

Fisheries landings and fishing effort data

Landings data from the Sea Around Us Project originated from a range of sources including the Food and Agriculture Organization's (FAO) fisheries database supplemented by regional datasets, e.g., from International Council for the Exploration of the Sea (ICES) for Europe. It is quality-checked and mapped to a grid of 30' by 30' spatial cells using a rule-based approach based on original spatial information, the operation of fleets in the Exclusive Economic Zone of maritime countries (e.g., through documented access agreements) and the known habitat-driven distribution of the reported marine taxa.

Fishing effort data from the Sea Around Us Project were obtained from a range of public domain sources including FAO and the European Union for non-tuna fishing, the Secretariat of the Pacific Community, International Commission for the Conservation of Atlantic Tunas, Inter-American Tropical Tuna Commission, Indian Ocean Tuna Commission and FAO's Atlas of Tuna and Billfish for tuna fishing, and the Commission for the Conservation of Antarctic Marine Living Resources for fishing effort in the Antarctic region. The resultant harmonized global dataset were mapped to 30' by 30' spatial cells using a variety of processes depending on spatial information present in the original sources. Tuna and Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) data provided spatial information whereas those from FAO and the EU did not, and required further spatial modelling. Fishing effort was first apportioned to fleet-accessible ports then mapped to spatial cells in adjacent waters using a two-scale gravity-model based on the value of mapped landings taken from surrounding waters from the *Sea Around Us* project's fisheries landings databases.

Landings and effort data were re-aggregated to Large Marine Ecosystems from the spatial cell data. Sources of possible error associated with the original landings database include the misrepresentation of the quantity or taxonomic-identity of landings. The former was reduced through cross-checking different sources and the substitution of reconstructed data, where possible, based on local experts. Fixing errors or over-aggregation in the taxonomic-identity of landings required procedures that cross-checked with the reports of neighbouring countries. The taxonomic identification of landings greatly assisted mapping the landings data as much is known about the habitat, depth and current latitudinal constraints of commercial marine fauna, and where critical habitats, required depths, etc are located. Known fishing arrangements help to verify where fleets were fishing, for example, trade magazines often report fleet activities. Data associated with fishing effort still have quality problems¹ but these are partially mitigated by constraining fishing effort to areas where landings are extracted, that is, cross-validation with maps of fisheries landings. Some fisheries effort data, such as for global tuna fisheries, have relatively fine-scale spatial information that can be used to cross-check the mapping of fisheries landings.

Calculating species' temperature preference

To calculate temperature preference for each species, we combined the predicted relative abundance with climatology (averaged of 1970 – 2000) of sea surface temperature (SST) data. First, relative abundance in each 30' latitude x 30' longitude was predicted using a species distribution modelling algorithm which relies on latitudinal and depth preferences, habitat association and known occurrence boundaries, but not SST^(2,3). The total relative abundance was normalized spatially so that the sum of relative abundance from all the cells was equivalent

to 1. Secondly, following the procedure documented in ^{4,5}, SST data were grouped into bins (i) with 1 °C increment. Thirdly, for each temperature bin, we calculated the total predicted relative abundance (K_i) divided by the total range area of ocean within the temperature bin (A_i). The temperature preference of the species in each temperature bin (p_i) was calculated by normalizing the average relative abundance per unit area by their sum across all temperature bins:

$$p_i = (K_i/A_i) / \sum_i (K_i/A_i)$$

Thus, the available area of water within each temperature bin is accounted for in calculating the temperature preference of the species, and $\sum_i p_i = 1$. The temperatures corresponding to the median, 25th and 75th percentile values of the temperature preferences of the species were then calculated. The analysis was repeated with alternative SST climatology of 1951 – 1960 and 1991-2000, and using an alternative species distribution modelling approach.

Statistical analysis of data

We accounted for the effects of fishing effort (*Effort*) and large-scale oceanographic changes (*OI*) on changes in MTC by using a generalized additive mixed model (GAMM). Firstly, we examined the time-lag in auto-correlation of the MTC time-series using the auto-correlation estimation function (acf) in R. MTC time-series from all LMEs have a significant time-lag of one year. Secondly, we obtained estimated fishing effort from 1970 to 2006^{1,6}. Thirdly, we obtained indicators of large-scale oceanographic indices for each ocean basin. For LMEs in the Pacific Ocean, their relationship with the Pacific Decadal Oscillation was used (from http://jisao.washington.edu/data_sets/pdo/#data). For LMEs in the North and South Atlantic, the North Atlantic Oscillation Index (<http://ljp.lasg.ac.cn/dct/page/65574>) and South Atlantic Dipole Index (<http://ljp.lasg.ac.cn/dct/page/65592>) were used. For LMEs in the Indian Ocean, the Indian

Ocean Dipole Mode Index (from <http://www.jamstec.go.jp>) was used. For LMEs in the Arctic, the summer sea ice extent (from http://www.ijis.iarc.uaf.edu/en/home/seaice_extent.htm) was used. For LMEs in the Southern Ocean, the Antarctic Oscillation Index (<http://www.lasg.ac.cn/staff/ljp/data-NAM-SAM-NAO/SAM%28AAO%29.htm>) was used. Each LME was assigned to its respective large-scale oceanographic indices (Table S1).

We accounted for the effects of fishing effort and large-scale oceanographic indices in each LME using the GAMM (R package MuMIn). We used a multi-model comparison framework (R package: MuMIn), with the full model being: $MTC = s(Effort) + s(OI) + Year$, with a temporal auto-correlation term (corAR1 function in R) where s represents a spline smoothing function, allowing for a lag of up to 3 years in the response of MTC to these two variables. Alternative models with either the *Effort* or *OI*, or both, removed from the model were tested and with and without the auto-correlation term. We calculated values of change in MTC based on the average value of the Year variable of the alternative GAMMs weighted by a factor calculated from the corresponding AICs. In addition, the best model is indicated by the lowest Akaike Information Criterion (AIC) (Table S1).

Determining the relationship between rates of changes in MTC and SST from 1970 to 2006

We tested the hypothesis that the rate of change in MTC was significantly correlated with the rate of change of SST from 1970 to 2006. SST were regressed against time (accounting for temporal auto-correlation with including an AR term) using Generalized Least Square model (“gls” function in R), with the slopes representing the rate of changes of SST. Variation in the rate of change in MTC, calculated from the GAMMs (both model ensembles and best model),

between large marine ecosystems can be significantly explained by the rate of change in SST (Table S3). Overall, the relationship between rate of change of MTC and SST was robust to alternative methods of statistical inferences.

Determining the importance of different factors in explaining MTC changes

Using the ‘model.avg’ function (package MuMIn) and the ‘Importance’ attribute of the function in R, we calculated the relative importance of each predictor variable expressed as sum of the Akaike weights over all of the models in which the parameter of interest appears. For comparison between variables, spline smoothing function was applied to all the three variables: fishing effort, large scale oceanographic index and SST. We then ranked the predictor variables according to their importance and summarized the ranks across Large Marine Ecosystems. Although fishing effort has a higher mean ranking, followed by Sea Surface Temperature (SST) and then large-scale oceanographic indices, these differences were not significant (Kruskal-Wallis rank sum test, $p > 0.05$) (Figure S1).

Relationship between Maximum Size and Mean Temperature

For each large marine ecosystem (LME) a linear regression was computed between the mean temperature preference of species and the log transformed maximum size of reported commercial taxa landed since the 1970s. The taxa were selected from the Sea Around Us project’s modelled fisheries landings data⁷. The maximum size was the maximum standard length for each taxon derived from data in online databases, mainly FishBase (www.fishbase.org) and SeaLifeBase (www.sealifebase.org). The linear model (lm procedure in R) was:

$$Temperature_{50} = a \cdot \log_{10}(Size) + c$$

where *Temperature50* is the median of the temperature preference profile, *Size* is maximum body length and *a* and *c* are the slope and intercept of the linear model.

In 13 out of 52 LMEs, $\log(\text{Size})$ was weakly and positively related to temperature while in 6 LMEs, the relationship was weakly negative. There was no significant relationship between $\log(\text{Size})$ and temperature in 33 LMEs.

Testing for the potential effects of catch mis-reporting

We tested the effects of catch misreporting, and the results confirmed our conclusion that misreporting is not correlated with temperature preference. We used published data of ‘reconstructed’ fisheries catch from 1970 to 2006 from five different areas, selected because they had publications documenting their reconstruction, all species in the reconstructed catch had a previously created distribution map (from which its temperature profile could be inferred), and which represented a range of habitats types and latitudes. These were: the Exclusive Economic Zones of Sabah, Malaysia, Poland⁸, American Samoa⁹, Guadeloupe¹⁰ and St. Helena Island¹¹. The reconstructed catch included the official FAO fisheries statistics supplemented with estimates of catches that are not reported in official statistics¹².

We calculated MTC during this period using the official statistics only and with the reconstructed data. We found that rates of change in MTC were not significantly different between the datasets for Sabah, American Samoa, Guadeloupe and St Helena (ANCOVA $p > 0.05$). Although the rate of change in MTC was significantly different in the case of Poland, MTCs calculated from both datasets showed a significant increase from 1970 to 2006. Thus, the qualitative trend is robust. This analysis shows that the admittedly strong misreporting of catch data does not affect our conclusions about changes in MTC.

Testing the potential effects of difference in temperature preferences between stocks

While we acknowledge that different populations of marine fishes can have different preferred temperature (e.g., Atlantic cod), global fisheries catch data are not reported at stock (or population) level. In fisheries statistics in a Large Marine Ecosystem, for example, catches of Atlantic cod is not subdivided into different stocks (e.g., the Irish Sea stock or the North Sea stock). Also, population structure is only known for a very limited number of exploited species.

We used a simulation approach to examine the potential effects of this assumption on the conclusions related to the relationship between changes in mean temperature of the catch and sea water temperature. We simulated hypothetical data on a 1-dimensional array of 180 cells, each represented a 30 minute latitudinal zone from 0° (equator) to 90° (pole). We then randomly selected a temperature gradient from 0° C to 30° C that decreased from the equator to the pole. Moreover, we simulated 100 ‘species’ with randomly selected temperature tolerance limits. For each species, we randomly simulated up to 20 stocks with temperature tolerance limits that were randomly generated, but were within the upper and lower limits of the species. Optimal temperatures were assumed to be the midrange of the upper and lower limits. Using a triangular distribution (*dtriangle* function in *R*), with abundance being 1 at the optimal temperature while abundance decreases to 0 at upper and lower tolerance limits, we calculated the abundance of each stock in each 30 minute cell.

We assumed a linear warming across the simulated ocean at 0.01°C per year. We then calculated the abundance of each stock in each cell using the assigned temperature tolerance limits and optimal temperature assigned to each stock for a 30-year time frame.

Assuming that we did not know the stock structure, we calculated a median preferred temperature of each species by overlaying the sum of simulated abundance of all the stocks

within a species and the temperature in each. We then calculated the mean temperature of the catch at the species level in a latitudinal section (40° to 60°).

We repeated this simulation 1000 times. We also repeated the procedure above, but assumed that each species had a maximum number of stocks of: (i) 1 stock (i.e., species = stock), (ii) 5 stocks, (iii) 10 stocks and (iv) 15 stocks. We then tested the effects of the number of stocks on the slope of the calculated rate of change of Mean Temperature of the Catch using ANCOVA, with year as the main effect and number of stocks within a species as covariate.

Our results showed that the number of stocks did not affect the calculated rate of change of Mean Temperature of the Catch (i.e., slope, $p > 0.1$). Increasing the number of stocks significantly increased the mean species level Mean Temperature of the Catch (i.e., intercept, $p < 0.05$). Thus, the potential existence of different stocks will only change the absolute value of the calculated MTC, but it would not affect the rate of change of MTC – the latter is the focus of the analysis in this paper. This shows that our findings and conclusions on the rate of change of Mean Temperature of the Catch are robust to the possible stock structure (and their different temperature tolerance) of a species.

Testing sensitivity to method of inferring temperature preference

We repeated the analysis using a subset of 698 species (fish only) with their temperature preference predicted from an alternative species distribution modelling approach called AquaMaps. This approach to modelling species' distributions uses simple, numerical descriptors of species relationships with environmental variables to predict distributions from occurrence databases. Environmental envelopes were calculated by associating occurrence data with current environmental variables to find the absolute and 'preferred' preference ranges (calculated as

shown in ^{3,13}). Predicted current distributions/ habitat suitability were generated multiplicatively from a suite of ‘environmental envelopes’ over each cell in a study area. Resulting cell values lie between 0 and 1 and represent the relative suitability of that cell for the specified species. The predicted current distributions for marine fishes were available through FishBase (www.fishbase.org). Using predicted distribution from AquaMaps, we inferred temperature preference of each species and calculated the MTC changes in each LME using the same methodology as the main analysis. We tested whether using MTC calculated from different species distribution modelling approach, with the same subset of species, would have an effect on the relationship between change in MTC and SST across LMEs using ANCOVA. The analysis showed that species modelling approach had no effect on the relationship between MTC and SST changes ($p > 0.05$).

Table S1. Average ranking of importance index calculated from multi-ensemble GAMM between MTC (Mean Temperature of the Catch), large-scale oceanographic index (OI), fishing effort (Effort) and SST (SST). Average ranking scales from 1 – 3, from least to most important. Oceanographic indices include: Pacific Oscillation Index (PDO), North Atlantic Oscillation Index (NAO), South Atlantic Dipole Index (SAD), Indian Ocean Dipole Mode Index (IDM), Summer Arctic Sea Ice (ASI) and Antarctic Oscillation Index (AOI).

Large Marine Ecosystems	Index used	Effort	OI	SST
East Bering Sea	PDO	3.0	1.7	1.3
Gulf of Alaska	PDO	1.3	2.3	2.3
California Current	PDO	2.0	1.0	3.0
Gulf of California	PDO	1.5	2.0	2.5
Gulf of Mexico	NAO	2.0	1.7	2.3
Southeast U.S. Continental Shelf	NAO	2.7	1.7	1.7
Northeast U.S. Continental Shelf	NAO	2.0	3.0	1.0
Scotian Shelf	NAO	1.0	2.3	2.7
Newfoundland-Labrador Shelf	NAO	2.7	2.0	1.3
Insular Pacific-Hawaiian	PDO	2.3	2.7	1.0
Pacific Central-American	PDO	3.0	1.7	1.3
Caribbean Sea	NAO	1.0	2.0	3.0
Humboldt Current	PDO	1.3	1.7	3.0
Patagonian Shelf	SAD	3.0	1.0	2.0
South Brazil Shelf	SAD	1.3	2.0	2.7
East Brazil Shelf	SAD	3.0	1.0	2.0
North Brazil Shelf	SAD	3.0	2.0	1.0
West Greenland Shelf	ASI	3.0	1.3	1.7
East Greenland Shelf	ASI	2.7	2.3	1.0
Barents Sea	ASI	2.0	1.0	3.0
Norwegian Sea	ASI	1.7	1.3	3.0
North Sea	NAO	1.0	2.7	2.3
Baltic Sea	NAO	3.0	1.0	2.0
Celtic-Biscay Shelf	NAO	3.0	1.0	2.0
Iberian Coastal	NAO	3.0	1.0	2.0
Mediterranean	-	3.0	0.0	1.0
Canary Current	SAD	1.0	2.3	2.7
Guinea Current	SAD	1.3	1.7	3.0
Benguela Current	SAD	1.3	2.0	2.7
Agulhas Current	IDM	3.0	1.0	2.0
Somali Coastal Current	IDM	1.7	1.3	3.0

Large Marine Ecosystems	Index used	Effort	OI	SST
Arabian Sea	IDM	3.0	1.0	2.0
Red Sea	IDM	2.0	1.0	3.0
Bay of Bengal	IDM	2.7	2.0	1.3
Gulf of Thailand	IDM	2.3	2.7	1.0
South China Sea	PDO	2.0	2.0	2.0
Sulu-Celebes Sea	PDO	2.7	2.3	1.0
Indonesian Sea	PDO	2.7	1.7	1.7
North Australia	PDO	1.7	1.3	3.0
Northeast Australia	PDO	1.5	1.5	3.0
East-Central Australia	PDO	3.0	1.7	1.3
Southeast Australia	AOI	1.0	3.0	2.0
Southwest Australia	AOI	2.0	3.0	1.0
West-Central Australia	PDO	1.0	3.0	2.0
Northwest Australia	PDO	2.7	1.7	1.7
New Zealand Shelf	AOI	3.0	2.0	1.0
East China Sea	PDO	3.0	1.5	1.5
Yellow Sea	PDO	2.0	3.0	1.0
Kuroshio Current	PDO	3.0	1.0	2.0
Sea of Japan/East Sea	PDO	1.0	2.5	2.5
Oyashio Current	PDO	3.0	1.5	1.5
Sea of Okhotsk	PDO	3.0	1.3	1.7

Table S2. Test statistics of GLM between rate of change of MTC and SST: (left column) all 52 LMEs and MTC changes estimated from model ensemble mean weighted by a factor calculated from the model's AICs, (middle column) all the 52 LMEs and MTC changes estimated from the model with lowest AIC, and (right column) test statistics with model ensemble for tropical LMEs only.

	All LMEs Model ensemble (AIC-weighted)		All LMEs Best model (lowest AIC)		Tropical LMEs Model ensemble (AIC-weighted)	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Estimate	-0.016	2.032	-0.017	2.093	-0.0151	1.825
Std. Error	0.011	0.579	0.012	0.576	0.0213	1.575
t value	-1.439	3.511	-1.461	3.511	-0.711	1.158
P-value	0.156	0.000956	0.150	0.000959	0.490	0.268
Significance	NS	***	NS	***	NS	NS

Table S3. Test statistics of ANCOVA examining the effects of year of SST climatology on the relationship between changes in MTC and SST for all 52 LME. *** - significant at 0.01 level; NS – not significant at 0.05 level.

Factors	Sum sq.	Mean sq.	F value	p-value
Climatology period	0.00007	0.000035	0.0216	0.9786 (NS)
SST	0.060198	0.060198	36.9633	<0.00001***
Climatology period*SST	0.000025	0.000013	0.0078	0.9923 (NS)

Table S4. Test statistics of ANCOVA of changes in MTC anomalies over time (Year) calculated from two different datatypes (Datatype): catch data and survey data. *** significant at 0.005 level, NS – not significant at 0.05 level.

	Value	Std. Error	t-value	p-value
Intercept	-106.87	33.54	-3.19	0.0022***
Year	0.054	0.017	3.189	0.0021***
Datatype	70.588	54.437	1.297	0.199 (NS)
Datatype*Year	-0.036	0.027	-1.298	0.198 (NS)

Table S5. Inferred temperature preference for each species. TP50, TP25 and TP75 represent median, 25 percentile and 75 percentile temperature preference (°C), respectively.

Scientific name	Common name	TP50	TP25	TP75
<i>Ablennes hians</i>	Psetta maxima	27	26	28
<i>Abudefduf luridus</i>	Canary damsel	20	19	20
<i>Acanthistius brasilianus</i>	Sea bass	14	13	16
<i>Acanthocybium solandri</i>	Wahoo	26	25	28
<i>Acanthopagrus berda</i>	Picnic seabream	27	25	29
<i>Acanthopagrus bifasciatus</i>	Twobar seabream	27	26	28
<i>Acanthopagrus latus</i>	Yellowfin seabream	27	26	29
<i>Acanthopagrus schlegeli</i>	Black porgy	17	16	20
<i>Acanthurus sohal</i>	Sohal surgeonfish	27	26	27
<i>Acetes japonicus</i>	Akiami paste shrimp	25	23	28
<i>Aethaloperca rogae</i>	Redmouth grouper	27	26	29
<i>Albula vulpes</i>	Bonefish	27	25	28
<i>Alectis alexandrinus</i>	African threadfish	24	21	26
<i>Alepes djedaba</i>	Shrimp scad	27	26	29
<i>Alepocephalus bairdii</i>	Bairds smooth-head	12	7	17
<i>Alepocephalus rostratus</i>	Rissos smooth-head	19	17	21
<i>Allocyttus niger</i>	Black oreo	8	5	10
<i>Alopias superciliosus</i>	Bigeye thresher	27	25	28
<i>Alopias vulpinus</i>	Thintail thresher	25	21	28
<i>Alosa aestivalis</i>	Blueback shad	14	11	18
<i>Alosa alosa</i>	Allis shad	15	12	18
<i>Alosa fallax</i>	Twaite shad	15	12	18
<i>Alosa mediocris</i>	Hickory shad	18	14	21
<i>Alosa pontica</i>	Pontic shad	13	13	14
<i>Alosa pseudoharengus</i>	Alewife	8	6	11
<i>Alosa sapidissima</i>	American shad	11	8	14
<i>Amblyraja hyperborea</i>	Arctic skate	10	5	15
<i>Ammodytes personatus</i>	Pacific sandeel	14	11	16
<i>Anadara granosa</i>	Blood cockle	28	27	28
<i>Anarhichas denticulatus</i>	Northern wolffish	6	2	9
<i>Anarhichas lupus</i>	Wolf-fish	8	5	10
<i>Anarhichas minor</i>	Spotted wolffish	5	2	8
<i>Anchoa hepsetus</i>	Broad-striped anchovy	25	23	27
<i>Anchoa mitchilli</i>	Bay anchovy	23	20	25

Scientific name	Common name	TP50	TP25	TP75
<i>Anodontostoma chacunda</i>	Chacunda gizzard shad	28	28	28
<i>Anoplopoma fimbria</i>	Sablefish	11	7	15
<i>Anthias anthias</i>	Swallowtail seaperch	20	18	23
<i>Antimora rostrata</i>	Blue antimora	25	21	28
<i>Aphanopus carbo</i>	Black scabbardfish	11	7	15
<i>Aphanopus intermedius</i>	Intermediate scabbardfish	25	22	27
<i>Aphareus rutilans</i>	Rusty jobfish	27	26	29
<i>Apostichopus japonicus</i>	Japanese sea cucumber	17	14	21
<i>Archosargus probatocephalus</i>	Sheepshead seabream	26	24	28
<i>Arctica islandica</i>	Ocean quahog	8	5	11
<i>Arctoscopus japonicus</i>	Sailfin sandfish	5	4	8
<i>Argentina silus</i>	Greater argentine	7	3	10
<i>Argentina sphyraena</i>	Argentine	16	12	19
<i>Argopecten circularis</i>	Pacific calico scallop	26	23	28
<i>Argopecten gibbus</i>	Calico scallop	25	23	27
<i>Argopecten irradians</i>	Atlantic bay scallop	19	13	24
<i>Argopecten purpuratus</i>	Peruvian calico scallop	21	20	22
<i>Argyrops spinifer</i>	King soldierbream	27	27	28
<i>Argyrosomus hololepidotus</i>	Southern meagre	25	23	27
<i>Argyrosomus regius</i>	Meagre	19	16	21
<i>Argyrozona argyrozona</i>	Carpenter seabream	19	18	20
<i>Ariomma indica</i>	Indian ariomma	27	26	29
<i>Aristeus antennatus</i>	Blue and red shrimp	19	19	20
<i>Aristeus varidens</i>	Striped red shrimp	26	25	27
<i>Arius thalassinus</i>	Giant seacatfish	27	26	28
<i>Arripis georgianus</i>	Australian ruff	17	16	18
<i>Arripis trutta</i>	Eastern Australian salmon	16	15	17
<i>Artemesia longinaris</i>	Argentine stiletto shrimp	16	14	19
<i>Atheresthes stomias</i>	Arrowtooth flounder	8	4	13
<i>Atherina boyeri</i>	Big-scale sand smelt	14	11	17
<i>Atherina presbyter</i>	Sand smelt	16	13	18
<i>Atractoscion aequidens</i>	Geelbeck croaker	27	25	29
<i>Atractoscion nobilis</i>	White weakfish	15	12	20
<i>Atrobucca nibe</i>	Longfin kob	28	27	28
<i>Atule mate</i>	Yellowtail scad	27	27	28
<i>Aulacomya ater</i>	Cholga mussel	14	12	16
<i>Austroglossus microlepis</i>	West coast sole	17	17	18
<i>Austroglossus pectoralis</i>	Mud sole	21	18	23
<i>Auxis rochei</i>	Bullet tuna	27	26	28
<i>Auxis thazard</i>	Frigate tuna	27	25	28

Scientific name	Common name	TP50	TP25	TP75
<i>Balistes capriscus</i>	Grey triggerfish	25	22	27
<i>Bathyraja eatonii</i>	Eatons skate	0	-1	2
<i>Bathyraja irrasa</i>	Kerguelen sandpaper skate	3	3	3
<i>Bathyraja maccaini</i>	McCains skate	-2	-2	-1
<i>Bathyraja meridionalis</i>	Dark-belly skate	1	1	2
<i>Bathyraja murrayi</i>	Murrays skate	3	2	3
<i>Belone belone</i>	Garpike	15	12	18
<i>Benthalbella elongata</i>	Benthalbella elongata	8	5	11
<i>Benthoosema pterotum</i>	Skinnycheek lanternfish	27	26	29
<i>Beryx decadactylus</i>	Alfonsino	23	17	26
<i>Beryx splendens</i>	Splendid alfonsino	27	25	28
<i>Bolbometopon muricatum</i>	Green humphead parrotfish	28	27	28
<i>Boops boops</i>	Bogue	20	16	24
<i>Boreogadus saida</i>	Polar cod	0	-1	3
<i>Borostomias antarcticus</i>	Borostomias antarcticus	19	14	23
<i>Bothus pantherinus</i>	Leopard flounder	27	26	29
<i>Brachydeuterus auritus</i>	Bigeye grunt	26	25	27
<i>Brama brama</i>	Atlantic pomfret	24	20	27
<i>Bregmaceros maclellandi</i>	Spotted codlet	28	28	28
<i>Brevoortia aurea</i>	Brazilian menhaden	18	17	19
<i>Brevoortia patronus</i>	Gulf menhaden	24	24	26
<i>Brevoortia pectinata</i>	Argentine menhaden	17	16	18
<i>Brevoortia tyrannus</i>	Atlantic menhaden	18	14	22
<i>Brosme brosme</i>	Tusk	9	7	10
<i>Brotula barbata</i>	Bearded brotula	27	26	28
<i>Buccinum undatum</i>	Whelk	11	10	12
<i>Callinectes danae</i>	Dana's swimming crab	26	24	27
<i>Callinectes sapidus</i>	Blue crab	25	22	27
<i>Callista chione</i>	Smooth callista	12	10	14
<i>Callorhinchus capensis</i>	Cape elephantfish	22	19	25
<i>Callorhinchus milii</i>	Ghost shark	15	13	15
<i>Cancer borealis</i>	Jonah crab	12	8	16
<i>Cancer irroratus</i>	Atlantic rock crab	21	17	25
<i>Cancer magister</i>	Dungeness crab	10	7	13
<i>Cancer pagurus</i>	Edible crab	14	11	16
<i>Cancer productus</i>	Pacific rock crab	10	7	13
<i>Capromimus abbreviatus</i>	Capro dory	11	10	13
<i>Capros aper</i>	Boarfish	19	12	23
<i>Carangoides bajad</i>	Orangespotted trevally	28	28	28
<i>Carangoides fulvoguttatus</i>	Yellowspotted trevally	28	27	29

Scientific name	Common name	TP50	TP25	TP75
<i>Carangoides malabaricus</i>	Malabar trevally	27	26	29
<i>Carangoides ruber</i>	Bar jack	25	23	27
<i>Caranx crysos</i>	Blue runner	25	24	27
<i>Caranx hippos</i>	Crevalle jack	27	26	28
<i>Caranx ignobilis</i>	Giant trevally	27	26	28
<i>Caranx melampyngus</i>	Bluefin trevally	28	27	28
<i>Caranx rhonchus</i>	False scad	24	21	26
<i>Caranx sexfasciatus</i>	Bigeye trevally	27	26	29
<i>Carcharhinus brachyurus</i>	Copper shark	26	23	28
<i>Carcharhinus falciformis</i>	Silky shark	26	25	28
<i>Carcharhinus limbatus</i>	Blacktip shark	27	26	28
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	27	26	28
<i>Carcharhinus obscurus</i>	Dusky shark	26	24	27
<i>Carcharhinus plumbeus</i>	Sandbar shark	26	25	28
<i>Carcharhinus sorrah</i>	Spottail shark	28	27	28
<i>Carcharias taurus</i>	Sand tiger shark	27	24	28
<i>Carcharodon carcharias</i>	Great white shark	24	20	27
<i>Carcinus aestuarii</i>	Mediterranean shore crab	19	18	20
<i>Carcinus maenas</i>	Green crab	13	9	16
<i>Cardium edule</i>	Common edible cockle	10	8	13
<i>Caulolatilus chrysops</i>	Atlantic goldeye tilefish	27	26	27
<i>Caulolatilus princeps</i>	Ocean whitefish	27	25	28
<i>Centriscoops humerosus</i>	Banded yellowfish	17	17	18
<i>Centroberyx affinis</i>	Redfish	18	17	19
<i>Centrolophus niger</i>	Blackfish	19	15	23
<i>Centrophorus granulosus</i>	Gulper shark	24	21	26
<i>Centrophorus lusitanicus</i>	Lowfin gulper shark	27	26	28
<i>Centrophorus squamosus</i>	Leafscale gulper shark	22	18	25
<i>Centropomus undecimalis</i>	Common snook	27	27	27
<i>Centropristis striata</i>	Black seabass	19	14	23
<i>Centroscyllum fabricii</i>	Black dogfish	24	21	27
<i>Centroscymnus coelolepis</i>	Portuguese dogfish	20	16	23
<i>Centroscymnus crepidater</i>	Longnose velvet dogfish	23	19	26
<i>Cephalopholis argus</i>	Peacock hind	27	26	29
<i>Cephalopholis fulva</i>	Coney	27	26	27
<i>Cephalopholis hemistiktos</i>	Yellowfin hind	26	26	27
<i>Cephalopholis miniata</i>	Coral hind	28	27	28
<i>Cepola macrophthalmalma</i>	Red bandfish	18	11	23
<i>Cervimunida johni</i>	Carrot Squat Lobster	13	12	14
<i>Cetengraulis edentulus</i>	Atlantic anchoveta	27	26	28

Scientific name	Common name	TP50	TP25	TP75
<i>Cetengraulis mysticetus</i>	Pacific anchoveta	27	24	28
<i>Cetorhinus maximus</i>	Basking shark	18	13	21
<i>Chaenocephalus aceratus</i>	Blackfin icefish	-1	-1	-1
<i>Chaenodraco wilsoni</i>	Spiny icefish	-2	-2	-1
<i>Champscephalus gunnari</i>	Mackerel icefish	-1	-2	1
<i>Channichthys rhinoceratus</i>	Unicorn icefish	3	3	4
<i>Cheilodactylus variegatus</i>	Peruvian morwong	18	17	19
<i>Cheilopogon agoo</i>	Japanese flyingfish	24	23	25
<i>Cheimerius nufar</i>	Santer seabream	26	24	28
<i>Chelidonichthys capensis</i>	Cape gurnard	19	16	22
<i>Chelidonichthys gurnardus</i>	Grey gurnard	11	5	17
<i>Chelidonichthys kumu</i>	Bluefin gurnard	27	25	28
<i>Chelidonichthys lastoviza</i>	Streaked gurnard	18	14	22
<i>Chelidonichthys lucerna</i>	Tub gurnard	15	8	22
<i>Chelon haematocheilus</i>	So-iny (redlip) mullet	19	18	21
<i>Chelon labrosus</i>	Thicklip grey mullet	14	10	18
<i>Chimaera monstrosa</i>	Rabbit fish	12	7	18
<i>Chione stutchburyi</i>	Stutchbury's venus	15	13	16
<i>Chionobathyscus dewitti</i>	Chionobathyscus dewitti	-2	-2	-1
<i>Chionodraco myersi</i>	Chionodraco myersi	-2	-2	-2
<i>Chionodraco rastrispinosus</i>	Ocellated icefish	-1	-2	-1
<i>Chionoecetes opilio</i>	Queen crab	4	2	6
<i>Chirocentrus dorab</i>	Dorab wolf-herring	28	27	28
<i>Chirocentrus nudus</i>	Whitefin wolf-herring	28	26	29
<i>Chlamys islandica</i>	Iceland scallop	8	5	11
<i>Chlamys opercularis</i>	Queen scallop	12	11	13
<i>Chlamys varia</i>	Variegated scallop	17	14	20
<i>Chloroscombrus chrysurus</i>	Atlantic bumper	27	25	29
<i>Chloroscombrus orqueta</i>	Pacific bumper	22	17	25
<i>Choromytilus chorus</i>	Choro mussel	12	11	13
<i>Chromis chromis</i>	Damselfish	23	20	25
<i>Chrysophrys auratus</i>	Squirefish	27	25	28
<i>Ciliata mustela</i>	Fivebeard rockling	7	3	11
<i>Citharichthys sordidus</i>	Pacific sanddab	17	8	23
<i>Citharus linguatula</i>	Atlantic spotted flounder	22	19	25
<i>Clinocardium nuttallii</i>	Nuttall cockle	7	5	10
<i>Clupanodon thrissa</i>	Chinese gizzard shad	27	26	28
<i>Clupea harengus</i>	Atlantic herring	8	5	11
<i>Clupea harengus membras</i>	Baltic herring	8	7	8
<i>Clupea pallasii</i>	Pacific herring	7	4	11

Scientific name	Common name	TP50	TP25	TP75
<i>Clupeonella cultriventris</i>	Black Sea sprat	14	14	14
<i>Cololabis saira</i>	Pacific saury	9	6	13
<i>Concholepas concholepas</i>	False abalone	12	11	14
<i>Conger conger</i>	European conger	16	9	22
<i>Conger myriaster</i>	Whitespotted conger	22	21	24
<i>Conger oceanicus</i>	American conger	25	23	27
<i>Conger orbignyanus</i>	Argentine conger	23	18	25
<i>Conodon nobilis</i>	Barred grunt	27	26	27
<i>Coregonus albula</i>	Vendace	9	8	10
<i>Coregonus lavaretus</i>	Common whitefish	10	8	12
<i>Coregonus oxyrinchus</i>	Houting	10	9	11
<i>Coryphaena hippurus</i>	Common dolphinfish	27	26	28
<i>Coryphaenoides rupestris</i>	Roundnose grenadier	10	6	13
<i>Crangon crangon</i>	Common shrimp	11	9	14
<i>Crassostrea gigas</i>	Pacific cupped oyster	13	10	16
<i>Crassostrea iredalei</i>	Slipper cupped oyster	28	28	28
<i>Crassostrea rhizophorae</i>	Mangrove cupped oyster	27	27	27
<i>Crassostrea virginica</i>	American cupped oyster	24	22	27
<i>Crenidens crenidens</i>	Karenteen seabream	26	24	28
<i>Cryodraco antarcticus</i>	Cryodraco antarcticus	-2	-2	-2
<i>Ctenolabrus rupestris</i>	Goldsinny-wrasse	11	7	15
<i>Cyclopterus lumpus</i>	Lumpsucker	7	3	10
<i>Cynoscion analis</i>	Peruvian weakfish	25	22	27
<i>Cynoscion nebulosus</i>	Spotted weakfish	23	20	26
<i>Cynoscion regalis</i>	Gray weakfish	15	12	18
<i>Cynoscion striatus</i>	South American striped weakfish	16	15	17
<i>Cyttus traversi</i>	King dory	18	17	20
<i>Dalatias licha</i>	Kitefin shark	23	19	26
<i>Dasyatis akajei</i>	Red stingray	28	26	29
<i>Dasyatis centroura</i>	Roughtail stingray	25	23	28
<i>Dasyatis pastinaca</i>	Common stingray	21	17	25
<i>Deania calcea</i>	Birdbeak dogfish	20	17	23
<i>Decapterus maruadsi</i>	Japanese scad	28	27	28
<i>Decapterus russelli</i>	Indian scad	28	27	28
<i>Dentex angolensis</i>	Angola dentex	28	26	29
<i>Dentex congoensis</i>	Congo dentex	27	25	27
<i>Dentex dentex</i>	Common dentex	19	17	20
<i>Dentex macrophthalmus</i>	Large-eye dentex	23	20	25
<i>Dentex maroccanus</i>	Morocco dentex	19	17	21
<i>Diagramma pictum</i>	Painted sweetlips	28	27	28

Scientific name	Common name	TP50	TP25	TP75
<i>Diastobranchus capensis</i>	Basketwork eel	17	15	19
<i>Dicentrarchus labrax</i>	European seabass	14	10	17
<i>Dicentrarchus punctatus</i>	Spotted seabass	18	16	20
<i>Dicologlossa cuneata</i>	Wedge sole	27	25	28
<i>Diplectrum formosum</i>	Sand seabass	26	25	27
<i>Diplodus annularis</i>	Annular seabream	13	10	17
<i>Diplodus argenteus</i>	South American silver porgy	27	26	27
<i>Diplodus cervinus</i>	Zebra seabream	21	18	24
<i>Diplodus puntazzo</i>	Sharpsnout seabream	23	20	25
<i>Diplodus sargus</i>	White seabream	22	19	25
<i>Diplodus vulgaris</i>	Common two-banded seabream	21	18	24
<i>Dipturus batis</i>	Blue skate	19	17	20
<i>Dipturus laevis</i>	Barndoor skate	8	6	10
<i>Dipturus linteus</i>	Sailray	6	3	9
<i>Dipturus oxyrinchus</i>	Longnosed skate	18	17	20
<i>Dissostichus eleginoides</i>	Patagonian toothfish	7	5	10
<i>Dissostichus mawsoni</i>	Antarctic toothfish	-1	-2	-1
<i>Dorosoma cepedianum</i>	American gizzard shad	20	16	24
<i>Dosidicus gigas</i>	Jumbo flying squid	26	24	28
<i>Dussumieria acuta</i>	Rainbow sardine	28	28	28
<i>Dussumieria elopsoidea</i>	Slender rainbow sardine	28	27	28
<i>Echinorhinus brucus</i>	Bramble shark	26	23	28
<i>Echinus esculentus</i>	European edible sea urchin	11	9	13
<i>Elagatis bipinnulata</i>	Rainbow runner	27	26	28
<i>Eledone cirrhosa</i>	Horned octopus	18	16	20
<i>Eleginops maclovinus</i>	Patagonian blennie	8	8	9
<i>Eleginus gracilis</i>	Saffron cod	5	3	7
<i>Eleginus navaga</i>	Navaga	0	-1	2
<i>Eleutheronema tetradactylum</i>	Fourfinger threadfin	28	27	28
<i>Elops lacerta</i>	West African ladyfish	26	24	27
<i>Elops saurus</i>	Ladyfish	27	27	27
<i>Emmelichthys nitidus</i>	Redbait	26	24	28
<i>Enchelyopus cimbrius</i>	Fourbeard rockling	9	4	14
<i>Engraulis anchoita</i>	Argentine anchoita	15	12	19
<i>Engraulis capensis</i>	Cape anchovy	19	17	21
<i>Engraulis encrasicolus</i>	European anchovy	19	15	23
<i>Engraulis japonicus</i>	Japanese anchovy	23	19	26
<i>Engraulis mordax</i>	Californian anchovy	16	13	20
<i>Engraulis ringens</i>	Anchoveta	17	15	19
<i>Ensis directus</i>	Atlantic razor clam	11	8	13

Scientific name	Common name	TP50	TP25	TP75
<i>Eopsetta jordani</i>	Petrале sole	9	7	11
<i>Epigonus telescopus</i>	Bulls-eye	19	18	21
<i>Epinephelus aeneus</i>	White grouper	27	25	28
<i>Epinephelus analogus</i>	Spotted grouper	28	27	28
<i>Epinephelus areolatus</i>	Areolate grouper	28	27	28
<i>Epinephelus chlorostigma</i>	Brownspotted grouper	28	27	28
<i>Epinephelus coioides</i>	Orange-spotted grouper	27	26	28
<i>Epinephelus fasciatus</i>	Blacktip grouper	27	26	28
<i>Epinephelus flavolimbatus</i>	Yellowedge grouper	27	26	27
<i>Epinephelus fuscoguttatus</i>	Brown-marbled grouper	28	27	28
<i>Epinephelus goreensis</i>	Dungat grouper	26	25	27
<i>Epinephelus guttatus</i>	Red hind	26	25	27
<i>Epinephelus marginatus</i>	Dusky grouper	25	21	27
<i>Epinephelus morio</i>	Red grouper	27	25	28
<i>Epinephelus morrhua</i>	Comet grouper	28	27	28
<i>Epinephelus multinotatus</i>	White-blotched grouper	28	27	29
<i>Epinephelus nigritus</i>	Warsaw grouper	27	27	27
<i>Epinephelus niveatus</i>	Snowy grouper	26	25	28
<i>Epinephelus polyphkadion</i>	Camouflage grouper	27	26	29
<i>Epinephelus striatus</i>	Nassau grouper	27	26	27
<i>Epinephelus summana</i>	Summan grouper	26	25	28
<i>Epinephelus tauvina</i>	Greasy grouper	27	26	28
<i>Erimacrus isenbeckii</i>	Hair Crab	7	3	11
<i>Ethmalosa fimbriata</i>	Bonga shad	27	26	27
<i>Ethmidium maculatum</i>	Pacific menhaden	18	16	19
<i>Etmopterus granulosus</i>	Southern lanternshark	11	8	15
<i>Etmopterus spinax</i>	Velvet belly lantern shark	24	21	27
<i>Etrumeus teres</i>	Round herring	25	21	27
<i>Etrumeus whiteheadi</i>	Whiteheads round herring	19	17	21
<i>Euphausia superba</i>	Antarctic krill	-1	-2	-1
<i>Euthynnus affinis</i>	Kawakawa	28	27	28
<i>Euthynnus alletteratus</i>	Little tunny	23	20	26
<i>Euthynnus lineatus</i>	Black skipjack	28	27	28
<i>Fistularia tabacaria</i>	Cornet fish	25	23	27
<i>Gadus macrocephalus</i>	Pacific cod	7	5	11
<i>Gadus morhua</i>	Atlantic cod	6	3	9
<i>Gadus ogac</i>	Greenland cod	5	2	10
<i>Galeichthys feliceps</i>	White baggar	24	22	26
<i>Galeocerdo cuvier</i>	Tiger shark	26	22	28
<i>Galeoides decadactylus</i>	Lesser African threadfin	26	25	27

Scientific name	Common name	TP50	TP25	TP75
<i>Galeorhinus galeus</i>	Tope shark	18	16	20
<i>Galeus melastomus</i>	Blackmouth catshark	17	11	22
<i>Genyonemus lineatus</i>	White croaker	14	11	17
<i>Genypterus blacodes</i>	Pink cusk-eel	15	12	17
<i>Genypterus capensis</i>	Kingklip	21	19	23
<i>Genypterus chilensis</i>	Red cusk-eel	24	22	26
<i>Genypterus maculatus</i>	Black cusk-eel	19	19	19
<i>Gerres nigri</i>	Guinean striped mojarra	26	25	27
<i>Gerres oblongus</i>	Slender silverbidy	28	27	28
<i>Gerres oyena</i>	Common silver-biddy	28	27	28
<i>Geryon quinquedens</i>	Red crab	23	17	26
<i>Ginglymostoma cirratum</i>	Nurse shark	27	26	28
<i>Girella nigricans</i>	Opaleye	22	19	25
<i>Girella tricuspidata</i>	Luderick	16	15	17
<i>Glycymeris glycymeris</i>	Dog cockle	12	9	15
<i>Glyptocephalus cynoglossus</i>	Witch	7	4	9
<i>Glyptocephalus zachirus</i>	Rex sole	7	4	10
<i>Gnathanodon speciosus</i>	Golden trevally	28	27	28
<i>Gobionotothen acuta</i>	Triangular notothen	3	2	4
<i>Gobionotothen gibberifrons</i>	Humped rockcod	3	0	6
<i>Gobius niger</i>	Black goby	12	7	17
<i>Grammoplites suppositus</i>	Spotfin flathead	27	26	28
<i>Gymnosarda unicolor</i>	Dogtooth tuna	27	27	28
<i>Gymnura altavela</i>	Spiny butterfly ray	27	26	28
<i>Halargyreus johnsonii</i>	Slender codling	19	15	23
<i>Haliotis gigantea</i>	Giant abalone	18	16	20
<i>Haliotis midae</i>	Perlemoen abalone	25	22	28
<i>Haliotis rubra</i>	Blacklip abalone	15	15	17
<i>Haliotis tuberculata</i>	Tuberculate abalone	19	17	20
<i>Haliporoides diomedea</i>	Chilean nylon shrimp	22	19	25
<i>Haliporoides sibogae</i>	Jack-knife shrimp	26	25	28
<i>Haliporoides triarthrus</i>	Knife shrimp	21	19	24
<i>Halobatrachus didactylus</i>	Lusitanian toadfish	22	18	26
<i>Harpadon nehereus</i>	Bombay duck	28	27	29
<i>Helicolenus dactylopterus</i>	Blackbelly rosefish	22	18	26
<i>Hemiramphus brasiliensis</i>	Ballyhoo	26	24	28
<i>Herklotsichthys quadrimaculatus</i>	Bluestripe herring	28	27	28
<i>Heterocarpus reedi</i>	Chilean nylon shrimp	14	14	15
<i>Heterocarpus vicarius</i>	Northern nylon shrimp	24	21	26
<i>Hexanchus griseus</i>	Bluntnose sixgill shark	24	20	27

Scientific name	Common name	TP50	TP25	TP75
<i>Hilsa kelee</i>	Kelee shad	28	28	28
<i>Himantura gerrardi</i>	Sharpnose stingray	24	20	27
<i>Hippoglossoides elassodon</i>	Flathead sole	7	4	11
<i>Hippoglossoides platessoides</i>	American plaice	7	4	10
<i>Hippoglossus hippoglossus</i>	Atlantic halibut	7	4	11
<i>Hippoglossus stenolepis</i>	Pacific halibut	6	4	8
<i>Homarus americanus</i>	American lobster	8	6	10
<i>Homarus gammarus</i>	European lobster	14	11	17
<i>Hoplostethus atlanticus</i>	Orange roughy	18	15	20
<i>Hoplostethus mediterraneus mediterraneus</i>	Mediterranean slimehead	22	17	26
<i>Hydrolagus coliei</i>	Spotted ratfish	15	9	18
<i>Hydrolagus mirabilis</i>	Large-eyed rabbitfish	22	17	25
<i>Hydrolagus novaezealandiae</i>	Dark ghost shark	15	13	16
<i>Hyperoglyphe antarctica</i>	Antarctic butterfish	14	11	16
<i>Hyperoglyphe bythites</i>	Black driftfish	27	26	27
<i>Hypomesus pretiosus</i>	Surf smelt	11	10	12
<i>Hypoptychus dybowskii</i>	Korean sandeel	7	5	10
<i>Hyporhamphus sajori</i>	Japanese halfbeak	27	26	29
<i>Ibacus ciliatus</i>	Sand Crayfish	22	20	25
<i>Ilisha africana</i>	West African ilisha	26	26	27
<i>Ilisha elongata</i>	Elongate ilisha	23	18	26
<i>Illex argentinus</i>	Argentine shortfin squid	10	8	12
<i>Illex coindetii</i>	Broadtail shortfin squid	22	18	25
<i>Illex illecebrosus</i>	Northern shortfin squid	17	12	21
<i>Isacia conceptionis</i>	Cabinza grunt	26	23	28
<i>Istiophorus albicans</i>	Atlantic sailfish	26	24	27
<i>Istiophorus platypterus</i>	Indo-Pacific sailfish	26	24	28
<i>Isurus oxyrinchus</i>	Shortfin mako	25	22	28
<i>Isurus paucus</i>	Longfin mako	27	26	28
<i>Jasus edwardsii</i>	Red rock lobster	15	14	17
<i>Jasus frontalis</i>	Juan Fernandez rock lobster	18	16	19
<i>Jasus lalandii</i>	Cape rock lobster	17	16	18
<i>Jasus novaehollandiae</i>	Southern rock lobster	15	15	15
<i>Jasus verreauxi</i>	Green rock lobster	16	14	18
<i>Joturus pichardi</i>	Bobo mullet	27	26	27
<i>Kathetostoma giganteum</i>	Giant stargazer	13	12	15
<i>Katsuwonus pelamis</i>	Skipjack tuna	26	24	27
<i>Konosirus punctatus</i>	Konoshiro gizzard shad	17	15	20
<i>Kyphosus sectatrix</i>	Bermuda sea chub	26	25	27
<i>Labrus bergylta</i>	Ballan wrasse	11	10	13

Scientific name	Common name	TP50	TP25	TP75
<i>Lactarius lactarius</i>	False trevally	28	27	28
<i>Laemonema longipes</i>	Longfin codling	7	5	11
<i>Lamna nasus</i>	Porbeagle	16	10	19
<i>Lampanyctodes hectoris</i>	Hectors lanternfish	18	16	19
<i>Lampris guttatus</i>	Opah	23	18	26
<i>Larimichthys croceus</i>	Large yellow croaker	23	20	25
<i>Larimichthys polyactis</i>	Yellow croaker	18	16	20
<i>Lateolabrax japonicus</i>	Japanese seaperch	26	24	28
<i>Lates calcarifer</i>	Barramundi	28	26	29
<i>Leiostomus xanthurus</i>	Spot croaker	23	20	26
<i>Lepidocybium flavobrunneum</i>	Escolar	26	24	28
<i>Lepidonotothen larseni</i>	Lepidonotothen larseni	1	-1	3
<i>Lepidonotothen mizops</i>	Toad notothen	4	3	5
<i>Lepidonotothen nudifrons</i>	Gaudy notothen	-1	-1	-1
<i>Lepidonotothen squamifrons</i>	Grey rockcod	1	0	3
<i>Lepidoperca pulchella</i>	Orange perch	16	15	17
<i>Lepidopsetta bilineata</i>	Rock sole	5	4	9
<i>Lepidopus caudatus</i>	Silver scabbardfish	24	19	27
<i>Lepidorhombus boscii</i>	Fourspotted megrim	14	9	19
<i>Lepidorhombus whiffiagonis</i>	Megrim	16	12	19
<i>Lepidorhynchus denticulatus</i>	Thorntooth grenadier	15	13	17
<i>Lepidotrigla cavillone</i>	Large-scaled gurnard	21	18	24
<i>Lethrinus atlanticus</i>	Atlantic emperor	27	26	27
<i>Lethrinus borbonicus</i>	Snubnose emperor	27	27	28
<i>Lethrinus harak</i>	Thumbprint emperor	28	27	29
<i>Lethrinus lentjan</i>	Pink ear emperor	28	27	28
<i>Lethrinus mahsena</i>	Sky emperor	28	27	28
<i>Lethrinus microdon</i>	Smalltooth emperor	28	27	28
<i>Lethrinus nebulosus</i>	Spangled emperor	27	26	28
<i>Lethrinus obsoletus</i>	Orange-striped emperor	28	27	28
<i>Lethrinus xanthochilus</i>	Yellowlip emperor	28	26	29
<i>Leucoraja circularis</i>	Sandy ray	8	5	12
<i>Leucoraja erinacea</i>	Little skate	12	10	13
<i>Leucoraja fullonica</i>	Shagreen ray	10	5	16
<i>Leucoraja naevus</i>	Cuckoo ray	17	11	22
<i>Lichia amia</i>	Leerfish	26	24	28
<i>Limanda aspera</i>	Yellowfin sole	7	4	12
<i>Limanda ferruginea</i>	Yellowtail flounder	7	6	9
<i>Limanda limanda</i>	Dab	10	9	12
<i>Limulus polyphemus</i>	Horseshoe crab	24	21	26

Scientific name	Common name	TP50	TP25	TP75
<i>Liocarcinus depurator</i>	Blue-leg swimcrab	15	12	18
<i>Lithodes aequispina</i>	Same-spine stone crab	7	5	9
<i>Lithodes antarcticus</i>	Southern king crab	9	8	11
<i>Lithodes maia</i>	Stone king crab	5	3	9
<i>Lithognathus lithognathus</i>	White steenbras	20	18	24
<i>Lithognathus mormyrus</i>	Striped seabream	24	20	27
<i>Littorina littorea</i>	Common periwinkle	9	7	12
<i>Liza aurata</i>	Golden grey mullet	16	13	19
<i>Liza klunzingeri</i>	Klunzingers mullet	27	26	27
<i>Liza saliens</i>	Leaping mullet	11	6	15
<i>Lobotes surinamensis</i>	Atlantic tripletail	27	25	28
<i>Loligo forbesii</i>	Veined Squid	25	21	27
<i>Loligo gahi</i>	Patagonian squid	11	8	14
<i>Loligo opalescens</i>	California market squid	15	13	18
<i>Loligo pealeii</i>	Longfin squid	21	11	25
<i>Loligo vulgaris</i>	Cape Hope squid	18	17	19
<i>Lophius americanus</i>	American angler	9	7	12
<i>Lophius budegassa</i>	Black-bellied angler	25	23	28
<i>Lophius piscatorius</i>	Angler	14	10	17
<i>Lophius vaillanti</i>	Shortspine African angler	25	23	27
<i>Lophius vomerinus</i>	Cape monk	21	19	25
<i>Lopholatilus chamaeleonticeps</i>	Great northern tilefish	25	22	28
<i>Loxechinus albus</i>	Chilean sea urchin	13	11	15
<i>Lutjanus argentimaculatus</i>	Mangrove red snapper	27	26	28
<i>Lutjanus argentiventris</i>	Yellow snapper	28	27	28
<i>Lutjanus bohar</i>	Two-spot red snapper	28	27	28
<i>Lutjanus campechanus</i>	Northern red snapper	24	21	27
<i>Lutjanus gibbus</i>	Humpback red snapper	28	27	28
<i>Lutjanus johnii</i>	Johns snapper	28	27	28
<i>Lutjanus kasmira</i>	Common bluestripe snapper	27	26	29
<i>Lutjanus malabaricus</i>	Malabar blood snapper	28	27	28
<i>Lutjanus purpureus</i>	Southern red snapper	27	27	27
<i>Lutjanus quinquelineatus</i>	Five-lined snapper	27	26	29
<i>Lutjanus synagris</i>	Lane snapper	27	25	28
<i>Macrodon ancylodon</i>	King weakfish	26	25	28
<i>Macroramphosus scolopax</i>	Longspine snipefish	26	23	28
<i>Macrourus berglax</i>	Onion-eye grenadier	6	2	9
<i>Macrourus holotrachys</i>	Bigeye grenadier	9	7	12
<i>Macruronus magellanicus</i>	Patagonian grenadier	9	8	11
<i>Macruronus novaezelandiae</i>	Blue grenadier	13	11	15

Scientific name	Common name	TP50	TP25	TP75
<i>Mactra sachalinensis</i>	Hen clam	18	12	22
<i>Maja squinado</i>	Spinous spider crab	20	17	23
<i>Makaira indica</i>	Black marlin	27	26	28
<i>Makaira nigricans</i>	Atlantic blue marlin	25	23	27
<i>Mallotus villosus</i>	Capelin	3	1	5
<i>Mancopsetta maculata antarctica</i>	Antarctic armless flounder	3	2	4
<i>Martialia hyadesi</i>	Sevenstar flying squid	13	11	15
<i>Maurolicus muelleri</i>	Pearlsides	22	16	26
<i>Megabalanus psittacus</i>	Giant barnacle	14	12	15
<i>Megalaspis cordyla</i>	Torpedo scad	28	27	28
<i>Megalops atlanticus</i>	Tarpon	26	25	27
<i>Megalops cyprinoides</i>	Indo-Pacific tarpon	28	28	29
<i>Meganctiphanes norvegica</i>	Norwegian krill	7	3	11
<i>Melanogrammus aeglefinus</i>	Haddock	7	5	10
<i>Mene maculata</i>	Moonfish	28	27	28
<i>Menidia menidia</i>	Atlantic silverside	10	7	14
<i>Menippe mercenaria</i>	Black stone crab	24	22	26
<i>Menticirrhus littoralis</i>	Gulf kingcroaker	26	25	27
<i>Menticirrhus saxatilis</i>	Northern kingcroaker	26	24	28
<i>Mercenaria mercenaria</i>	Northern quahog	17	12	21
<i>Meretrix lusoria</i>	Japanese hard clam	17	15	19
<i>Merlangius merlangus</i>	Whiting	11	9	14
<i>Merluccius angustimanus</i>	Panama hake	24	22	26
<i>Merluccius australis</i>	Southern hake	11	9	13
<i>Merluccius bilinearis</i>	Silver hake	7	5	10
<i>Merluccius capensis</i>	Shallow-water Cape hake	17	17	18
<i>Merluccius gayi gayi</i>	South Pacific hake	14	13	15
<i>Merluccius hubbsi</i>	Argentine hake	14	10	19
<i>Merluccius merluccius</i>	European hake	18	15	20
<i>Merluccius polli</i>	Benguela hake	26	25	27
<i>Merluccius productus</i>	North Pacific hake	15	13	18
<i>Merluccius senegalensis</i>	Senegalese hake	21	20	22
<i>Mesodesma donacium</i>	Macha clam	17	15	19
<i>Metanephrops andamanicus</i>	Andaman lobster	28	28	28
<i>Metanephrops challengerii</i>	New Zealand lobster	14	13	16
<i>Metanephrops mozambicus</i>	Mozambique lobster	26	25	27
<i>Metapenaeus endeavouri</i>	Endeavour shrimp	27	26	28
<i>Metapenaeus joyneri</i>	Shiba shrimp	26	24	28
<i>Metapenaeus monoceros</i>	Speckled shrimp	27	26	29
<i>Meuschenia scaber</i>	Velvet leatherjacket	15	15	17

Scientific name	Common name	TP50	TP25	TP75
<i>Microchirus variegatus</i>	Thickback sole	17	10	22
<i>Microcosmus sulcatus</i>	Grooved sea squirt	18	17	19
<i>Microgadus proximus</i>	Pacific tomcod	7	4	10
<i>Microgadus tomcod</i>	Atlantic tomcod	9	6	11
<i>Micromesistius australis</i>	Southern blue whiting	9	7	11
<i>Micromesistius poutassou</i>	Blue whiting	15	10	19
<i>Micropogonias furnieri</i>	Whitemouth croaker	24	21	26
<i>Micropogonias undulatus</i>	Atlantic croaker	26	25	27
<i>Microstomus kitt</i>	Lemon sole	6	3	10
<i>Microstomus pacificus</i>	Dover sole	11	6	16
<i>Miichthys miiuy</i>	Mi-iuy croaker	23	22	24
<i>Mobula mobular</i>	Devil fish	19	15	23
<i>Mola mola</i>	Ocean sunfish	26	23	27
<i>Molva dypterygia</i>	Blue ling	11	5	17
<i>Molva molva</i>	Ling	14	10	17
<i>Monotaxis grandoculis</i>	Humpnose big-eye bream	28	27	28
<i>Mora moro</i>	Common mora	23	19	26
<i>Morone americana</i>	White perch	15	10	21
<i>Morone saxatilis</i>	Striped sea-bass	21	16	25
<i>Mugil cephalus</i>	Flathead mullet	27	25	28
<i>Mugil liza</i>	Liza	26	24	28
<i>Mugil soiuy</i>	So-iuy mullet	11	7	13
<i>Mulloidichthys flavolineatus</i>	Yellowstripe goatfish	27	26	29
<i>Mullus argentinae</i>	Argentine goatfish	20	17	23
<i>Mullus barbatus</i>	Red mullet	17	12	22
<i>Mullus surmuletus</i>	Striped red mullet	19	13	23
<i>Muraena helena</i>	Mediterranean moray	20	14	24
<i>Muraenesox cinereus</i>	Daggertooth pike conger	28	27	28
<i>Muraenolepis microps</i>	Smalleye moray cod	-1	-2	-1
<i>Mustelus asterias</i>	Starry smooth-hound	10	6	14
<i>Mustelus henlei</i>	Brown smooth-hound	27	26	28
<i>Mustelus lenticulatus</i>	Spotted estuary smooth-hound	15	13	16
<i>Mustelus mustelus</i>	Smooth-hound	26	23	28
<i>Mustelus schmitti</i>	Narrownose smooth-hound	13	12	16
<i>Mya arenaria</i>	Sand gaper	10	7	13
<i>Mycteroperca bonaci</i>	Black grouper	27	26	27
<i>Mycteroperca microlepis</i>	Gag	26	24	27
<i>Mycteroperca phenax</i>	Scamp	23	20	26
<i>Mycteroperca venenosa</i>	Yellowfin grouper	27	26	27
<i>Mycteroperca xenarcha</i>	Broomtail grouper	28	27	28

Scientific name	Common name	TP50	TP25	TP75
<i>Myliobatis aquila</i>	Common eagle ray	26	23	28
<i>Mytilus chilensis</i>	Chilean mussel	12	9	14
<i>Mytilus coruscus</i>	Korean mussel	16	15	18
<i>Mytilus edulis</i>	Blue mussel	8	4	11
<i>Mytilus galloprovincialis</i>	Mediterranean mussel	17	14	19
<i>Mytilus planulatus</i>	Australian mussel	26	23	28
<i>Mytilus platensis</i>	River Plata mussel	14	13	14
<i>Myxine glutinosa</i>	Hagfish	11	6	17
<i>Naso unicornis</i>	Bluespine unicornfish	28	27	28
<i>Necora puber</i>	Velvet swimcrab	10	9	12
<i>Nemadactylus bergi</i>	White morwong	12	10	14
<i>Nemadactylus macropterus</i>	Tarakihi	27	25	28
<i>Nematalosa nasus</i>	Blochs gizzard shad	25	22	28
<i>Nematopalaemon schmitti</i>	Whitebelly prawn	27	27	27
<i>Nemipterus japonicus</i>	Japanese threadfin bream	28	27	29
<i>Nemipterus randalli</i>	Randalls threadfin bream	28	27	28
<i>Nemipterus virgatus</i>	Golden threadfin bream	27	26	28
<i>Neocyttus rhomboidalis</i>	Spiky oreo	17	15	19
<i>Neopagetopsis ionah</i>	Bible icefish	-2	-2	-1
<i>Nephrops norvegicus</i>	Norway lobster	17	14	20
<i>Nezumia aequalis</i>	Common Atlantic grenadier	22	18	25
<i>Nibea mitsukurii</i>	Nibe croaker	21	20	22
<i>Normanichthys crockeri</i>	Normans camote	17	16	19
<i>Notorynchus cepedianus</i>	Broadnose sevengill shark	18	16	22
<i>Notothenia coriiceps</i>	Yellowbelly rockcod	0	-1	2
<i>Notothenia rossii</i>	Marbled rockcod	4	1	7
<i>Nototodarus sloanii</i>	Wellington flying squid	15	13	17
<i>Oblada melanura</i>	Saddled seabream	24	21	26
<i>Octopus vulgaris</i>	Common octopus	26	23	28
<i>Ocyurus chrysurus</i>	Yellowtail snapper	26	25	28
<i>Odontesthes regia</i>	Silverside	18	16	19
<i>Ommastrephes bartramii</i>	Neon flying squid	25	21	27
<i>Oncorhynchus gorbuscha</i>	Pink salmon	5	3	9
<i>Oncorhynchus keta</i>	Chum salmon	5	3	8
<i>Oncorhynchus kisutch</i>	Coho salmon	4	3	6
<i>Oncorhynchus masou</i>	Cherry salmon	8	5	13
<i>Oncorhynchus mykiss</i>	Rainbow trout	9	6	12
<i>Oncorhynchus nerka</i>	Sockeye salmon	4	3	6
<i>Oncorhynchus tshawytscha</i>	Chinook salmon	6	4	8
<i>Ophiodon elongatus</i>	Lingcod	11	7	16

Scientific name	Common name	TP50	TP25	TP75
<i>Opisthonema libertate</i>	Pacific thread herring	27	25	28
<i>Opisthonema oglinum</i>	Atlantic thread herring	26	25	28
<i>Orcynopsis unicolor</i>	Plain bonito	18	17	20
<i>Orthopristis chrysoptera</i>	Pigfish	24	22	27
<i>Osmerus eperlanus</i>	European smelt	10	9	11
<i>Osmerus mordax</i>	Atlantic rainbow smelt	3	1	5
<i>Ostrea chilensis</i>	Chilean flat oyster	25	21	27
<i>Ostrea edulis</i>	European flat oyster	15	12	18
<i>Ostrea lurida</i>	Olympia flat oyster	14	11	18
<i>Ostrea lutaria</i>	New Zealand dredge oyster	14	12	16
<i>Otolithes ruber</i>	Tiger-toothed croaker	28	27	28
<i>Oxynotus centrina</i>	Angular roughshark	26	24	28
<i>Oxynotus paradoxus</i>	Sailfin roughshark	18	16	20
<i>Pagellus acarne</i>	Axillary seabream	19	18	20
<i>Pagellus bellottii bellottii</i>	Red pandora	25	22	26
<i>Pagellus bogaraveo</i>	Blackspot seabream	18	16	20
<i>Pagellus erythrinus</i>	Common pandora	18	16	20
<i>Pagrus auriga</i>	Redbanded seabream	23	20	26
<i>Pagrus caeruleostictus</i>	Bluespotted seabream	23	20	26
<i>Pagrus pagrus</i>	Common seabream	25	21	27
<i>Palaemon longirostris</i>	Delta prawn	11	10	13
<i>Palaemon serratus</i>	Common prawn	17	14	19
<i>Palinurus delagoae</i>	Natal spiny lobster	25	24	26
<i>Palinurus elephas</i>	Common spiny lobster	13	10	17
<i>Palinurus gichristi</i>	Southern spiny lobster	18	16	21
<i>Palinurus mauritanicus</i>	Pink spiny lobster	18	17	19
<i>Pampus argenteus</i>	Silver pomfret	26	23	28
<i>Pandalopsis japonica</i>	Sidestripe shrimp	8	5	13
<i>Pandalus borealis</i>	Northern prawn	5	3	9
<i>Pandalus goniurus</i>	Humpy shrimp	4	3	6
<i>Pandalus hypsinotus</i>	Humpback shrimp	7	4	10
<i>Pandalus kessleri</i>	Grass shrimp	5	4	7
<i>Pandalus montagui</i>	Aesop shrimp	6	2	9
<i>Panopea abrupta</i>	Pacific geoduck	8	6	10
<i>Panulirus argus</i>	Caribbean spiny lobster	27	26	27
<i>Panulirus cygnus</i>	Australian spiny lobster	21	20	22
<i>Panulirus gracilis</i>	Blue spiny lobster	27	25	28
<i>Panulirus homarus</i>	Scalloped spiny lobster	27	27	28
<i>Panulirus longipes</i>	Longlegged spiny lobster	27	26	29
<i>Paphies australis</i>	Pipi wedge clam	20	15	24

Scientific name	Common name	TP50	TP25	TP75
<i>Paracentrotus lividus</i>	Stony sea urchin	17	14	19
<i>Paralabrax humeralis</i>	Peruvian rock seabass	26	24	28
<i>Paralichthys californicus</i>	California flounder	17	14	20
<i>Paralichthys dentatus</i>	Summer flounder	15	12	20
<i>Paralichthys olivaceus</i>	Bastard halibut	20	17	23
<i>Paralithodes brevipes</i>	Spiny king crab	5	4	6
<i>Paralithodes camtschaticus</i>	Red king crab	6	3	9
<i>Paralithodes platypus</i>	Blue King Crab	4	3	4
<i>Paralomis aculeata</i>	Red stone crab	1	-1	3
<i>Paralomis granulosa</i>	Softshell red crab	10	8	11
<i>Paralomis spinosissima</i>	Antarctic stone crab	1	-1	3
<i>Paralonchurus peruanus</i>	Peruvian banded croaker	21	20	22
<i>Parapenaeopsis atlantica</i>	Guinea shrimp	26	25	27
<i>Parapenaeus longirostris</i>	Deepwater rose shrimp	25	23	27
<i>Parapercis colias</i>	Blue cod	13	12	15
<i>Parapristipoma octolineatum</i>	African striped grunt	27	26	28
<i>Parastromateus niger</i>	Black pomfret	28	27	28
<i>Paratrachichthys trailli</i>	Sandpaper fish	17	16	20
<i>Paristiopterus labiosus</i>	Giant boarfish	23	18	27
<i>Parona signata</i>	Parona leatherjacket	24	22	26
<i>Parophrys vetula</i>	English sole	10	8	12
<i>Patagonotothen brevicauda</i>	Patagonian rockcod	10	7	12
<i>Patagonotothen ramsayi</i>	Ramsay's icefish	10	8	11
<i>Patinopecten caurinus</i>	Weathervane scallop	8	6	11
<i>Pecten jacobaeus</i>	Great Mediterranean scallop	20	19	20
<i>Pecten maximus</i>	Great Atlantic scallop	12	11	15
<i>Pecten novaezelandiae</i>	New Zealand scallop	16	15	17
<i>Pecten yessoensis</i>	Yesso scallop	18	15	21
<i>Pegusa lascaris</i>	Sand sole	26	23	28
<i>Pelates quadrilineatus</i>	Fourlined terapon	27	25	29
<i>Pellona ditchela</i>	Indian pellona	28	27	28
<i>Penaeus aztecus</i>	Northern brown shrimp	20	16	24
<i>Penaeus brasiliensis</i>	Redspotted shrimp	27	26	27
<i>Penaeus brevirostris</i>	Crystal shrimp	26	23	28
<i>Penaeus californiensis</i>	Yellowleg shrimp	25	22	27
<i>Penaeus chinensis</i>	Fleshy prawn	21	20	24
<i>Penaeus duorarum</i>	Northern pink shrimp	25	23	26
<i>Penaeus indicus</i>	Indian white prawn	27	27	28
<i>Penaeus japonicus</i>	Kuruma prawn	26	23	28
<i>Penaeus kerathurus</i>	Caramote prawn	23	20	26

Scientific name	Common name	TP50	TP25	TP75
<i>Penaeus latisulcatus</i>	Western king prawn	26	24	28
<i>Penaeus merguensis</i>	Banana prawn	28	27	28
<i>Penaeus monodon</i>	Giant tiger prawn	26	23	28
<i>Penaeus notialis</i>	Southern pink shrimp	27	27	27
<i>Penaeus occidentalis</i>	Western white shrimp	26	24	28
<i>Penaeus paulensis</i>	Sao Paulo shrimp	15	13	18
<i>Penaeus penicillatus</i>	Redtail prawn	28	27	28
<i>Penaeus semisulcatus</i>	Green tiger prawn	27	26	29
<i>Penaeus setiferus</i>	Northern white shrimp	24	23	25
<i>Penaeus stylirostris</i>	Blue shrimp	25	22	28
<i>Penaeus vannamei</i>	Whiteleg shrimp	27	26	28
<i>Pennahia anea</i>	Greyfin croaker	28	28	28
<i>Pennahia argentata</i>	White croaker	24	23	26
<i>Pentaceros decacanthus</i>	Bigspined boarfish	20	18	23
<i>Pentanemus quinquarius</i>	Royal threadfin	26	24	27
<i>Peprilus simillimus</i>	Pacific pompano	16	13	20
<i>Peprilus triacanthus</i>	American butterfish	19	11	23
<i>Percophis brasiliensis</i>	Brazilian flathead	18	14	22
<i>Perna perna</i>	South American rock mussel	26	24	28
<i>Perna viridis</i>	Brown mussel	26	24	28
<i>Petromyzon marinus</i>	Sea lamprey	11	6	16
<i>Petrus rupestris</i>	Red steenbras	20	18	21
<i>Phycis blennoides</i>	Greater forkbeard	16	12	19
<i>Phycis phycis</i>	Forkbeard	20	19	20
<i>Pitar rostratus</i>	Rostrate pitar	21	20	23
<i>Placopecten magellanicus</i>	American sea scallop	8	5	10
<i>Platichthys flesus</i>	Flounder	12	10	15
<i>Platichthys stellatus</i>	Starry flounder	4	2	8
<i>Platycephalus indicus</i>	Bartail flathead	27	27	28
<i>Plectorhinchus gaterinus</i>	Blackspotted rubberlips	27	26	28
<i>Plectorhinchus macrolepis</i>	Biglip grunt	27	26	27
<i>Plectorhinchus mediterraneus</i>	Rubberlip grunt	23	20	26
<i>Plectorhinchus pictus</i>	Trout sweetlips	28	27	28
<i>Plectorhinchus schotaf</i>	Minstrel sweetlip	27	26	29
<i>Plectropomus areolatus</i>	Squaretail coral grouper	28	27	28
<i>Plectropomus pessuliferus</i>	Roving coral grouper	28	27	29
<i>Pleoticus muelleri</i>	Argentine red shrimp	14	12	16
<i>Pleoticus robustus</i>	Royal red shrimp	25	22	27
<i>Plesiopenaeus edwardsianus</i>	Scarlet shrimp	25	23	27
<i>Pleuragramma antarcticum</i>	Antarctic silverfish	-2	-2	-2

Scientific name	Common name	TP50	TP25	TP75
<i>Pleurogrammus azonus</i>	Okhostk atka mackerel	10	6	15
<i>Pleuroncodes monodon</i>	Squat Lobster	17	15	19
<i>Pleuroncodes planipes</i>	Pelagic red crab	25	23	27
<i>Pleuronectes platessus</i>	European plaice	12	9	15
<i>Pleuronectes quadrituberculatus</i>	Alaska plaice	4	2	5
<i>Pleuronichthys decurrens</i>	Curlfin sole	14	10	18
<i>Pogonias cromis</i>	Black drum	24	22	27
<i>Pogonophryne permitini</i>	Pogonophryne permitini	-2	-2	-2
<i>Pollachius pollachius</i>	Pollack	10	9	12
<i>Pollachius virens</i>	Saithe	8	4	11
<i>Pollicipes pollicipes</i>	Barnacle	19	18	20
<i>Polydactylus quadrifilis</i>	Giant African threadfin	27	26	27
<i>Polyprion americanus</i>	Wreckfish	18	15	21
<i>Polyprion oxygeneios</i>	Hapuka	17	15	18
<i>Pomacanthus maculosus</i>	Yellowbar angelfish	27	26	28
<i>Pomadasy s argenteus</i>	Silver grunt	27	26	29
<i>Pomadasy s incisus</i>	Bastard grunt	27	25	28
<i>Pomadasy s jubelini</i>	Sompat grunt	26	25	27
<i>Pomadasy s kaakan</i>	Javelin grunter	27	26	29
<i>Pomadasy s stridens</i>	Striped piggy	27	26	28
<i>Pomatomus saltator</i>	Bluefish	27	25	28
<i>Pontinus kuhlii</i>	Offshore rockfish	27	25	28
<i>Portunus pelagicus</i>	Blue swimming crab	27	26	29
<i>Portunus trituberculatus</i>	Gazami crab	26	24	28
<i>Priacanthus macracanthus</i>	Red bigeye	28	27	28
<i>Prionace glauca</i>	Blue shark	23	18	26
<i>Prolatilus jugularis</i>	Tilefish	16	14	18
<i>Promethichthys prometheus</i>	Roudi escolar	26	24	28
<i>Protothaca staminea</i>	Pacific littleneck clam	8	6	11
<i>Protothaca thaca</i>	Taca clam	19	15	23
<i>Psenopsis anomala</i>	Melon seed	22	21	24
<i>Psettichthys melanostictus</i>	West American sand sole	10	7	11
<i>Psettodes belcheri</i>	Spottail spiny turbot	27	25	27
<i>Psettodes erumei</i>	Indian spiny turbot	28	27	29
<i>Pseudocaranx dentex</i>	White trevally	20	18	23
<i>Pseudochaenichthys georgianus</i>	South Georgia icefish	-1	-1	0
<i>Pseudocyttus maculatus</i>	Smooth oreo	12	6	17
<i>Pseudopentaceros richardsoni</i>	Pelagic armorhead	17	16	18
<i>Pseudopercis semifasciata</i>	Pigletfish	14	12	16
<i>Pseudophycis bachus</i>	Red codling	14	13	15

Scientific name	Common name	TP50	TP25	TP75
<i>Pseudopleuronectes americanus</i>	Winter flounder	10	8	12
<i>Pseudopleuronectes herzensteini</i>	Littlemouth flounder	12	9	15
<i>Pseudotolithus elongatus</i>	Bobo croaker	26	26	27
<i>Pseudotolithus senegalensis</i>	Cassava croaker	26	25	27
<i>Pseudotolithus senegallus</i>	Law croaker	27	25	27
<i>Pseudupeneus prayensis</i>	West African goatfish	27	26	28
<i>Pterogymnus lanarius</i>	Panga seabream	20	18	24
<i>Pteroscion peli</i>	Boe drum	25	24	27
<i>Pterothrissus belloci</i>	Longfin bonefish	25	24	27
<i>Pterygotrigla polyommata</i>	Latchet	17	16	18
<i>Pyura chilensis</i>	Red sea squirt	12	11	13
<i>Pyura stolonifera</i>	Red bait	17	15	18
<i>Rachycentron canadum</i>	Cobia	27	25	28
<i>Raja asterias</i>	Starry ray	15	12	17
<i>Raja brachyura</i>	Blonde ray	15	9	20
<i>Raja clavata</i>	Thornback ray	17	14	20
<i>Raja microocellata</i>	Small-eyed ray	14	12	16
<i>Raja montagui</i>	Spotted ray	14	9	20
<i>Raja undulata</i>	Undulate ray	18	12	23
<i>Rastrelliger brachysoma</i>	Short mackerel	28	28	28
<i>Rastrelliger kanagurta</i>	Indian mackerel	28	27	28
<i>Regalecus glesne</i>	King of herrings	22	18	25
<i>Reinhardtius evermanni</i>	Kamchatka flounder	6	4	10
<i>Reinhardtius hippoglossoides</i>	Greenland halibut	6	4	9
<i>Rexea solandri</i>	Silver gemfish	17	15	18
<i>Rhabdosargus globiceps</i>	White stumpnose	21	19	25
<i>Rhabdosargus haffara</i>	Haffara seabream	27	25	28
<i>Rhinobatos percellens</i>	Chola guitarfish	26	25	28
<i>Rhinobatos planiceps</i>	Pacific guitarfish	24	22	26
<i>Rhinochimaera atlantica</i>	Spearnose chimaera	25	23	28
<i>Rhomboplites aurorubens</i>	Vermilion snapper	27	26	27
<i>Rhynchobatus djiddensis</i>	Giant guitarfish	27	26	29
<i>Ruditapes decussatus</i>	Grooved carpet shell	17	13	22
<i>Ruditapes philippinarum</i>	Japanese carpet shell	18	16	20
<i>Ruvettus pretiosus</i>	Oilfish	25	22	28
<i>Salilota australis</i>	Tadpole codling	9	8	11
<i>Salmo salar</i>	Atlantic salmon	9	6	12
<i>Salmo trutta</i>	Sea trout	9	9	10
<i>Salvelinus alpinus</i>	Charr	1	0	3
<i>Sarda chiliensis</i>	Eastern Pacific bonito	19	19	19

Scientific name	Common name	TP50	TP25	TP75
<i>Sarda orientalis</i>	Striped bonito	28	27	28
<i>Sarda sarda</i>	Atlantic bonito	23	18	26
<i>Sardina pilchardus</i>	European pilchard	16	13	19
<i>Sardinella aurita</i>	Round sardinella	25	22	27
<i>Sardinella brasiliensis</i>	Brazilian sardinella	26	25	27
<i>Sardinella gibbosa</i>	Goldstripe sardinella	28	28	28
<i>Sardinella lemuru</i>	Bali sardinella	28	27	29
<i>Sardinella longiceps</i>	Indian oil sardine	28	27	28
<i>Sardinella maderensis</i>	Madeiran sardinella	24	21	26
<i>Sardinella zunasi</i>	Japanese sardinella	22	19	24
<i>Sardinops sagax</i>	South American pilchard	22	18	25
<i>Sargocentron spiniferum</i>	Sabre squirrelfish	27	26	29
<i>Sarpa salpa</i>	Salema	25	23	28
<i>Saurida tumbil</i>	Greater lizardfish	28	27	28
<i>Saurida undosquamis</i>	Brushtooth lizardfish	27	24	28
<i>Saxidomus giganteus</i>	Butter clam	7	5	9
<i>Scapharca subcrenata</i>	Half-crenated ark	20	18	22
<i>Scarus ghobban</i>	Blue-barred parrotfish	27	26	29
<i>Scarus persicus</i>	Gulf parrotfish	26	26	27
<i>Schedophilus ovalis</i>	Imperial blackfish	25	22	27
<i>Schedophilus pamarco</i>	Pamarco blackfish	26	25	27
<i>Sciaena umbra</i>	Brown meagre	19	14	23
<i>Sciaenops ocellatus</i>	Red drum	26	24	28
<i>Scolopsis taeniatus</i>	Black-streaked monocle bream	27	26	27
<i>Scomber australasicus</i>	Blue mackerel	24	20	27
<i>Scomber japonicus</i>	Chub mackerel	23	18	27
<i>Scomber scombrus</i>	Atlantic mackerel	12	8	16
<i>Scomberesox saurus</i>	Atlantic saury	20	14	24
<i>Scomberoides commersonianus</i>	Talang queenfish	28	27	28
<i>Scomberoides lysan</i>	Doublespotted queenfish	28	27	28
<i>Scomberoides tol</i>	Needlescaled queenfish	28	27	28
<i>Scomberomorus brasiliensis</i>	Serra Spanish mackerel	27	27	27
<i>Scomberomorus cavalla</i>	King mackerel	25	22	27
<i>Scomberomorus commerson</i>	Narrow-barred Spanish mackerel	28	27	28
<i>Scomberomorus guttatus</i>	Indo-Pacific king mackerel	28	27	29
<i>Scomberomorus lineolatus</i>	Streaked seerfish	28	28	28
<i>Scomberomorus maculatus</i>	Spanish mackerel	24	22	26
<i>Scomberomorus niphonius</i>	Japanese Spanish mackerel	18	15	20
<i>Scomberomorus regalis</i>	Cero	25	23	27
<i>Scomberomorus sierra</i>	Pacific sierra	25	22	27

Scientific name	Common name	TP50	TP25	TP75
<i>Scomberomorus tritor</i>	West African Spanish mackerel	24	22	26
<i>Scophthalmus aquosus</i>	Windowpane	11	9	13
<i>Scophthalmus maximus</i>	Turbot	11	9	14
<i>Scophthalmus rhombus</i>	Brill	11	7	14
<i>Scorpaena porcus</i>	Black scorpionfish	18	16	20
<i>Scorpaena scrofa</i>	Largescaled scorpionfish	25	23	28
<i>Scorpaenichthys marmoratus</i>	Cabezón	13	8	18
<i>Scyliorhinus canicula</i>	Smallspotted catshark	17	10	22
<i>Scyliorhinus stellaris</i>	Nursehound	16	10	22
<i>Scylla serrata</i>	Indo-Pacific swamp crab	26	24	28
<i>Scyllarides latus</i>	Mediterranean slipper lobster	19	19	20
<i>Scymnodon ringens</i>	Knifetooth dogfish	18	16	20
<i>Sebastes alutus</i>	Pacific ocean perch	6	5	10
<i>Sebastes entomelas</i>	Widow rockfish	9	6	11
<i>Sebastes flavidus</i>	Yellowtail rockfish	11	7	16
<i>Sebastes goodei</i>	Chilipepper	16	11	20
<i>Sebastes marinus</i>	Ocean perch	5	3	6
<i>Sebastes melanops</i>	Black rockfish	11	7	15
<i>Sebastes mentella</i>	Deepwater redfish	4	2	7
<i>Sebastes paucispinis</i>	Bocaccio	8	5	11
<i>Sebastes pinniger</i>	Canary rockfish	8	5	11
<i>Sebastes viviparus</i>	Norway redfish	9	9	9
<i>Sebastolobus alascanus</i>	Shortspine thornyhead	6	4	10
<i>Selar crumenophthalmus</i>	Bigeye scad	27	26	29
<i>Selaroides leptolepis</i>	Yellowstripe scad	28	27	28
<i>Selene dorsalis</i>	African moonfish	24	22	26
<i>Selene setapinnis</i>	Atlantic moonfish	26	24	28
<i>Semele solida</i>	Chilean semele	12	11	14
<i>Semicossyphus pulcher</i>	California sheephead	22	19	25
<i>Sepia officinalis</i>	Common cuttlefish	19	15	23
<i>Seriola dumerili</i>	Greater amberjack	27	26	28
<i>Seriola lalandi</i>	Yellowtail amberjack	26	24	28
<i>Seriolella brama</i>	Common warehou	15	13	16
<i>Seriolella caerulea</i>	White warehou	13	10	16
<i>Seriolella porosa</i>	Choicy ruff	17	16	19
<i>Seriolella punctata</i>	Silver warehou	15	13	16
<i>Seriolina nigrofasciata</i>	Blackbanded trevally	27	26	29
<i>Serranus cabrilla</i>	Comber	23	20	27
<i>Sicyonia brevirostris</i>	Rock shrimp	25	23	27
<i>Sicyonia ingentis</i>	Ridgeback shrimp	19	17	21

Scientific name	Common name	TP50	TP25	TP75
<i>Siliqua patula</i>	Pacific razor clam	7	5	9
<i>Sillago sihama</i>	Silver sillago	27	26	28
<i>Solea senegalensis</i>	Senegalese sole	21	16	25
<i>Solea solea</i>	Common sole	16	12	19
<i>Solen vagina</i>	European razor clam	10	7	15
<i>Solenocera agassizii</i>	Kolibri shrimp	26	24	27
<i>Somniosus microcephalus</i>	Greenland shark	7	3	10
<i>Somniosus rostratus</i>	Little sleeper shark	26	24	28
<i>Sparus auratus</i>	Gilthead seabream	26	22	28
<i>Spectrunculus grandis</i>	Pudgy cuskeel	22	18	26
<i>Sphoeroides maculatus</i>	Northern puffer	12	8	18
<i>Sphyraena barracuda</i>	Great barracuda	27	26	28
<i>Sphyraena jello</i>	Pickhandle barracuda	27	25	29
<i>Sphyraena obtusata</i>	Obtuse barracuda	28	27	28
<i>Sphyrna lewini</i>	Scalloped hammerhead	27	25	28
<i>Sphyrna zygaena</i>	Smooth hammerhead	25	22	28
<i>Spicara maena</i>	Blotched picarel	16	12	19
<i>Spisula ovalis</i>	Venus clam	11	10	12
<i>Spisula polynyma</i>	Stimpsons surf clam	4	2	6
<i>Spisula solida</i>	Surf clam	11	9	12
<i>Spisula solidissima</i>	Atlantic surf clam	14	9	20
<i>Spondyliosoma cantharus</i>	Black seabream	19	14	23
<i>Spratelloides gracilis</i>	Silverstriped round herring	28	28	28
<i>Sprattus fuegensis</i>	Falkland sprat	9	8	11
<i>Sprattus sprattus</i>	European sprat	12	9	16
<i>Sprattus sprattus balticus</i>	Baltic sprat	9	8	10
<i>Squalus acanthias</i>	Piked dogfish	16	10	19
<i>Squatina argentina</i>	Argentine angelshark	13	11	15
<i>Squatina squatina</i>	Angelshark	15	12	18
<i>Squilla mantis</i>	Spottail mantis squillid	22	19	25
<i>Stenotomus chrysops</i>	Scup	20	16	23
<i>Stephanolepis cirrhifer</i>	Thread-sail filefish	22	21	23
<i>Stereolepis gigas</i>	Giant sea-bass	22	18	25
<i>Strangomera bentincki</i>	Araucanian herring	13	13	14
<i>Stromateus fiatola</i>	Blue butterfish	25	23	28
<i>Symphodus melops</i>	Corkwing wrasse	12	7	16
<i>Synagrops japonicus</i>	Japanese splitfin	27	25	28
<i>Takifugu vermicularis</i>	Pear puffer	14	13	16
<i>Tapes pullastra</i>	Pullet carpet shell	13	10	16
<i>Tapes rhomboides</i>	Banded carpet shell	13	10	17

Scientific name	Common name	TP50	TP25	TP75
<i>Tautoga onitis</i>	Tautog	14	11	17
<i>Tautoglabrus adspersus</i>	Cunner	7	6	9
<i>Tawera gayi</i>	Gay's little venus	12	11	12
<i>Tenualosa ilisha</i>	Hilsa shad	27	26	28
<i>Tenualosa toli</i>	Toli shad	28	28	28
<i>Tetrapturus albidus</i>	Atlantic white marlin	25	23	27
<i>Tetrapturus angustirostris</i>	Shortbill spearfish	27	25	28
<i>Tetrapturus audax</i>	Striped marlin	27	24	28
<i>Tetrapturus pfluegeri</i>	Longbill spearfish	27	26	27
<i>Thalassoma pavo</i>	Ornate wrasse	22	19	25
<i>Thaleichthys pacificus</i>	Eulachon	8	5	10
<i>Thenus orientalis</i>	Flathead lobster	28	27	28
<i>Theragra chalcogramma</i>	Alaska pollack	6	4	8
<i>Thunnus alalunga</i>	Albacore	23	20	26
<i>Thunnus albacares</i>	Yellowfin tuna	26	24	28
<i>Thunnus atlanticus</i>	Blackfin tuna	27	26	28
<i>Thunnus maccoyii</i>	Southern bluefin tuna	16	12	19
<i>Thunnus obesus</i>	Bigeye tuna	26	24	27
<i>Thunnus orientalis</i>	Pacific bluefin tuna	26	22	28
<i>Thunnus thynnus</i>	Northern bluefin tuna	24	19	27
<i>Thunnus tonggol</i>	Longtail tuna	28	27	28
<i>Thyrsites atun</i>	Snoek	14	11	17
<i>Thyrsitops lepidopoides</i>	White snake mackerel	17	15	20
<i>Tivela mactroides</i>	Trigonal tivala	27	26	28
<i>Todarodes pacificus</i>	Japanese flying squid	13	8	19
<i>Todarodes sagittatus</i>	European flying squid	20	15	24
<i>Tonna galea</i>	Helmet ton	26	24	28
<i>Totoaba macdonaldi</i>	Totoaba	20	19	21
<i>Trachinotus blochii</i>	Snubnose pompano	28	28	28
<i>Trachinotus carolinus</i>	Florida pompano	25	23	27
<i>Trachinotus mookalee</i>	Indian pompano	28	28	28
<i>Trachinotus ovatus</i>	Derbio	19	13	23
<i>Trachinus draco</i>	Greater weever	10	6	15
<i>Trachurus capensis</i>	Cape horse mackerel	25	23	27
<i>Trachurus declivis</i>	Greenback horse mackerel	20	15	24
<i>Trachurus japonicus</i>	Japanese jack mackerel	19	15	22
<i>Trachurus lathami</i>	Rough scad	27	26	28
<i>Trachurus mediterraneus</i>	Mediterranean horse mackerel	19	18	20
<i>Trachurus murphyi</i>	Inca scad	15	12	17
<i>Trachurus picturatus</i>	Blue jack mackerel	21	18	24

Scientific name	Common name	TP50	TP25	TP75
<i>Trachurus symmetricus</i>	Pacific jack mackerel	13	9	16
<i>Trachurus trachurus</i>	Atlantic horse mackerel	18	14	22
<i>Trachurus trecae</i>	Cunene horse mackerel	25	24	27
<i>Trachypenaeus curvirostris</i>	Southern rough shrimp	27	26	28
<i>Trachyrincus scabrous</i>	Roughsnout grenadier	21	18	24
<i>Trematomus eulepidotus</i>	Blunt scalyhead	-2	-2	-1
<i>Trematomus hansonii</i>	Striped rockcod	1	1	1
<i>Trichiurus lepturus</i>	Largehead hairtail	25	21	28
<i>Trigla lyra</i>	Piper gurnard	24	20	27
<i>Tripteroptychus gilchristi</i>	Grenadier cod	22	18	26
<i>Trisopterus esmarkii</i>	Norway pout	9	8	11
<i>Trisopterus luscus</i>	Puting	12	10	14
<i>Trisopterus minutus</i>	Poor cod	15	12	18
<i>Turbo cornutus</i>	Horned turban	19	18	21
<i>Tylosurus crocodilus</i>	Hound needlefish	28	27	28
<i>Umbrina canariensis</i>	Canary drum	26	24	28
<i>Umbrina canosai</i>	Argentine croaker	19	17	21
<i>Umbrina cirrosa</i>	Shi drum	15	13	18
<i>Upogebia pugettensis</i>	Blue mud shrimp	10	9	11
<i>Urophycis brasiliensis</i>	Brazilian codling	13	10	16
<i>Urophycis chuss</i>	Red hake	10	8	12
<i>Urophycis tenuis</i>	White hake	7	5	9
<i>Valamugil seheli</i>	Bluespot mullet	28	27	28
<i>Variola louti</i>	Yellow-edged lyretail	27	26	29
<i>Venus gallina</i>	Striped venus	14	12	17
<i>Venus verrucosa</i>	Warty venus	19	16	23
<i>Xiphias gladius</i>	Swordfish	26	23	27
<i>Xiphopenaeus kroyeri</i>	Atlantic seabob	26	25	27
<i>Xiphopenaeus riveti</i>	Pacific seabob	27	25	28
<i>Zanclorhynchus spinifer</i>	Spiny horsefish	6	4	9
<i>Zenopsis conchifer</i>	Silvery John dory	25	22	27
<i>Zenopsis nebulosus</i>	Mirror dory	27	24	28
<i>Zeus faber</i>	John dory	23	19	26
<i>Zidona dufresnei</i>	Angulate volute	17	14	19
<i>Zoarces americanus</i>	Ocean pout	7	6	8
<i>Zoarces viviparus</i>	Viviparous blenny	9	8	10
<i>Zygochlamys delicatula</i>	Delicate scallop	13	12	15
<i>Zygochlamys patagonica</i>	Patagonean scallop	9	8	11

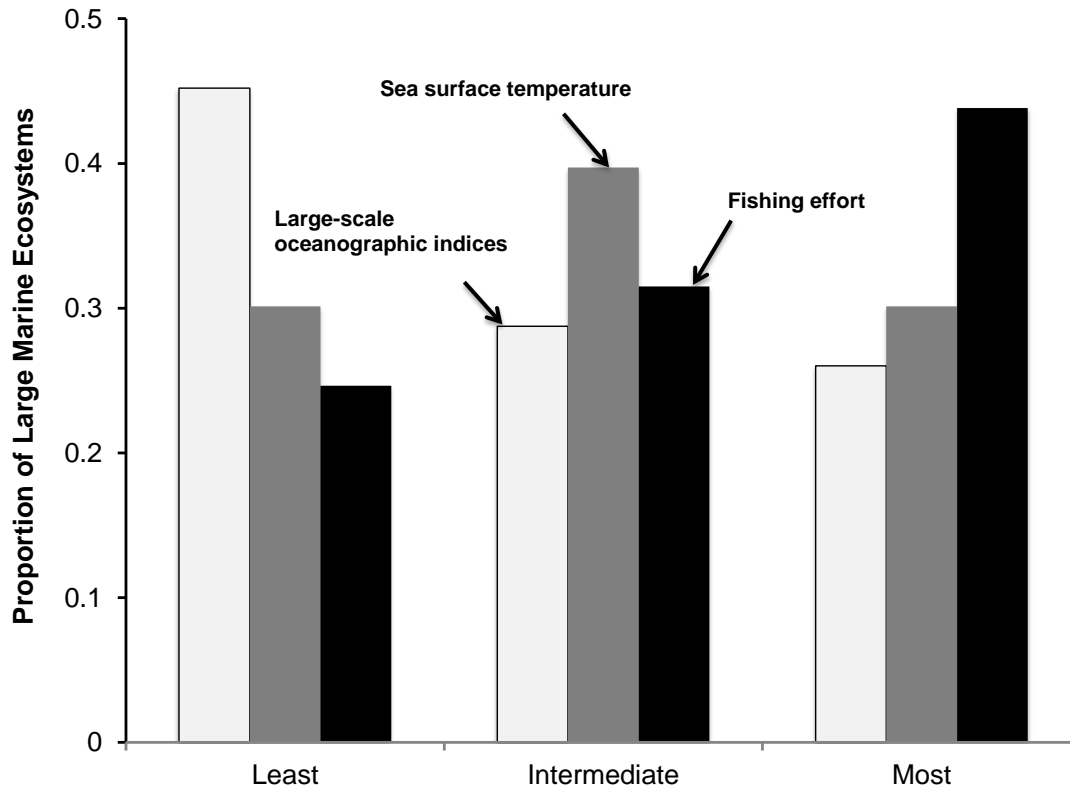
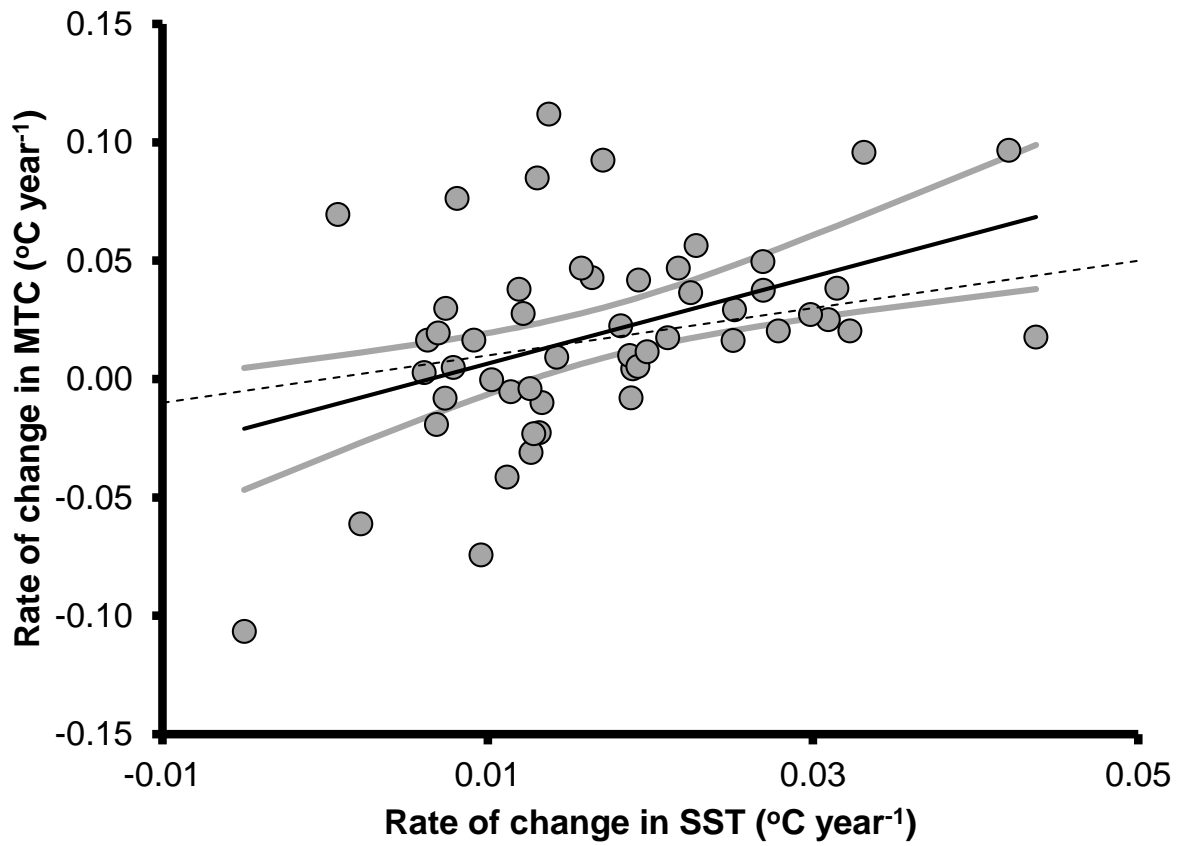


Figure S1. Proportion of LMEs and models with relative ranking of importance of fishing effort, sea surface temperature and large-scale oceanographic indices in explaining the variation of Mean Temperature of the Catch in the 52 LMEs. Importance ranking of each variable is based on the sum of the Akaike weights over all of the models in which the parameter of interest appears

A



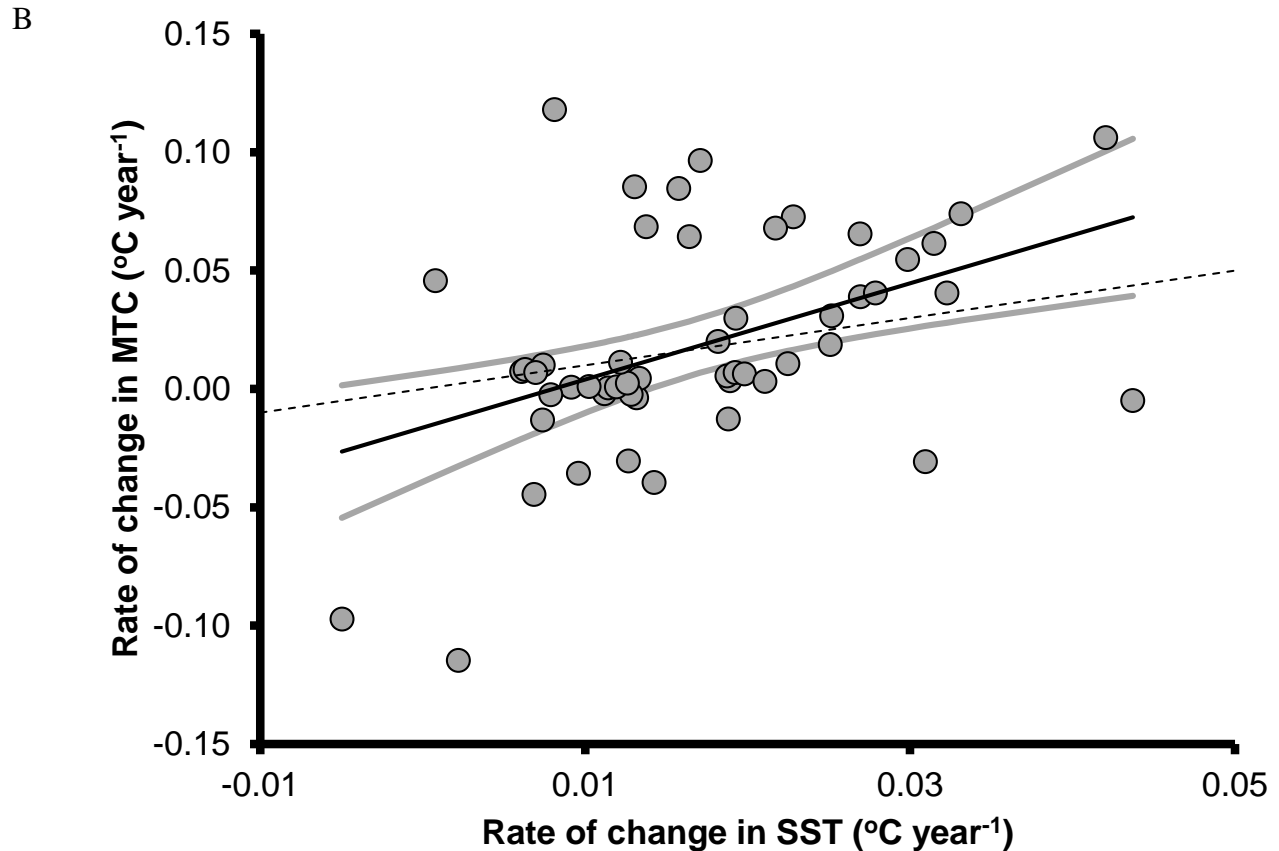
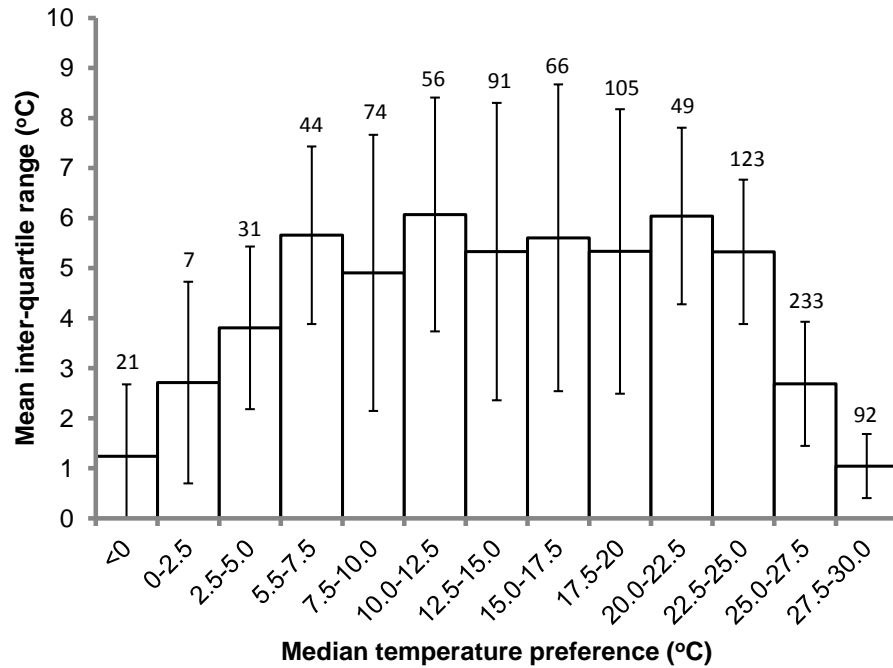


Figure S2. Relationship between rate of changes in Mean Temperature of the Catch (MTC) and Sea Surface Temperature (SST) from 1970 to 2006 in 52 LMEs: (A) calculated using the 25th percentile of the temperature preference profile of each species; (B) calculated using the 75th percentile of the temperature preference profile of each species. The dotted line represents a 1:1 ratio. The grey lines represent 95% confidence limits.

A.



B.

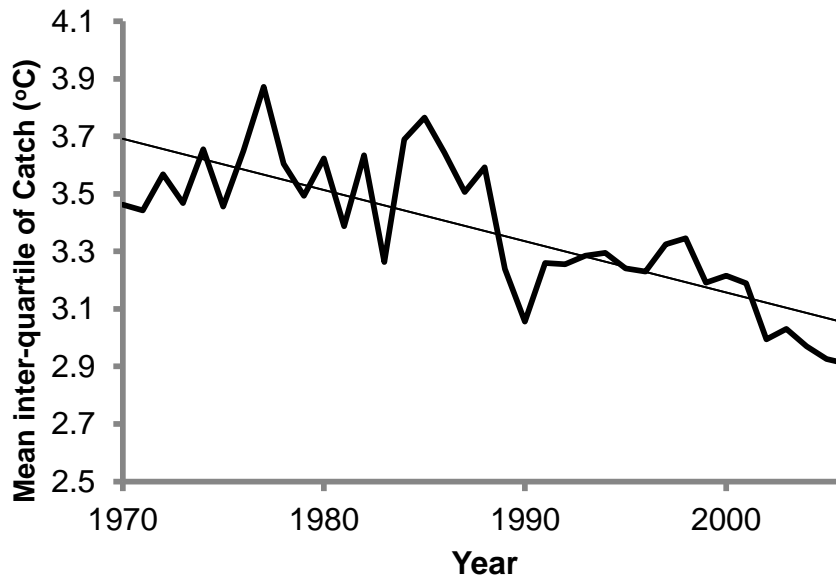


Figure S3. Temperature preference profiles of the species (A) and changes in the temperature preference ranges of tropical species over time (B). The error bars in (A) represent standard deviation across species, on top of which the number of species in each temperature class is specified. The line in (B) is based on a linear regression between mean inter-quartile of catch and time, with a slope of $-0.0178 \text{ } ^\circ\text{C year}^{-1}$ and an intercept of $38.8 \text{ } ^\circ\text{C}$.

References

- 1 Anticamara, J. A., Watson, R., Gelchu, A. & Pauly, D. Global fishing effort (1950–2010): Trends, gaps, and implications. *Fisheries Research* **107**, 131-136, doi:10.1016/j.fishres.2010.10.016 (2011).
- 2 Close, C. *et al.* in *Fishes in Databases and Ecosystems* Vol. 14(4) (eds D. Palomares, K. I. Stergiou, & D. Pauly) 27-37 (University of British Columbia, 2006).
- 3 Jones, M., Dye, S., Pinnegar, J., Warren, R. & Cheung, W. W. L. Modelling commercial fish distributions: prediction and assessment using different approaches. *Ecological Modelling* **225**, 133-145 (2012).
- 4 Röckmann, C., Dickey-Collas, M., Payne, M. R. & van Hal, R. Realized habitats of early-stage North Sea herring: looking for signals of environmental change. *ICES Journal of Marine Science: Journal du Conseil* **68**, 537-546, doi:10.1093/icesjms/fsq171 (2011).
- 5 Cheung, W. W. L., Lam, V. & Pauly, D. (2008).
- 6 Watson, R. A. *et al.* Global marine yield halved as fishing intensity redoubles. *Fish and Fisheries*, doi:10.1111/j.1467-2979.2012.00483.x (2012).
- 7 Watson, R., Kitchingman, A., Gelchu, A. & Pauly, D. Mapping global fisheries: sharpening our focus. *Fish and Fisheries* **5**, 168-177, doi:10.1111/j.1467-2979.2004.00142.x (2004).
- 8 Zeller, D. *et al.* The Baltic Sea: estimates of total fisheries removals 1950-2007. *Fisheries Research* **108**, 356-363. (2011).
- 9 Zeller, D., Booth, S., Craig, P. & Pauly, D. Reconstruction of coral reef fisheries catches in American Samoa, 1950 – 2002. *Coral Reefs* **25**, 144-152 (2006).

- 10 Frotté, L., Harper, S., Veitch, L., Booth, S. & Zeller, D. in *Fisheries catch reconstructions: Islands, Part I. Fisheries Centre Research Reports 17(5)* (eds D. Zeller & S. Harper) 13-19 (Fisheries Centre, University of British Columbia., 2009).
- 11 Booth, S. & Azar, H. in *Fisheries catch reconstructions: Islands, Part I. Fisheries Centre Research Reports 17 (5)*. (eds D. Zeller & S. Harper) 27-34 (Fisheries Centre, University of British Columbia, 2009).
- 12 Zeller, D., Booth, S., Davis, G. & Pauly, D. Re-estimation of small-scale for U.S. flag-associated islands in the western Pacific: the last 50 years. . *U.S. Fisheries Bulletin* **105**, 266-277 (2007).
- 13 Kaschner, K., Tittensor, D. P., Ready, J., Gerrodette, T. & Worm, B. Current and Future Patterns of Global Marine Mammal Biodiversity. *PLoS ONE* **6**, e19653, doi:10.1371/journal.pone.0019653 (2011).