent of world *Marine shrimps and prawns* aquaculture in 2019.

Three species groups had below-average growth: *Tilapias and other cichlids* (#6; 2.63 percent); *Oysters* (#7; 2.13 percent); and *Carp, barbels and other cyprinids* (#1; 1.5 percent).

The production of three species groups has declined: *Freshwater fishes nei* (#10; -2.23 percent); *Clams, cockles, arkshells* (#8; -1.08 percent); and *Red seaweeds* (#2; -0.5 percent). The decline in *Clams, cockles, arkshells*

TABLE 1: Top 10 species groups by quantity in world aquaculture production, 2019

Top 10 species groups		World aquaculture production quantity, 2019				2019 production compared to 2018		
Species group	ISSCAAP division	Number of ASFIS species items in the group farmed in global aquaculture	Number of countries farming the species group	World aquaculture production quantity of the species group (live weight; tonnes)	Share of world aquaculture production quantity of all species (%)	Ranking by quantity in 2018 ^e	Change in quantity (tonnes)	Change in percentage (%)
1. Carps, barbels and other cyprinids ^a	Freshwater fishes	38	95	29 789 359	24.80	#1	439 927	1.50
2. Red seaweeds ^a	Aquatic plants	9	32	18 251 474	15.20	#2	- 92 393	-0.50
3. Brown seaweeds ^a	Aquatic plants	10	14	16 393 764	13.65	#3	1 413 369	9.43
4. Marine shrimps and prawns ^b	Crustaceans	14	62	6 555 315	5.46	#4	509 086	8.42
5. Catfishes ^c	Freshwater fishes	28	86	6 264 326	5.22	#7	496 575	8.61
6. Tilapias and other cichlids ^a	Freshwater fishes	18	124	6 194 760	5.16	#5	158 901	2.63
7. Oysters ^a	Molluscs	13	46	6 125 606	5.10	#6	127 625	2.13
8. Clams, cockles, arkshells ^a	Molluscs	26	22	5 522 876	4.60	#8	- 60 483	-1.08
9. Salmons, trouts, smelts ^a	Diadromous fishes	23	83	3 855 434	3.21	#9	302 982	8.53
10. Freshwater fishes nei ^d	Freshwater fishes	1	66	2 515 482	2.09	#10	- 57 365	-2.23
<i>Other species</i>		263	<i>n.a</i>	18 630 025	15.51	<i>n.a</i>	1 090 903	6.22
All species		443	196	120 098 422	100.00	n.a	4 329 127	3.74

Data source: FAO Fishery and Aquaculture Statistics. Global aquaculture production 1950–2019 (FishStatJ). March 2021.

www.fao.org/fishery/statistics/software/fishstatj/en.

Notes: ^aISSCAAP group; ISSCAAP = International Standard Statistical Classification of Aquatic Animals and Plants. ^bSame as ISSCAAP group "Shrimps, prawns". ^cSubgroup of the ISSCAAP group "Miscellaneous freshwater fishes", including freshwater fishes of the order of Siluriformes. ^dASFIS species item that represents a group of miscellaneous freshwater fishes; ASFIS = Aquatic Sciences and Fisheries Information System and "nei" = not elsewhere included. ^eThe 2018 ranking here is slightly different from the one presented in a previous factsheet on *Top 10 species groups in global aquaculture 2018* (www.fao.org/3/ca9383en/ca9383en.pdf) because the FAO aquaculture production statistics have been updated.

1. More information can be found in FAO. 2021. *Seaweeds and microalgae: an overview for unlocking their potential in global aquaculture development*. FAO Fisheries and Aquaculture Circular No. 1229. Rome.
2. www.fao.org/3/cb5012en/cb5012en.pdf
3. 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
4. The 2018 ranking here is slightly different from the one presented in a previous factsheet on *Top 10 species groups in global aquaculture 2018* (www.fao.org/3/ca9383en/ca9383en.pdf) because the current factsheet is based on more recently updated FAO statistics.



primarily reflected the 2.69 percent decline of *Ruditapes philippinarum*, which accounted for 72.94 percent of world aquaculture of *Clams, cockles, arkshells*. The decline in *Red seaweeds* largely reflected the 3.12 percent decline of *Kappaphycus/Eucheuma*, which accounted for 63.68 percent of world cultivation of *Red seaweeds* in 2019.

Other species (including 263 ASFIS species items) accounted for 15.51 percent of world aquaculture production in 2019; their average 6.22 percent growth between 2018 and 2019 was nearly twice as high as the world average for all species (Table 1).

Featured species: seaweeds

Seaweeds (i.e. marine macroalgae) include brown seaweeds (around 2 000 species under Phaeophyceae), red seaweeds (over 7 200 species under Rhodophyta) and green seaweeds (more than 1 800 macroalgal species under Chlorophyta).⁵ World seaweed cultivation is concentrated on a relatively small number of species. FAO statistics record only 27 seaweed species items being cultivated in 2019 (Table 2), which were only a fraction (6.1 percent) of the total 443 ASFIS species items in global aquaculture (Table 1). In contrast, the 34.7 million tonnes (wet weight) of world seaweed cultivation in 2019 accounted for 28.9 percent of world aquaculture production of all species.

In terms of tonnage (measured in wet weight), red seaweeds and brown seaweeds were, respectively, the second- and third-largest species groups in global aquaculture in 2019 (Table 1). The world cultivation of red seaweeds declined 0.5 percent between 2018 and 2019, whereas that of brown seaweeds increased 9.43 percent (Table 1).

World seaweed cultivation production tonnage increased 1 000-fold between 1950 and 2019, from 34.7 thousand tonnes to 34.7 million tonnes. The rapid growth was primarily attributed to five genera,⁶ including two brown seaweed genera (*Laminaria/Saccharina* and *Undaria*) and three red seaweed genera (*Kappaphycus/Eucheuma*, *Gracilaria* and *Porphyra*) (Table 2). The seaweeds *Laminaria/Saccharina* (commonly known as kelp), *Undaria* (wakame) and *Porphyra* (nori) are common human foods widely and frequently consumed in Eastern Asia, whereas *Kappaphycus/Eucheuma* and *Gracilaria* are mostly used to produce hydrocolloids (i.e. carrageenan and agar, respectively).⁷

The cultivation of green seaweeds has been small and on a downward trend since the early 1990s. FAO statistics show eight green seaweed species items cultivated during 1950–2019; six of them had non-negligible production (i.e. greater than a half tonne) in 2019 (Table 2). The 16 696 tonnes of green seaweed cultivation in 2019 comprised primarily five species items, namely, *Caulerpa* spp., *Monostroma nitidum*, *Enteromorpha (Ulva) prolifera*, *Capsosiphon fulvescens*, and *Codium fragile*.

FAO statistics recorded 42 countries or territories having non-negligible seaweed cultivation production in 2019. Yet the top five producers (China, Indonesia, Republic of Korea, the Philippines and the Democratic People’s Republic of Korea) accounted for 98 percent of world production. More detailed information on global seaweed production can be found in another WAPI factsheet on *Global seaweeds and microalgae production, 1950–2019*.⁸

TABLE 2: Global seaweed cultivation, 2019

Species group	World seaweed cultivation, 2019				
	Number of ASFIS species items in the group being cultivated	Number of countries cultivating the species group	World cultivation of the species group (wet tonnes)	Share of world cultivation of all seaweed species (%)	Contribution of cultivation to world total production of the species group (%)
Seaweeds	27	42	34 679 134	100.00	96.97
Brown seaweeds	10	14	16 393 764	47.27	96.04
<i>Laminaria/Saccharina</i>	2	7	12 273 748	35.39	98.89
<i>Undaria</i>	2	4	2 563 582	7.39	99.89
<i>Sargassum</i>	2	2	303 973	0.88	100.00
<i>Macrocystis</i>	1	1	2	0.00	0.00
Miscellaneous brown seaweeds	3	8	1 252 459	3.61	85.02
Red seaweeds	9	32	18 251 474	52.63	98.97
<i>Kappaphycus/Eucheuma</i>	3	23	11 622 213	33.51	99.46
<i>Gracilaria</i>	3	11	3 639 833	10.50	98.50
<i>Porphyra</i>	2	5	2 984 123	8.60	99.98
Miscellaneous red seaweeds	1	2	5 305	0.02	6.96
Green seaweeds (excluding green microalgae)	6	6	16 696	0.05	50.71
<i>Ulva</i>	1	1	2 155	0.01	91.46
<i>Caulerpa</i>	1	1	1 090	0.00	100.00
Miscellaneous green seaweeds	4	4	13 451	0.04	45.63
Seaweeds nei	2	5	17 200	0.05	7.86

Data source: FAO Fishery and Aquaculture Statistics. Global aquaculture production 1950-2019 (FishStatJ). March 2021. nei = not elsewhere included. www.fao.org/fishery/statistics/software/fishstatj/en

5. www.seaweed.ie

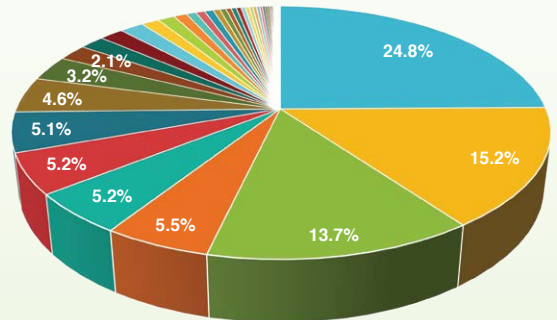
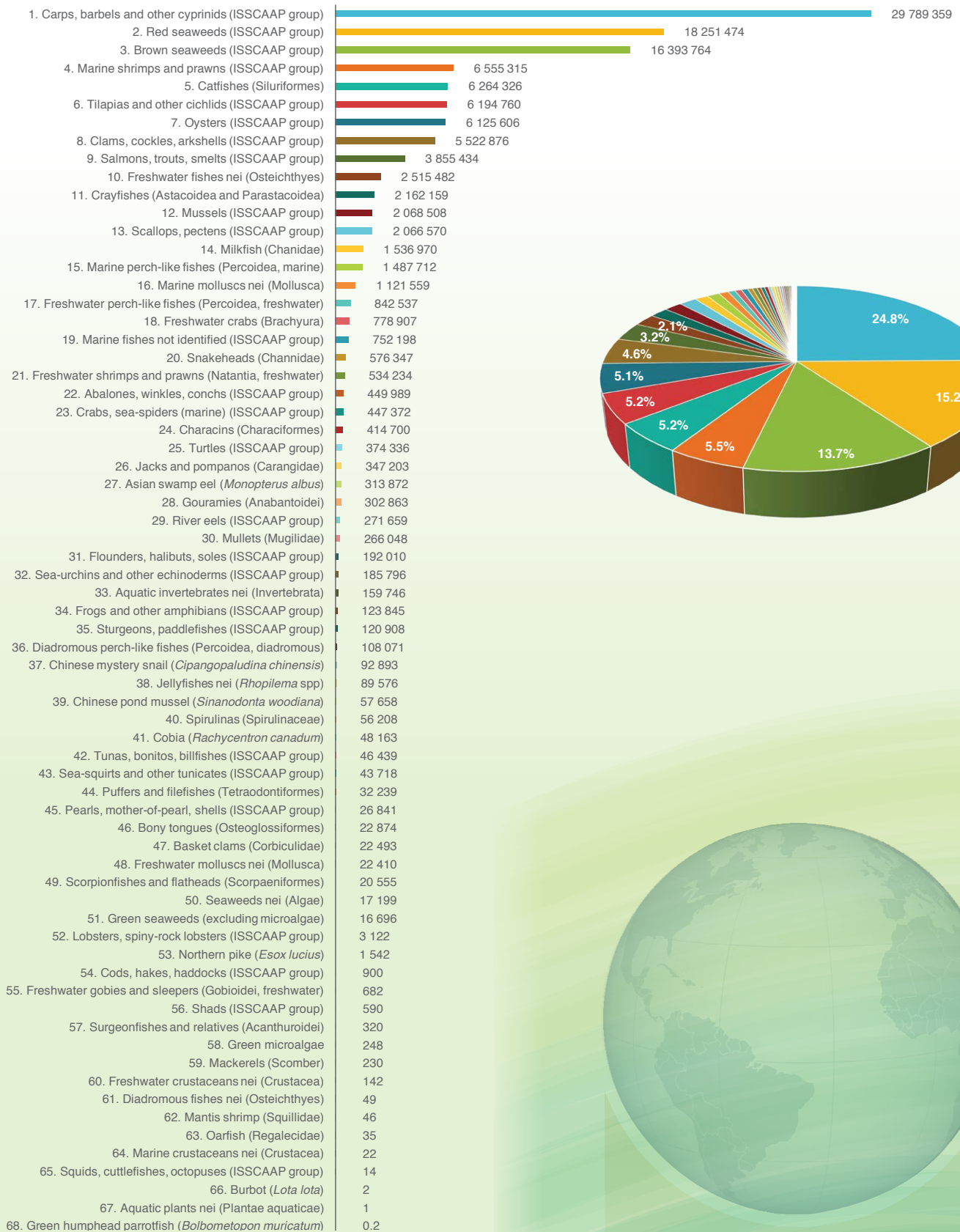
6. More information can be found in Cai, J., Lovatelli, S., Stankus, A. & Zhou, X. 2021. *Seaweed revolution: where is the next milestone?* FAO Aquaculture Newsletter, 63.

7. More information can be found in McHugh, D.J. 2003. *A guide to the seaweed industry*. Fisheries Technical Paper No. 441. Rome, FAO. 105 pp.

8. www.fao.org/3/cb4579en/cb4579en.pdf



World aquaculture production (2019): 120 090 422 tonnes



CONTACTS

Fisheries Division – Natural Resources and Sustainable Production
 E-mail: WAPI@fao.org
www.fao.org/fishery/statistics/software/wapi/en
 Food and Agriculture Organization of the United Nations
 Rome, Italy



Some rights reserved. This work is available under a CC BY-NC-SA 3.0 IGO licence

ACKNOWLEDGEMENTS

The factsheet (including the supplementary materials) was prepared by Junning Cai and Giulia Galli with valuable comments and suggestions from Nathanael Hishamunda, Weimin Miao, Georgios Paximadis and Tipparat Pongthanapanich.

Graphic design: José Luis Castilla Civit.

Cover photo credits from top left across: X. Zhou; ©FAO; L. Cornish; J. Cai; ©FAO; Y. Luo; X. Zhou; A. Stankus; M. Marzot; M. Hasan; J. Cai; A. Berry; J. Cai; A. Nesar; A. Lovatelli; X. Bang; J. Cai; M. Ledo; J. Cai; S. Venturi; A. Hurtado; M. Hasan; ©FAO; ©FAO; ©FAO; ©FAO; J. Cai; ©FAO; A. Lovatelli; J. Cai; ©The Pacific Community. Photo credits, p. 2 from left to right: A. Nesar; M. Ledo; S. Diffey; J. Cai; L. Cornish; A. Berry; S. Venturi; X. Zhou. Photo credits, p. 3 from left to right: Y. Luo; L. Cornish; X. Zhou; S. Diffey; J. Cai; J. Cai; A. Hurtado.