

Classification and definition of fishery zones and fishery resources of the world

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Fishery Resource

Fishery resources have a comprehensive definition

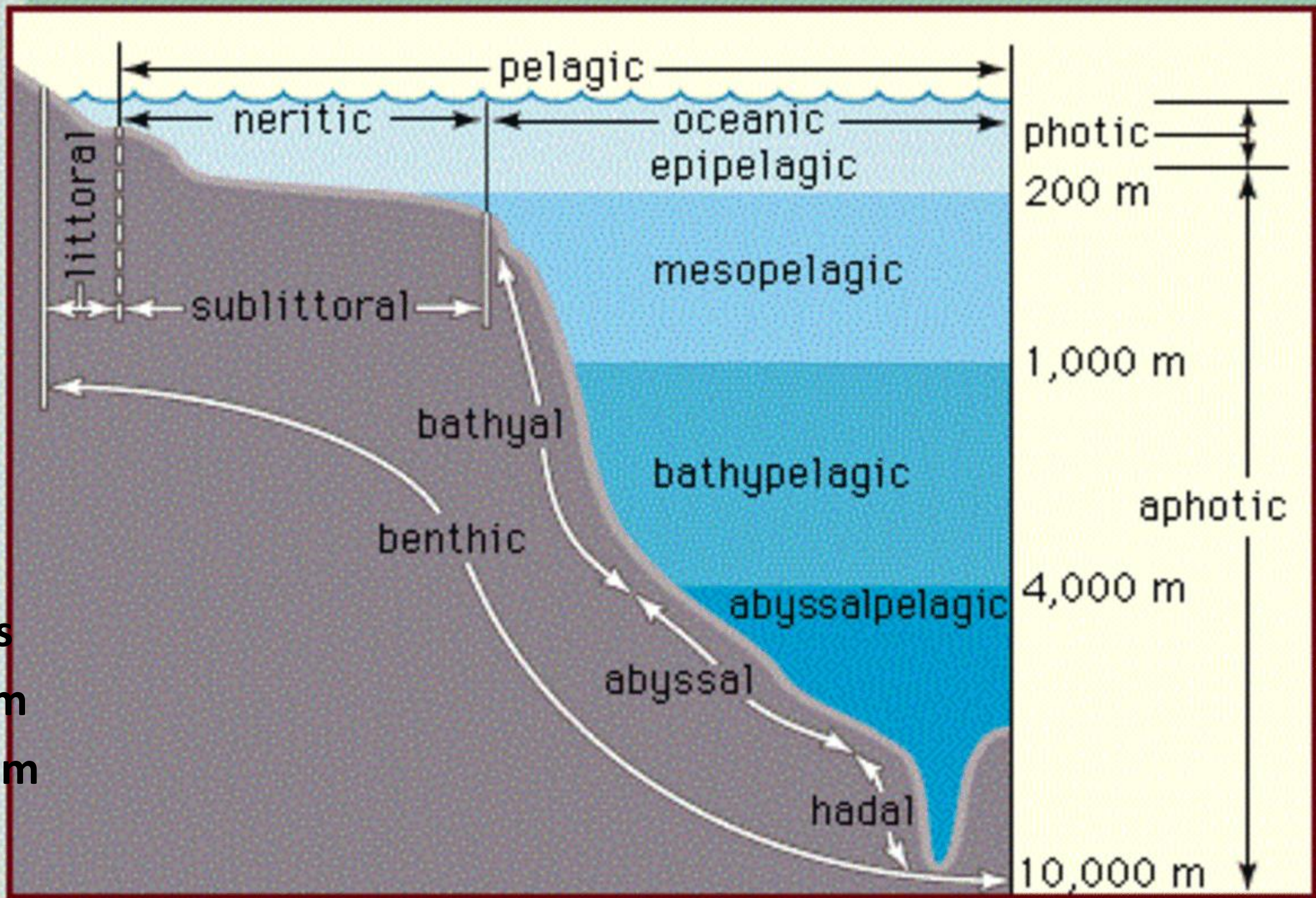
- In general, refer to all animals that predominantly inhabit aquatic habitats and are captured by humans ([Gartside and Kirkegaard, 2009](#)).
- Therefore, invertebrates (e.g., mollusks, crustaceans, echinoderms, and even sponges) and vertebrates (fishes, amphibians, reptiles, mammals) are considered fishery resources, although only fishes and crustaceans (i.e., marine lobsters, shrimps, and crabs) are quantified in fisheries statistics.

Fish biodiversity

- 55,000 recognized vertebrate spp globally
- 35797 – Fishes (Slightly more than half)
- 3157 spp (NBFGR, 2020) (11.5% of the fish fauna so far known in the world.)
 - 1545 spp –marine
 - 892 spp freshwater
 - 391 spp – brackishwater-marine
 - 115 spp – freshwater-brackishwater
 - 197 spp – fw-bw-mw
- The estimated number of the fish shows 33,059 species in the world (Eschmeyer and Fong, 2014).
- Belonging to 4,494 genera, 515 families and 62 orders throughout the world (Nelson, 2006)

Aquatic Ecosystem

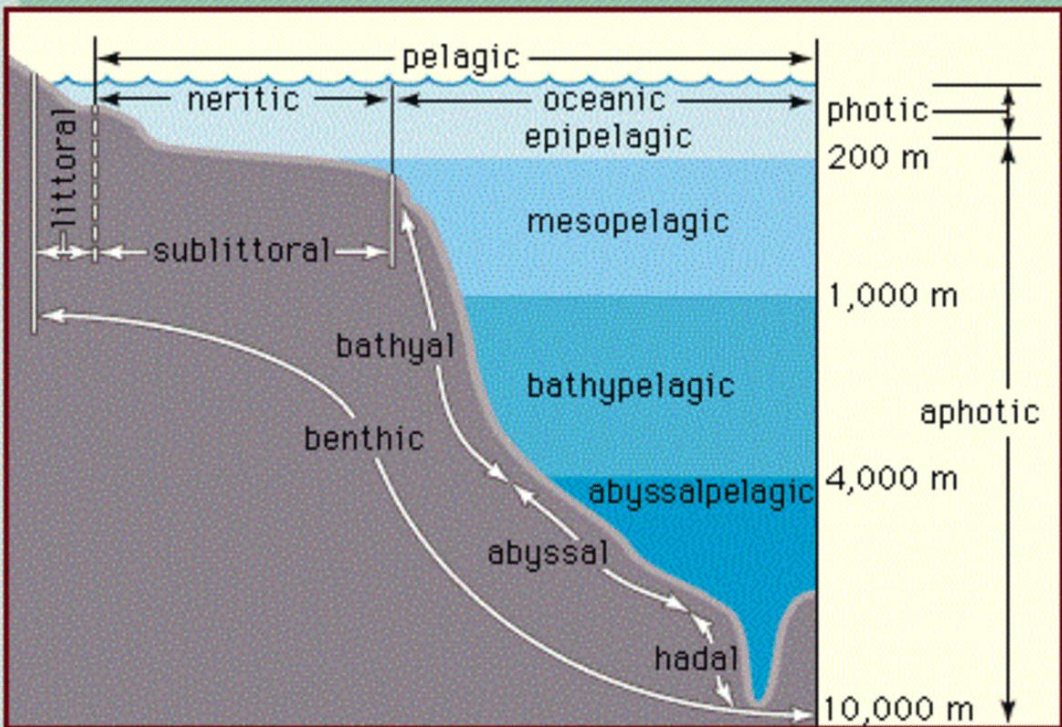
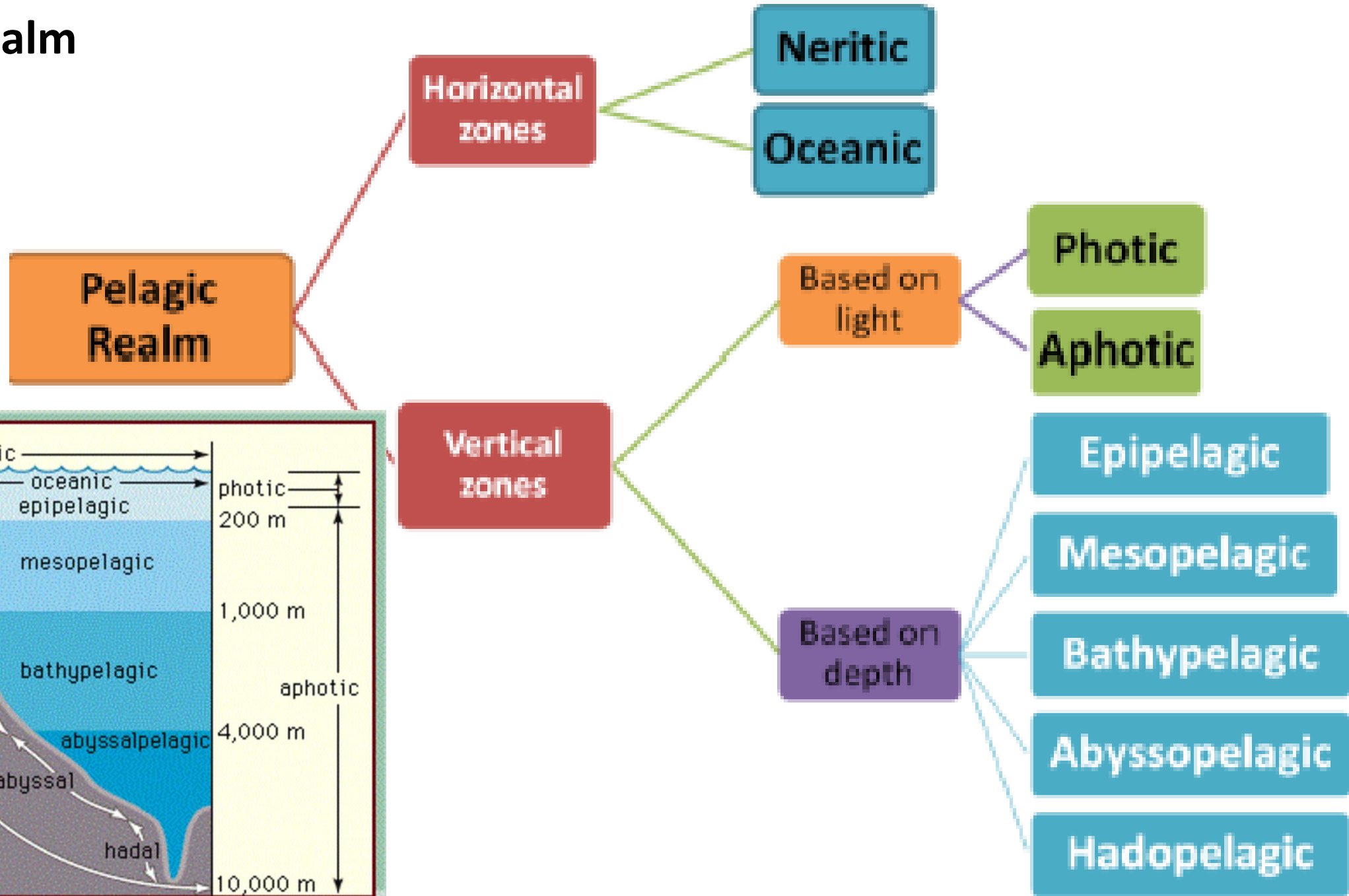
- 70% of the surface of the earth is covered by water
 - 97% of all water is in the oceans.
 - 1% freshwater in the earth's surface

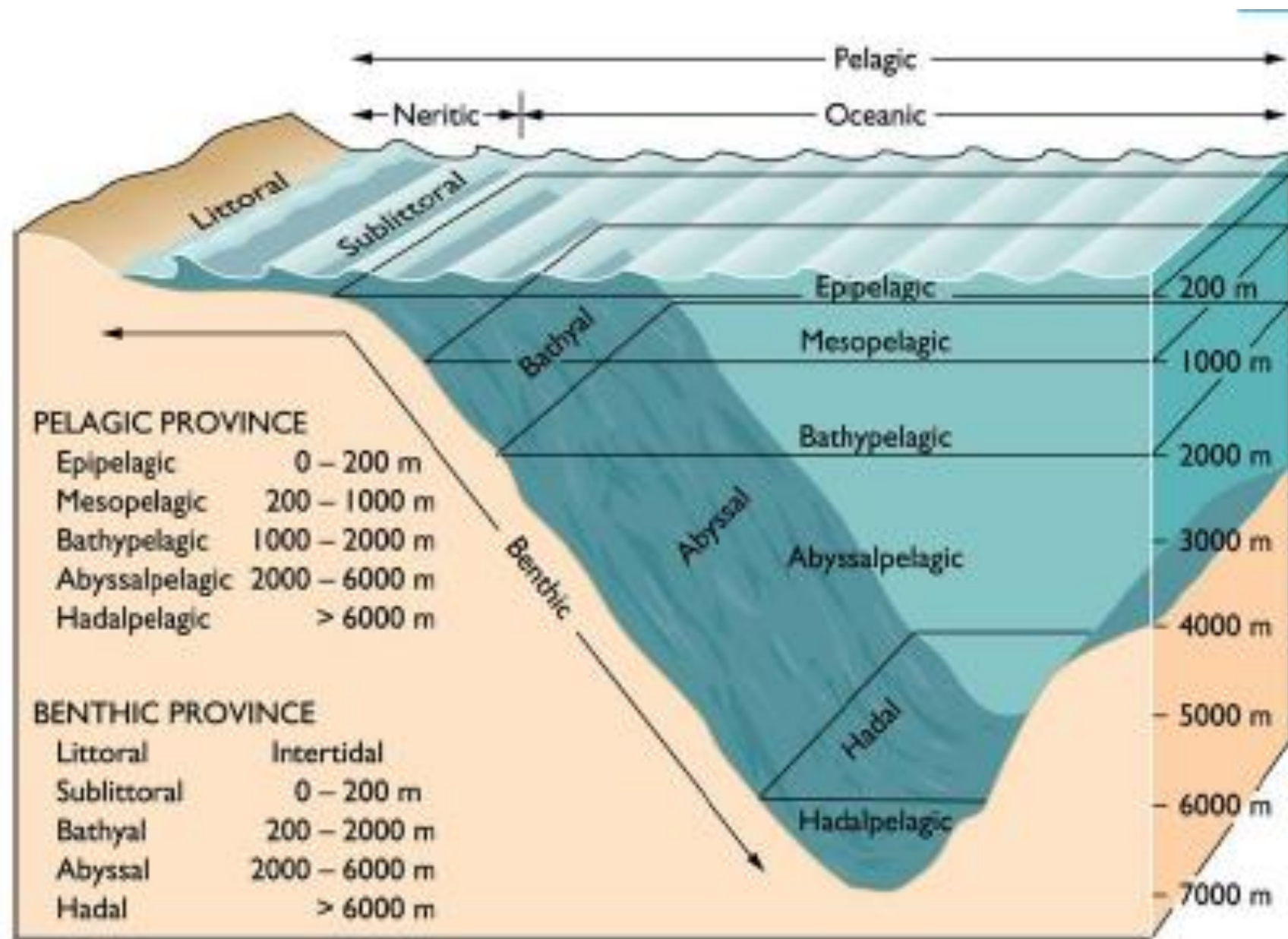


Ocean

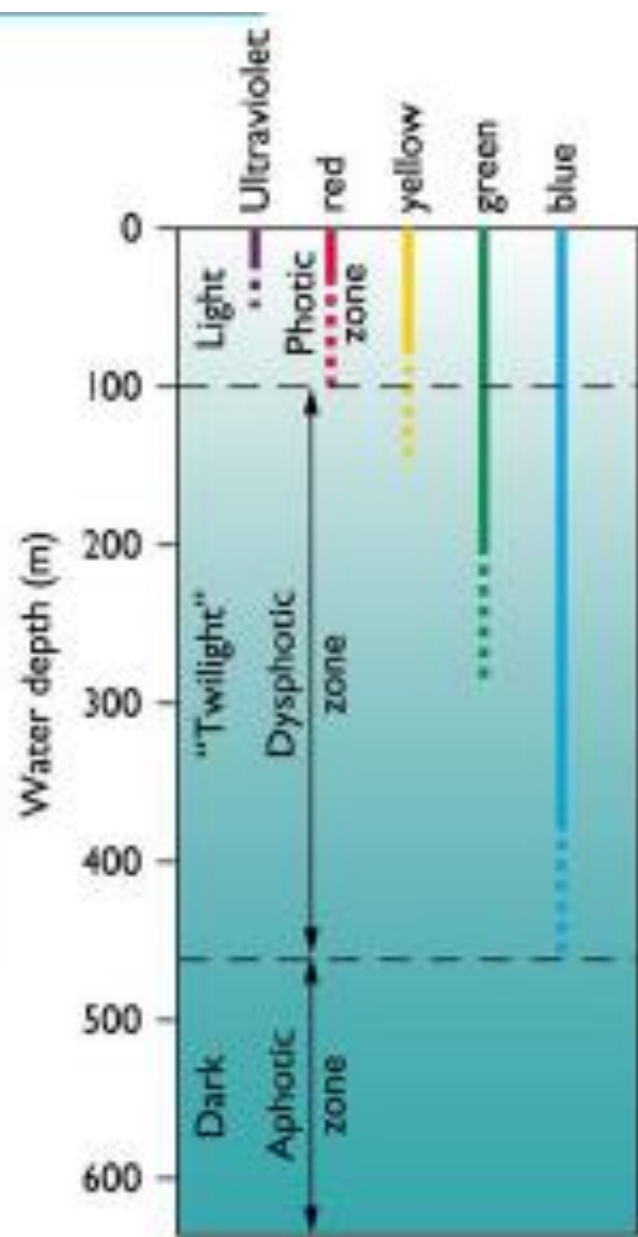
- Two divisions
- 1. Pelagic realm
- 2. Benthic realm

1. Pelagic realm






(a) BIOZONES

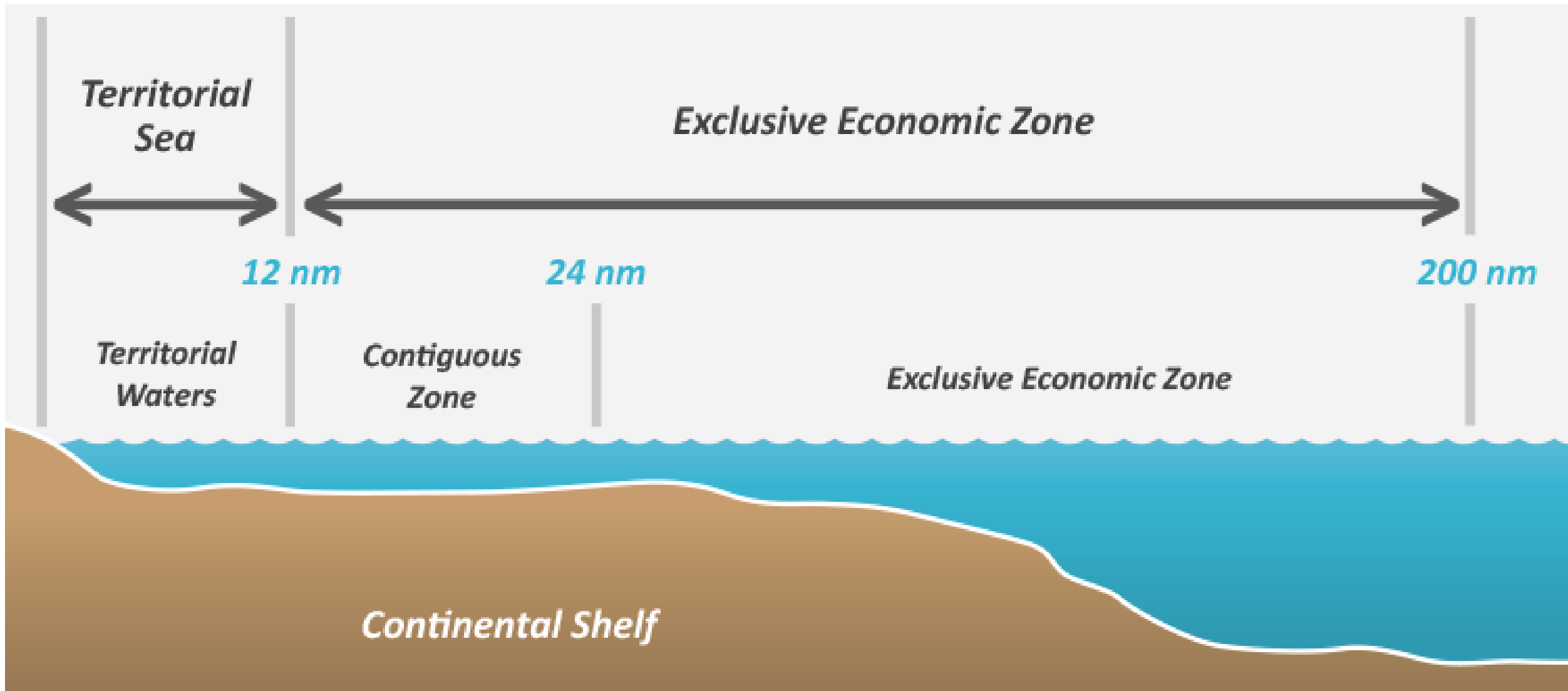


(b) LIGHT ZONES

2. Benthic realm

- Intertidal zone
 - Sublittoral zone
 - Supralittoral zone – spray zone: 0-200m
 - Bathyal Zone: 200-2000m
 - Abyssal Zone: 2000-6000m
 - Hadal Zone: >6000m
- 
- Littoral zone

For the administrative purposes-

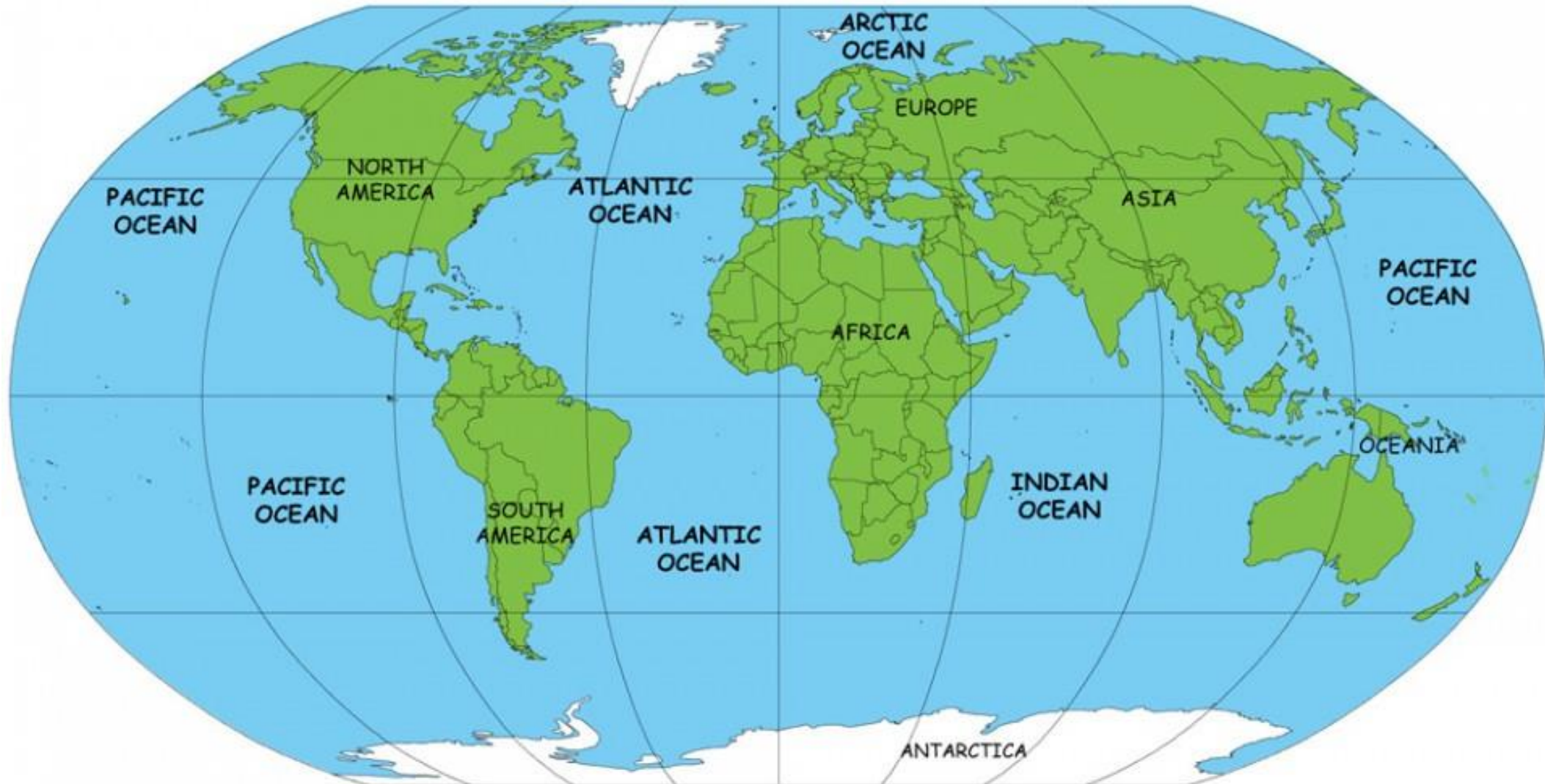




1 NAUTICAL MILE
= 1.85200 KM

TERRITORIAL SEA
CONTIGUOUS ZONE
EXCLUSIVE ECONOMIC
ZONE (EEZ)

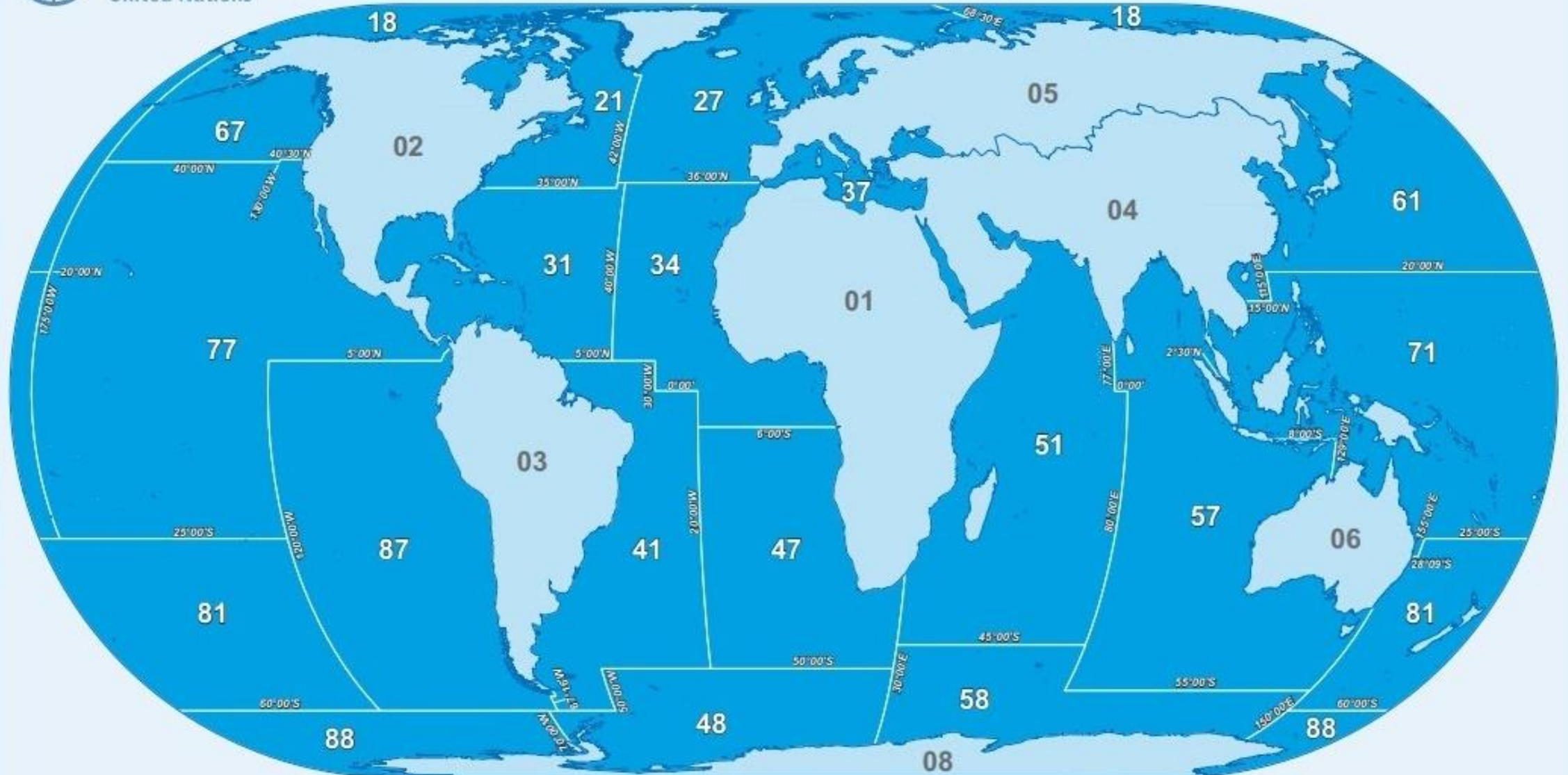
OCEANS OF THE WORLD



FAO divided the fishing areas of the world into 19 major marine and 7 major inland fishing areas for statistical purposes



Food and Agriculture
Organization of the
United Nations



Major Inland Fishing Areas for Statistical Purposes

01 - Africa

02 – North America

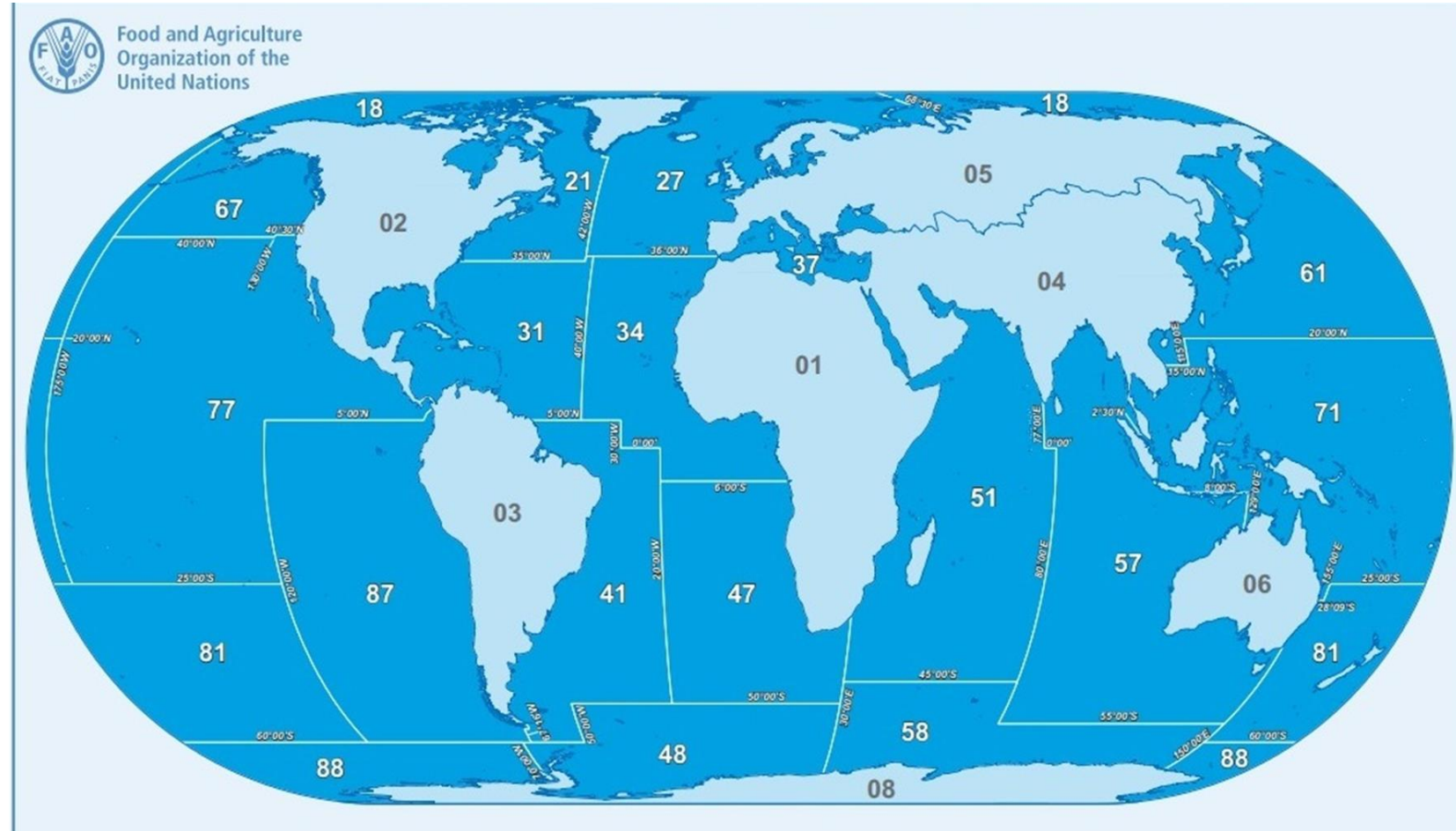
03 – South America

04 – Asia

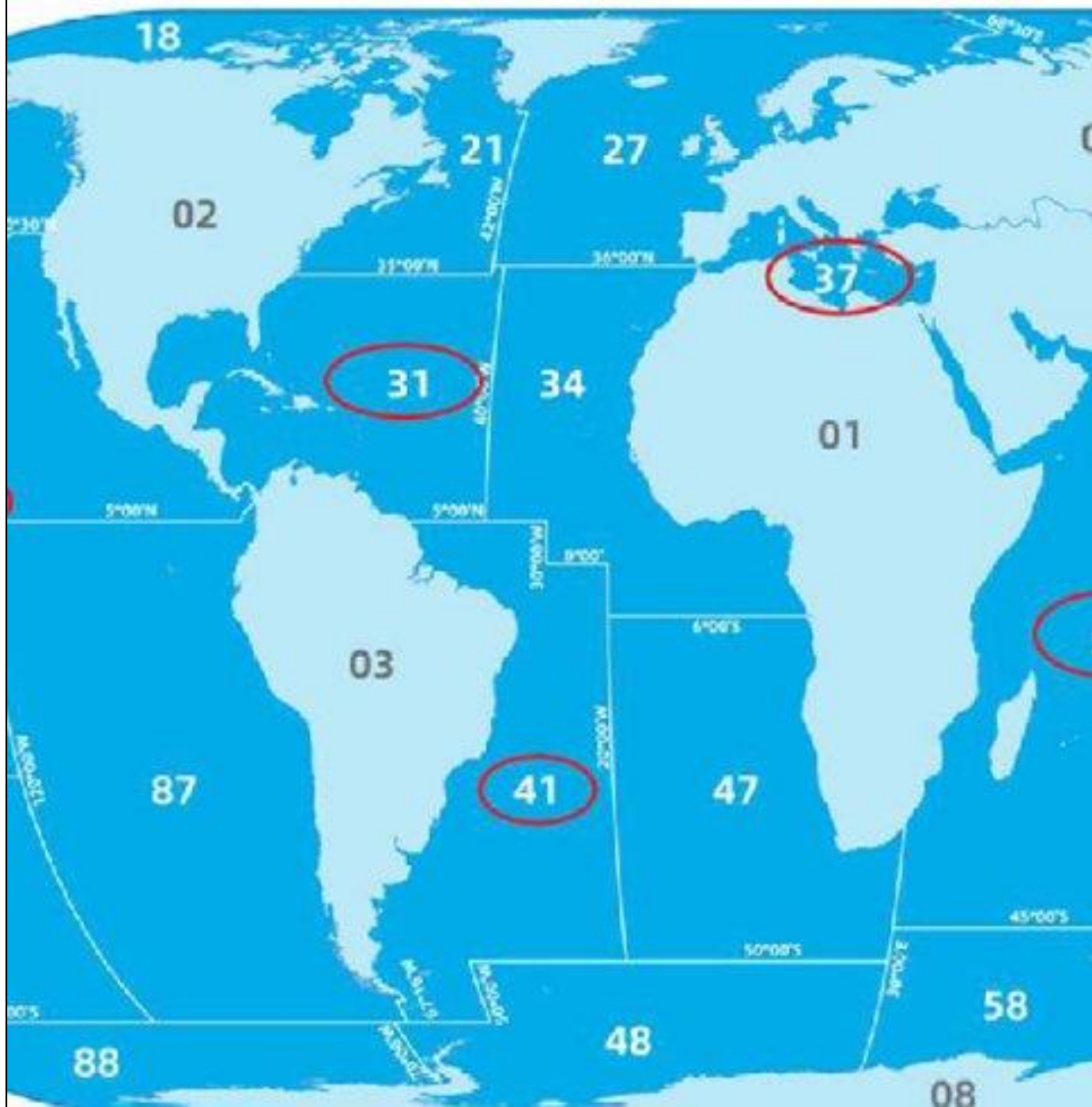
05 – Europe

06 – Oceania

08 - Antarctica



Major Marine Fishing Areas for Statistical Purposes



- 18. Arctic Sea
- 21. Atlantic, Northwest
- 27. Atlantic, Northeast
- 31. Atlantic, Western Central
- 34. Atlantic, Eastern Central
- 37. Mediterranean and Black Sea
- 41. Atlantic, Southwest
- 47. Atlantic, Southeast
- 48. Atlantic, Antarctic

Atlantic Ocean

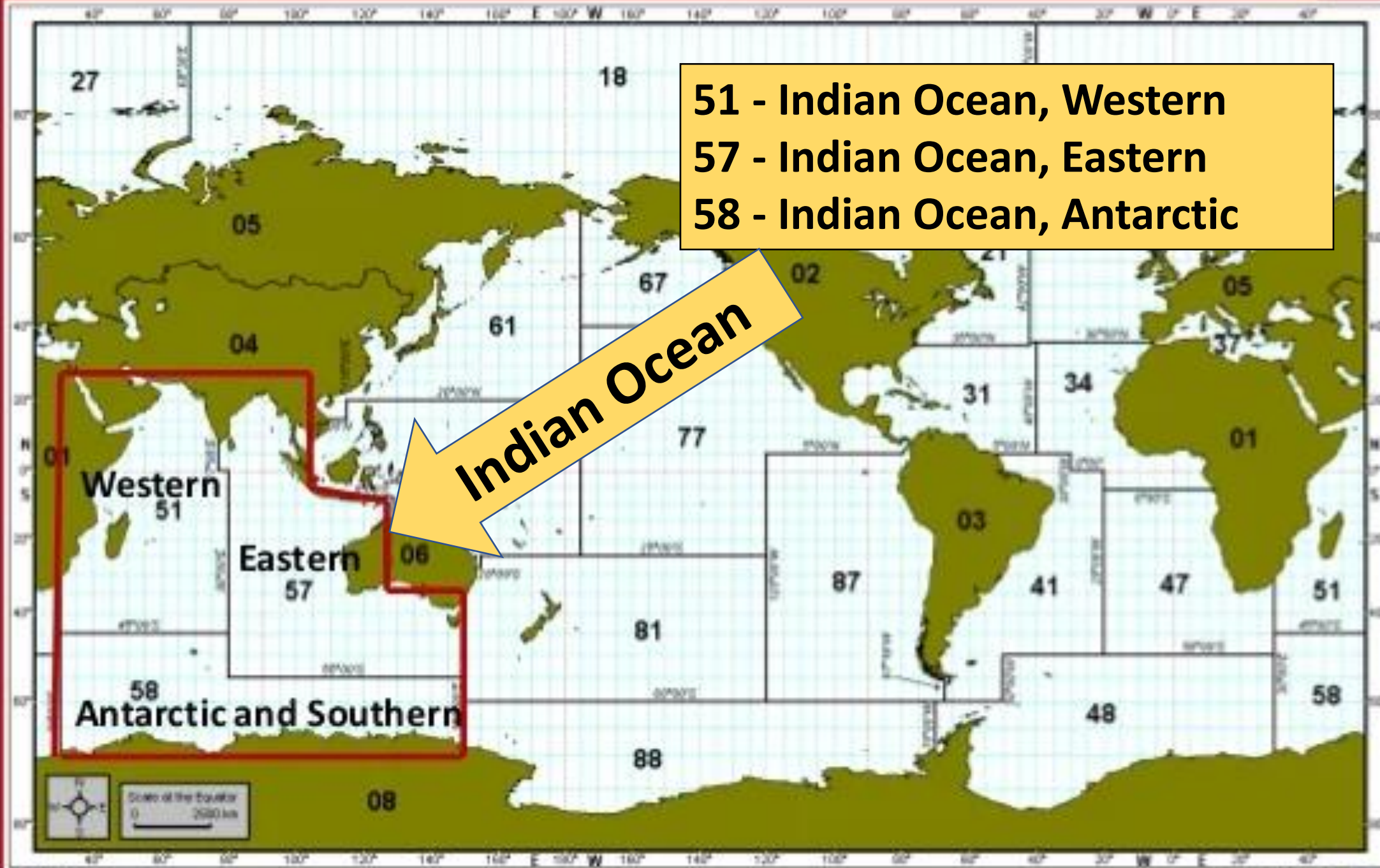
51 - Indian Ocean, Western
57 - Indian Ocean, Eastern
58 - Indian Ocean, Antarctic

Indian Ocean

Western
51

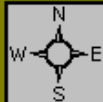
Eastern
57

58
Antarctic and Southern



Pacific Ocean

- 61 - Pacific, Northwest**
- 67 - Pacific, Northeast**
- 71 - Pacific, Western Central**
- 77 - Pacific, Eastern Central**
- 81 - Pacific, Southwest**
- 87 - Pacific, Southeast**
- 88 - Pacific, Antarctic**



Scale at the Equator
0 2500 km

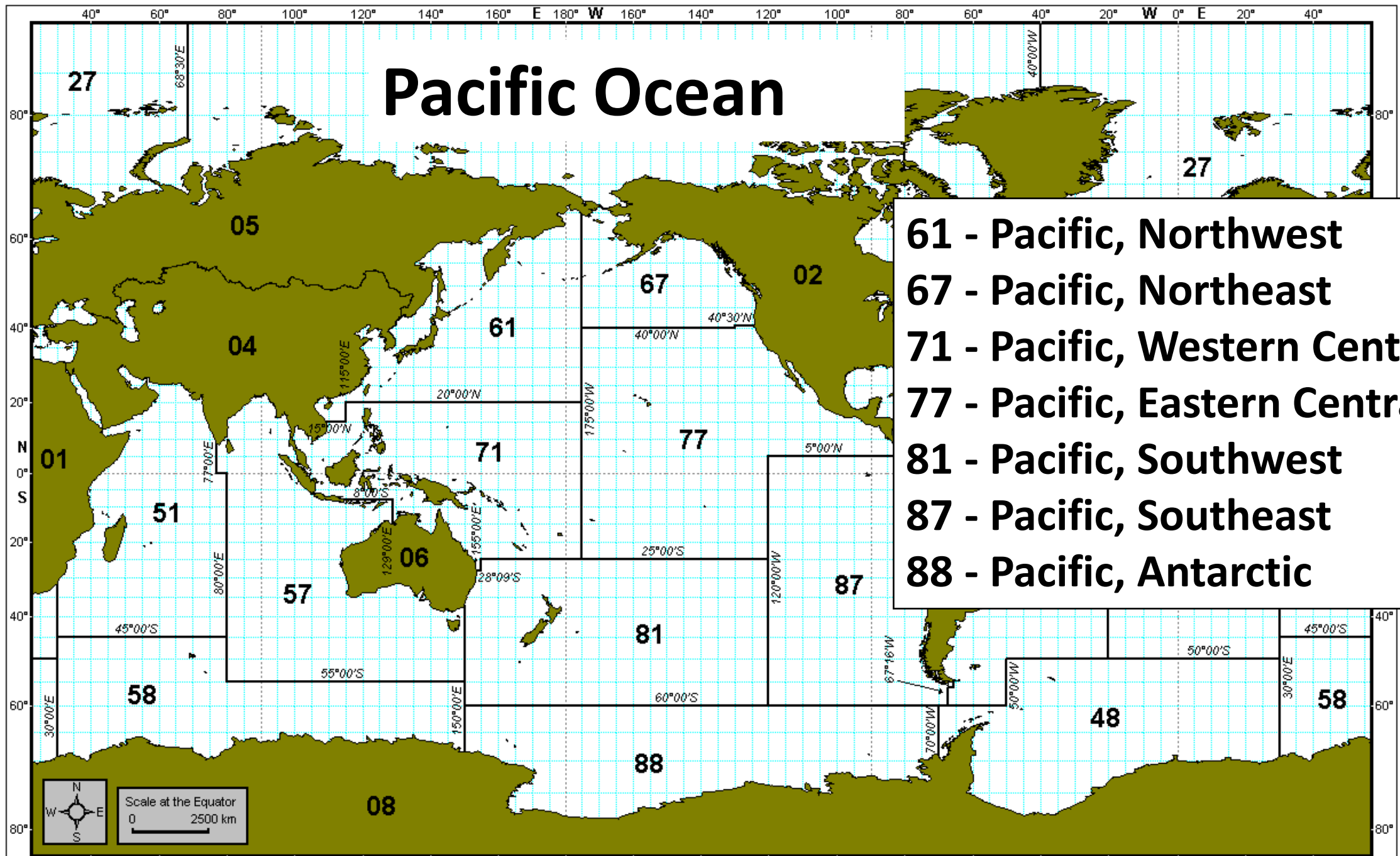


TABLE 1 WORLD FISHERIES AND AQUACULTURE PRODUCTION, UTILIZATION AND TRADE¹

	1990s	2000s	2010s	2018	2019	2020
	Average per year					
	<i>Million tonnes (live weight equivalent)</i>					
Production						
Capture:						
Inland	7.1	9.3	11.3	12.0	12.1	11.5
Marine	81.9	81.6	79.8	84.5	80.1	78.8
Total capture	88.9	90.9	91.0	96.5	92.2	90.3
Aquaculture:						
Inland	12.6	25.6	44.7	51.6	53.3	54.4
Marine	9.2	17.9	26.8	30.9	31.9	33.1
Total aquaculture	21.8	43.4	71.5	82.5	85.2	87.5
Total world fisheries and aquaculture	110.7	134.3	162.6	178.9	177.4	177.8

Utilization²						
Human consumption	81.6	109.3	143.2	156.8	158.1	157.4
Non-food uses	29.1	25.0	19.3	22.2	19.3	20.4
Population (billions) ³	5.7	6.5	7.3	7.6	7.7	7.8
Per capita apparent consumption (kg)	14.3	16.8	19.5	20.5	20.5	20.2
Trade						
Exports – in quantity	39.6	51.6	61.4	66.8	66.6	59.8
<i>Share of exports in total production</i>	35.8%	38.5%	37.7%	37.3%	37.5%	33.7%
Exports – in value (USD 1 billion)	46.6	76.4	141.8	165.3	161.8	150.5

¹ Excluding aquatic mammals, crocodiles, alligators and caimans and algae. Totals may not match due to rounding.

² Utilization data for 2018–2020 are provisional estimates.

³ Source of population figures: United Nations. 2019. 2019 Revision of World Population Prospects. In: *UN*. New York. Cited 22 April 2022.

<https://population.un.org/wpp>

SOURCE: FAO.

TABLE 2 MARINE CAPTURE PRODUCTION: MAJOR PRODUCING COUNTRIES AND TERRITORIES

Country or territory	Production (average per year)				Production				Percentage of total, 2020
	1980s	1990s	2000s	2010s	2017	2018	2019	2020	
	<i>(million tonnes, live weight)</i>								
China	3.82	9.96	12.43	13.24	13.19	12.68	12.15	11.77	15
Indonesia	1.74	3.03	4.37	5.98	6.56	6.71	6.56	6.43	8
Peru (total)	4.14	8.10	8.07	5.13	4.13	7.15	4.80	5.61	7
<i>Peru (excluding anchoveta)</i>	<i>2.50</i>	<i>2.54</i>	<i>0.95</i>	<i>1.01</i>	<i>0.83</i>	<i>0.96</i>	<i>1.29</i>	<i>1.22</i>	
Russian Federation	1.51	4.72	3.20	4.28	4.59	4.84	4.72	4.79	6
United States of America	4.53	5.15	4.75	4.89	5.01	4.77	4.81	4.23	5
India	1.69	2.60	2.95	3.55	3.94	3.62	3.67	3.71	5
Viet Nam	0.53	0.94	1.72	2.70	3.15	3.19	3.29	3.27	4
Japan	10.59	6.72	4.41	3.48	3.19	3.26	3.16	3.13	4
Norway	2.21	2.43	2.52	2.30	2.39	2.49	2.31	2.45	3
Chile (total)	4.52	5.95	4.02	2.16	1.92	2.12	1.98	1.77	2
<i>Chile (excluding anchoveta)</i>	<i>4.00</i>	<i>4.45</i>	<i>2.75</i>	<i>1.40</i>	<i>1.29</i>	<i>1.27</i>	<i>1.23</i>	<i>1.27</i>	
Philippines	1.32	1.68	2.10	1.92	1.72	1.65	1.67	1.76	2
Thailand	2.08	2.70	2.38	1.46	1.30	1.39	1.41	1.52	2
Malaysia	0.76	1.08	1.31	1.46	1.47	1.45	1.46	1.38	2
Republic of Korea	2.18	2.25	1.78	1.56	1.35	1.39	1.41	1.36	2

TABLE 5 INLAND WATERS CAPTURE PRODUCTION: MAJOR PRODUCING COUNTRIES AND TERRITORIES

Country	Production (average per year)				Production				Percentage of total, 2020
	1980s	1990s	2000s	2010s	2017	2018	2019	2020	
<i>(million tonnes, live weight)</i>									
Top 25 inland water capture producers									
India	0.50	0.58	0.84	1.43	1.59	1.70	1.79	1.80	16
China	0.54	1.46	2.11	2.03	2.18	1.96	1.84	1.46	13
Bangladesh	0.44	0.50	0.86	1.08	1.16	1.22	1.24	1.25	11
Myanmar	0.14	0.15	0.48	0.85	0.89	0.89	0.89	0.84	7
Uganda	0.19	0.22	0.33	0.44	0.39	0.44	0.60	0.57	5
Indonesia	0.27	0.31	0.31	0.47	0.47	0.66	0.71	0.49	4
Cambodia	0.05	0.09	0.34	0.46	0.47	0.42	0.40	0.41	4
United Republic of Tanzania	0.25	0.29	0.30	0.31	0.33	0.31	0.38	0.41	4
Nigeria	0.10	0.10	0.21	0.35	0.42	0.39	0.37	0.35	3
Egypt	0.12	0.23	0.27	0.25	0.26	0.27	0.30	0.32	3
Russian Federation	0.09	0.26	0.22	0.27	0.27	0.27	0.25	0.28	2
Brazil	0.20	0.18	0.24	0.23	0.22	0.22	0.22	0.22	2

Country	Production (average per year)				Production				Percentage of total, 2020
	1980s	1990s	2000s	2010s	2017	2018	2019	2020	
<i>(million tonnes, live weight)</i>									
Inland water captures, by region									
Asia	2.87	4.17	5.98	7.39	7.85	7.90	7.89	7.29	64
Africa	1.47	1.89	2.33	2.87	3.01	3.02	3.24	3.21	28
Americas	0.56	0.54	0.58	0.57	0.59	0.64	0.55	0.53	5
Europe	0.28	0.43	0.36	0.40	0.41	0.41	0.39	0.42	4
Oceania	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0
Others ¹	0.51	–	–	–	–	–	–	–	0
World total	5.70	7.05	9.26	11.26	11.88	11.99	12.09	11.47	100

TABLE 3 MARINE CAPTURE PRODUCTION: MAJOR SPECIES AND GENERA

Species item	2007–2016	2017	2018	2019	2020	Percentage of total, 2020
	<i>(thousand tonnes, live weight)</i>					
Finfish						
Anchoveta, <i>Engraulis ringens</i>	5 548	3 923	7 045	4 249	4 896	7
Alaska pollock, <i>Gadus chalcogrammus</i>	3 072	3 489	3 396	3 495	3 544	5
Skipjack tuna, <i>Katsuwonus pelamis</i>	2 675	2 772	3 081	3 285	2 827	4
Atlantic herring, <i>Clupea harengus</i>	1 981	1 816	1 823	1 697	1 598	2
Yellowfin tuna, <i>Thunnus albacares</i>	1 278	1 521	1 547	1 555	1 569	2
Blue whiting, <i>Micromesistius poutassou</i>	904	1 559	1 712	1 517	1 487	2
Pacific chub mackerel, <i>Scomber japonicus</i>	1 404	1 514	1 554	1 417	1 360	2
European pilchard, <i>Sardina pilchardus</i>	1 130	1 434	1 604	1 496	1 331	2
Pacific sardine, <i>Sardinops sagax</i>	880	754	859	937	1 277	2
Scads nei, ¹ <i>Decapterus</i> spp.	1 189	1 186	1 336	1 293	1 265	2
Largehead hairtail, <i>Trichiurus lepturus</i>	1 292	1 221	1 150	1 136	1 144	2
Atlantic cod, <i>Gadus morhua</i>	1 091	1 308	1 221	1 133	1 078	2
Atlantic mackerel, <i>Scomber scombrus</i>	948	1 219	1 047	869	1 049	2
Japanese anchovy, <i>Engraulis japonicus</i>	1 273	1 060	958	927	970	1
Others	41 623	44 142	43 671	42 608	41 341	62
Finfish total	66 288	68 918	72 002	67 612	66 734	100

Species item	2007–2016	2017	2018	2019	2020	Percentage of total, 2020
	<i>(thousand tonnes, live weight)</i>					
Crustaceans						
Natantian decapods nei, <i>Natantia</i>	796	974	849	863	820	15
Antarctic krill, <i>Euphausia superba</i>	194	252	312	371	445	8
Gazami crab, <i>Portunus trituberculatus</i>	451	513	493	473	442	8
Fleshy prawn, <i>Penaeus chinensis</i>	127	181	223	216	367	7
Giant tiger prawn, <i>Penaeus monodon</i>	228	237	225	215	305	5
Marine crabs nei, <i>Brachyura</i>	289	343	307	323	290	5
Northern prawn, <i>Pandalus borealis</i>	321	223	249	251	255	5
Akiami paste shrimp, <i>Acetes japonicus</i>	567	453	439	402	251	4
Others	2 688	2 866	2 905	2 727	2 449	44
Crustaceans total	5 662	6 043	6 002	5 841	5 625	100

Species item	2007–2016	2017	2018	2019	2020	Percentage of total, 2020
	(thousand tonnes, live weight)					
Molluscs						
Jumbo flying squid, <i>Dosidicus gigas</i>	866	763	892	914	877	15
Marine molluscs nei, Mollusca	763	644	658	707	600	10
Various squids nei, Loliginidae, Ommastrephidae	613	655	571	614	529	9
Cephalopods nei, Cephalopoda	412	433	322	425	424	7
Yesso scallop, <i>Mizuhopecten yessoensis</i>	304	247	316	351	357	6
Cuttlefish, bobtail squids nei, Sepiidae, Sepiolidae	303	395	347	365	353	6
Argentine shortfin squid, <i>Illex argentinus</i>	526	336	301	171	345	6
Others	2 785	2 486	2 549	2 624	2 438	41
Molluscs total	6 572	5 960	5 956	6 171	5 923	100

Species item	2007–2016	2017	2018	2019	2020	Percentage of total, 2020
	(thousand tonnes, live weight)					
Other aquatic animals						
Jellyfishes nei, <i>Rhopilema</i> spp.	325	262	264	184	222	44
Aquatic invertebrates nei, Invertebrata	50	120	122	115	117	23
Sea cucumbers nei, Holothuroidea	26	38	48	48	43	9
Chilean sea urchin, <i>Loxechinus albus</i>	35	31	32	37	38	7
Cannonball jellyfish, <i>Stomolophus meleagris</i>	29	47	29	36	33	7
Sea urchins nei, <i>Strongylocentrotus</i> spp.	34	29	25	27	31	6
Others	24	28	24	23	20	4
Other aquatic animals total	522	555	544	470	503	100

TABLE 10 WORLD PRODUCTION OF MAJOR AQUACULTURE SPECIES (INCLUDING SPECIES GROUPS)

	2000	2005	2010	2015	2020	Percentage of total, 2020
	<i>(thousand tonnes, live weight)</i>					
Finfish in inland aquaculture						
Grass carp, <i>Ctenopharyngodon idellus</i>	2 976.5	3 396.6	4 213.1	5 315.0	5 791.5	11.8
Silver carp, <i>Hypophthalmichthys molitrix</i>	3 034.7	3 690.0	3 972.0	4 713.6	4 896.6	10
Nile tilapia, <i>Oreochromis niloticus</i>	1 001.5	1 721.3	2 637.4	4 000.9	4 407.2	9
Common carp, <i>Cyprinus carpio</i>	2 410.4	2 666.3	3 331.0	4 025.8	4 236.3	8.6
Catla, <i>Catla catla</i>	602.3	1 317.5	2 526.4	2 313.4	3 540.3	7.2
Bighead carp, <i>Hypophthalmichthys nobilis</i>	1 438.9	1 929.5	2 513.6	3 109.1	3 187.2	6.5
<i>Carassius</i> spp.	1 198.5	1 798.2	2 137.8	2 644.1	2 748.6	5.6
Striped catfish, <i>Pangasianodon hypophthalmus</i>	113.2	411.2	1 749.4	2 083.2	2 520.4	5.1
Roho labeo, <i>Labeo rohita</i>	733.9	1 435.9	1 133.2	1 785.3	2 484.8	5.1
Clarias catfishes, <i>Clarias</i> spp.	48.8	149.5	343.3	923.7	1 249.0	2.5
Tilapias nei, <i>Oreochromis</i> spp.	123.9	199.3	449.6	929.9	1 069.9	2.2
Wuchang bream, <i>Megalobrama amblycephala</i>	445.9	477.2	629.2	723.2	781.7	1.6
Rainbow trout, <i>Oncorhynchus mykiss</i>	340.4	360.0	464.7	546.5	739.5	1.5
Black carp, <i>Mylopharyngodon piceus</i>	149.0	280.7	409.5	541.2	695.5	1.4
Largemouth black bass, <i>Micropterus salmoides</i>	0.2	140.3	179.5	321.5	621.3	1.3
Subtotal of 15 major species	14 618.2	19 973.5	26 689.7	33 976.3	38 970.1	79.3
Subtotal other species	3 546.6	4 260.1	6 337.7	8 535.7	10 150.4	20.7
Total	18 164.7	24 233.6	33 027.4	42 512.0	49 120.5	100

Finfish in marine and coastal aquaculture

Atlantic salmon, <i>Salmo salar</i>	895.7	1 266.6	1 433.8	2 380.2	2 719.6	32.6
Milkfish, <i>Chanos chanos</i>	429.7	542.9	750.5	1 012.3	1 167.8	14
Mulletts nei, Mugilidae	92.4	173.7	102.7	129.2	291.2	3.5
Gilthead seabream, <i>Sparus aurata</i>	87.3	110.8	142.3	168.8	282.1	3.4
Large yellow croaker, <i>Larimichthys croceus</i>	0.0	60.9	83.3	142.4	254.1	3
European seabass, <i>Dicentrarchus labrax</i>	60.7	90.9	118.0	149.1	243.9	2.9
Groupers nei, <i>Epinephelus</i> spp.	7.6	57.1	77.2	149.2	226.2	2.7
Coho(=Silver) salmon, <i>Oncorhynchus kisutch</i>	108.6	115.1	124.8	140.7	221.8	2.7
Rainbow trout, <i>Oncorhynchus mykiss</i>	155.3	202.0	287.7	204.1	220.1	2.6
Japanese seabass, <i>Lateolabrax japonicus</i>	0.6	79.6	104.8	120.6	196.9	2.4
Pompano, <i>Trachinotus ovatus</i>	0.0	0.0	80.0	110.0	160.0	1.9
Japanese amberjack, <i>Seriola quinqueradiata</i>	136.8	159.7	138.9	140.3	137.1	1.6
Nile tilapia, <i>Oreochromis niloticus</i>	1.6	5.3	20.3	49.8	107.4	1.3
Barramundi(=Giant seaperch), <i>Lates calcarifer</i>	18.1	27.0	52.7	68.7	105.8	1.3
Red drum, <i>Sciaenops ocellatus</i>	2.1	42.4	53.0	71.3	84.3	1
Subtotal of 15 major species	1 996.6	2 933.9	3 569.9	5 036.7	6 418.2	77

	2000	2005	2010	2015	2020	Percentage of total, 2020
	<i>(thousand tonnes, live weight)</i>					
Algae						
Japanese kelp, <i>Laminaria japonica</i>	5 380.9	5 699.1	6 525.6	10 313.7	12 469.8	35.5
Eucheuma seaweeds, <i>Eucheuma</i> spp.	214.3	983.9	3 472.6	10 182.1	8 129.4	23.2
Gracilaria seaweeds, <i>Gracilaria</i> spp.	55.5	933.2	1 657.1	3 767.0	5 180.4	14.8
Wakame, <i>Undaria pinnatifida</i>	311.1	2 439.7	1 505.1	2 215.6	2 810.6	8
Nori, <i>Porphyra</i> spp.	424.9	703.1	1 040.7	1 109.9	2 220.2	6.3
Elkhorn sea moss, <i>Kappaphycus alvarezii</i>	649.5	1 283.5	1 884.2	1 751.8	1 604.1	4.6
Fusiform sargassum, <i>Sargassum fusiforme</i>	12.1	115.6	97.0	209.3	292.9	0.8
Spiny eucheuma, <i>Eucheuma denticulatum</i>	85.3	174.5	265.5	280.8	154.1	0.4
Subtotal of 8 major species	7 133.7	12 332.7	16 447.9	29 830.2	32 861.5	93.7
Subtotal other species	3 461.9	2 498.6	3 726.5	1 243.4	2 216.0	6.3
Total	10 595.6	14 831.3	20 174.3	31 073.5	35 077.6	100

- <https://www.fao.org/fishery/docs/maps/Default.htm#PROPOSED>
- <https://seafoodsourcing.org/fao-fishing-zone/#:~:text=Search%20Search%20in%20FAO%20FISHERY%20ZONES%20FAO%20ZONE,%20%20%20%20%2019%20more%20rows%20>