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Supplementary Information for

A global network of marine protected areas for food

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This PDF file includes:

Supplementary text
Figures S1 to S17
Tables S1 to S3
SI References

Supplementary Information Text

Food provision definition

The change in total fish catch due to an MPA network w , which defines our food provision metric, is given by $\Delta H_w = \sum_i H_{w,i} - \sum_i H_{bau,i}$, where $\sum_i H_{w,i}$ and $\sum_i H_{bau,i}$ represent total global catch with and without implementing additional MPAs, respectively. $H_{w,i}$ and $H_{bau,i}$ represent catches for stock i . In the following text, we drop the index i for brevity.

Fisheries dynamics with no MPA

With no MPA, fish biomass (B) is given by:

$$B_{t+1} = (1 - E)B_t + f_t(\cdot) \quad (\text{S1})$$

and fish catch (H) by:

$$H_t = E_t B_t \quad (\text{S2})$$

where E is the exploitation rate, or the proportion of stock i biomass in a fishing area removed by fishing, $f(\cdot)$ is the growth of the stock, and t is time. $f(\cdot)$ represents the population growth both from the increase in fish weight with increasing age and growth from the addition of new individuals by reproduction. We express the growth as a logistic function:

$$f_t(\cdot) = rB_t \left(1 - \frac{B_t}{K}\right) \quad (\text{S3})$$

where r is the maximum population growth rate, i.e., population growth rate in the absence of density-dependence mechanism that regulates growth, and K is the carrying capacity. At steady-state $B_{t+1} = B_t$, therefore, we drop the time variable in Eqns. (S1-S3):

$$B = (1 - E)B + rB \left(1 - \frac{B}{K}\right) \quad (\text{S4})$$

$$H = EB \quad (\text{S5})$$

Solving for the steady-state fish biomass and catch results in:

$$B = \left(\frac{r - E}{r}\right) K \quad (\text{S6})$$

$$H = \left(\frac{r - E}{r}\right) EK \quad (\text{S7})$$

Fisheries dynamics with an MPA

We consider the case where a fraction of the stock's range is in a fully-protected MPA, where fishing is prohibited inside the MPA. We denote the fraction of the stock's total K in the MPA as our parameter R (i.e., R is our MPA size parameter). The fish biomass inside (B_{in}) and outside (B_{out}) the MPA is given by:

$$B_{in,t+1} = B_{in,t} + f_{in,t}(\cdot) - B_{trans,t} \quad (\text{S8})$$

$$B_{out,t+1} = (1 - E_{out,t})B_{out,t} + f_{out,t}(\cdot) + B_{trans,t} \quad (\text{S9})$$

where $f_{in}(\cdot)$ and $f_{out}(\cdot)$ are the growth equations for inside and outside the MPA, B_{trans} describes the transfer of biomass between the MPA and the fishing area, t is time, and E_{out} is the exploitation rate in the fishing area, which can depend on the MPA's size and the stock's management.

The growth equations, which capture both individual biomass build-up and larval contributions, are given by:

$$f_{in,t}(\cdot) = RrB_{T,t} \left(1 - \frac{B_{T,t}}{K}\right) \quad (\text{S10})$$

$$f_{out,t}(\cdot) = (1 - R)rB_{T,t} \left(1 - \frac{B_{T,t}}{K}\right) \quad (\text{S11})$$

where $B_T = B_{in} + B_{out}$ or the total fish biomass. The growth equations above consider a common larval pool that contributes to the population growth inside and outside the MPA. This implies that all larval production (from MPAs and fished areas) is homogenized across the entire geographic range of the stock, and larvae settle homogeneously into fished areas and MPAs in proportion to their respective areas.

Fish catch is given by:

$$H_t = E_t B_{out,t} \quad (\text{S12})$$

For a logistic model, the highest biomass growth is achieved at $B_{out} = K/2$. Overfished stocks, in particular those with biomass $\ll K/2$, will benefit from an MPA, because protection allows biomass to build-up inside the MPA and, consequently, this biomass build-up contributes to biomass growth in the fishing area.

Biomass transfer

When establishing an MPA, a fraction of the biomass inside the MPA will move to the fishing area (denoted as μ) and a fraction of biomass in the fishing area will enter the MPA (denoted as ν). The net transfer of biomass is given by (1):

$$B_{trans} = \mu B_{in} - \nu B_{out} \quad (\text{S13})$$

We impose that the transfer of biomass is zero when the density of biomass inside and outside the MPA is equal:

$$\frac{B_{in}}{R} = \frac{B_{out}}{1 - R} \quad (\text{S14})$$

where R is the fraction of a stock's total K in the MPA. Therefore, the net transfer of biomass is given by:

$$B_{trans} = \mu \left(B_{in} - \frac{R}{1 - R} B_{out} \right) \quad (\text{S15})$$

The parameter μ depends on the size of the MPA and species mobility m . We assume that μ linearly decreases with R and is scaled by species mobility, i.e., the fraction of the biomass inside the MPA that moves out linearly decreases with the MPA's size ($\mu = m(1 - R)$), although this parameter can take many functional forms. Thus,

$$B_{trans} = m(1 - R) \left(B_{in} - \frac{R}{1 - R} B_{out} \right) \quad (\text{S16})$$

Equation (S16) is identical to the density-dependent movement of the adult biomass model reported in Cabral *et al.* (2). The biomass transfer operates at the scale of the entire geographic range of the stock.

Steady-state fish catch and biomass with an MPA

At steady-state $B_{t+1} = B_t$, therefore, we drop the time variable in Eqns. (S8-S12):

$$B_{in} = B_{in} + Rr(B_{in} + B_{out}) \left(1 - \frac{B_{in} + B_{out}}{K} \right) - \mu \left(B_{in} - \frac{R}{1 - R} B_{out} \right) \quad (\text{S17})$$

$$B_{out} = (1 - E)B_{out} + (1 - R)r(B_{in} + B_{out}) \left(1 - \frac{B_{in} + B_{out}}{K} \right) + \mu \left(B_{in} - \frac{R}{1 - R} B_{out} \right) \quad (\text{S18})$$

$$H = EB_{out} \quad (\text{S19})$$

Note that the biomass density inside the MPA will never reach K as long as some fishing occurs outside, because the adult biomass will move from higher fish density inside the MPA to lower fish density in the fishing area.

Solving for the steady-state fish biomass and fish catch outside the MPA, we have:

$$B_{out} = \left(\frac{mK(1 - R)}{ER + m} \right) \left(1 - \frac{E(1 - R)m}{(ER + m)r} \right) \quad (\text{S20})$$

$$H = E \left(\frac{mK(1 - R)}{ER + m} \right) \left(1 - \frac{E(1 - R)m}{(ER + m)r} \right) \quad (\text{S21})$$

When $R=0$, Eqns. (S20 and S21) will be equivalent to the no MPA case (Eqns. S6 and S7).

Food provision equation

The food provision potential of a given network of MPAs (w) is $\Delta H_w = \sum_i H_{w,i} - \sum_i H_{bau,i}$. Some stocks already have some level of protection because, at the time of writing, 2.4% of the ocean is in fully- or highly-protected MPAs (3), i.e., the current fraction of a stock's K in the MPA (R_{bau}) is non-zero for some species. Using Eqn. (S21) summed all over the modeled stocks, the changes in catch due to the implementation of a network of MPAs (w) is given by:

$$\begin{aligned} \Delta H_w = & \left[\sum_i E_{w,i} \left(\frac{m_i K_i (1 - R_{w,i})}{E_{w,i} R_{w,i} + m_i} \right) \left(1 - \frac{E_{w,i} (1 - R_{w,i}) m_i}{(E_{w,i} R_{w,i} + m_i) r_i} \right) \right] - \\ & \left[\sum_i E_{bau,i} \left(\frac{m_i K_i (1 - R_{bau,i})}{E_{bau,i} R_{bau,i} + m_i} \right) \left(1 - \frac{E_{bau,i} (1 - R_{bau,i}) m_i}{(E_{bau,i} R_{bau,i} + m_i) r_i} \right) \right] \end{aligned} \quad (\text{S22})$$

where $E_{w,i}$ is the exploitation rate of stock i given an MPA network w and $E_{pau,i}$ is the exploitation rate of stock i under a business-as-usual scenario.

Species and stock lists

We use the commercially exploited marine species in Costello *et al.* (4) for which species distribution layers from AquaMaps (5) and population growth rates (r) from FishLife (6), FishBase (7), and SeaLifeBase (8) are available. We end up with 811 matched species. For species with stock assessments, we spatially disaggregate species distributions into stock distributions with ranges determined by the spatial management area of the stock (9) (Fig. S8). We include 527 assessed stocks, resulting to a total of 1338 stocks considered in our analysis.

Planning unit

Our planning unit resolution is ~55 km x 55 km and is based on AquaMaps' species native range resolution of 0.5 by 0.5 degrees. We change the coordinate reference system of the stocks' distribution from a half-degree WGS84 reference system to a Mollweide equal area projection using the *raster* R package (10).

Growth rate

We use FishLife (6) to derive the population growth rate (r) of most of the modeled fish species. The growth rate for invertebrates and the remaining fish species were taken from FishBase (7) and SeaLifeBase (8).

Species mobility

We incorporate species mobility into our model of MPA effects on food provisioning to account for the adult movement of biomass across MPA boundaries. We use three categorizations of mobility characteristics: sedentary and/or highly site-attached ($m=0.1$), mobile and/or habitat associated ($m=0.3$), and highly mobile, transient, and/or highly migratory ($m=0.9$) (Table S1). Our classification combines both density dependent (i.e., movement due to space limitation, territoriality, etc.) and density independent (i.e., random movement of fish via simple diffusion) movement, and we therefore use generous bounds to classify linear scales of movement. Our liberal definition of movement therefore includes relocations to new home ranges and excursions – potentially spawning migrations – by individuals with otherwise restricted home ranges (e.g., linear movements >1 km were recorded for Scarids, Acanthurids, Mullids, Epinephelinids, and Lethrinds over multiple long-term tracking studies (11–14)).

The assignment of values to mobility characteristics is arbitrary, but our categorization is modeled around our ~55 km by 55 km planning unit. We define $m=0.1$ to represent species with maximum scales of movement <1 km for adults. Species in the $m=0.3$ category have maximum adult scales of movement between 1–55 km. Species in the $m=0.9$ category are wide ranging and many cross national jurisdictions, with maximum adult scales of movement >55 km.

The mobility indices were assigned using keyword matching from four databases that were searched sequentially: FishBase (7), SeaLifeBase (8), FAO (15), and the IUCN Red List of Threatened Species (16) (Table S2). Mobility indices were assigned by three unique classifiers; insufficient information in reference databases and discrepancies between mobility classifications between scorers were resolved using peer-reviewed literature. All species mobility indices, classification keywords, source information, and relevant notes are presented in Table S3.

Carrying capacity

We use the MSY estimate per species reported in Costello *et al.* (4) and the growth rate (r) per species from Thorson (6), FishBase (7), and SeaLifeBase (8) to calculate the total carrying

capacity (K) per species (Figs. S9-S11). We derive the first-ever spatially-explicit dataset of stock carrying capacity per planning unit or pixel (Fig. S9) by distributing the total K in proportion to the relative probability of occurrence of the species within its native range (5). Using this spatial information on the carrying capacity per species, we can map carrying capacities for various species categories such as total K for different species mobility characteristics (Figs. S12-S14).

Uncertainty analysis

The four curves in Figure 2, as well as the results in Figure 3, illustrate how our food provision benefit estimate changes given alternative future fishery trajectories (i.e., given different ways E could change in the future). A future with more overfished fisheries means higher MPA benefits.

We add uncertainty bounds to our food provisioning projections by incorporating the uncertainties in r and K parameters. The probability distribution of r for most fish species was derived from Thorson *et al.* (6), and we derive the probability distribution of r for invertebrates and other missing fish species using the reported r and its associated standard deviation from FishBase (7) and SeaLifeBase (8). We assume an uncertainty in K per species of $\pm 15\%$ based on the information that K is typically 9 to 12 times the MSY (our current total K estimate is 11 times our total MSY estimate) (17). Uncertainty in K per species i in our analysis is derived by a random draw from the uniform distribution with a minimum value of $0.85K_i$ and a maximum value of $1.15K_i$, i.e., $K_i = U[0.85K_i, 1.15K_i]$.

Effect of MPA size on catch

We test the effect of MPA size on food provisioning (ΔH) across a range of biological characteristics of the species (i.e., growth rate and mobility) and starting status of the fisheries. In particular, we test how ΔH changes at different MPA sizes for underfished fisheries ($E/E_{MSY} = 0.2$ and 0.6), fisheries harvested at MSY ($E/E_{MSY}=1$), and overfished fisheries ($E/E_{MSY} = 1.4$ and 1.6), where E is the exploitation rate of the fishery under the no MPA case and E_{MSY} is the exploitation rate at which MSY is achieved (Figs. S15 and S16). The exploitation rate experienced by a stock in fished area increases as MPA size increases (bottom panels). Our model suggests that only overfished fisheries can gain food benefits from MPAs (top right panels). Catch is predicted to be lower for the case where MPAs are implemented in underfished fisheries or fisheries harvested at MSY vs. the no additional MPA case.

For overfished fisheries, a smaller MPA size (relative to the stock range) is required to optimize the catch of species with low mobility compared to highly mobile species (Figs. S15 and S16). Smaller MPA size is also required to optimize the catch of fast growing (Fig. S15) species vs. slow growing species (Fig. S16). As expected, MPA benefits are higher for species with higher growth rates (Figs. S15 and S16). The more overfished the fishery, the higher the fishery's benefits are from MPAs (Figs. S15 and S16).

Figure S17 shows the top 15 stocks that will gain the largest increases in food provisioning potential from strategically protecting an additional 5% of the global ocean. Most of the benefit comes from overfished stocks with high K and limited stock range.

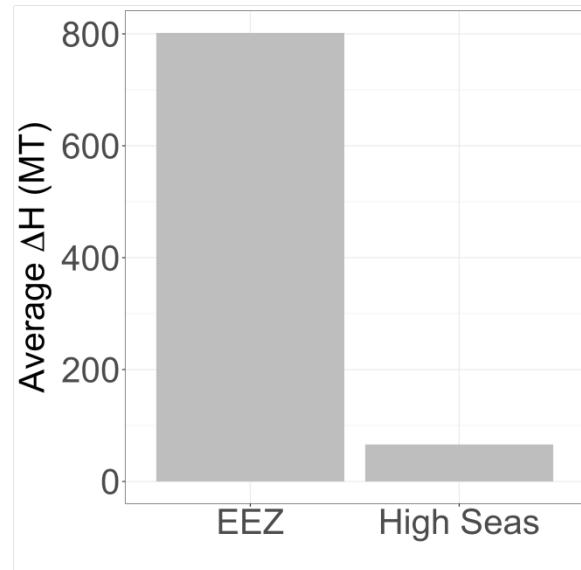


Fig. S1. Average pixel-level spillover potential (ΔH) within exclusive economic zones (EEZs) vs. the high seas. Each pixel is evaluated independently. See Fig. 1.

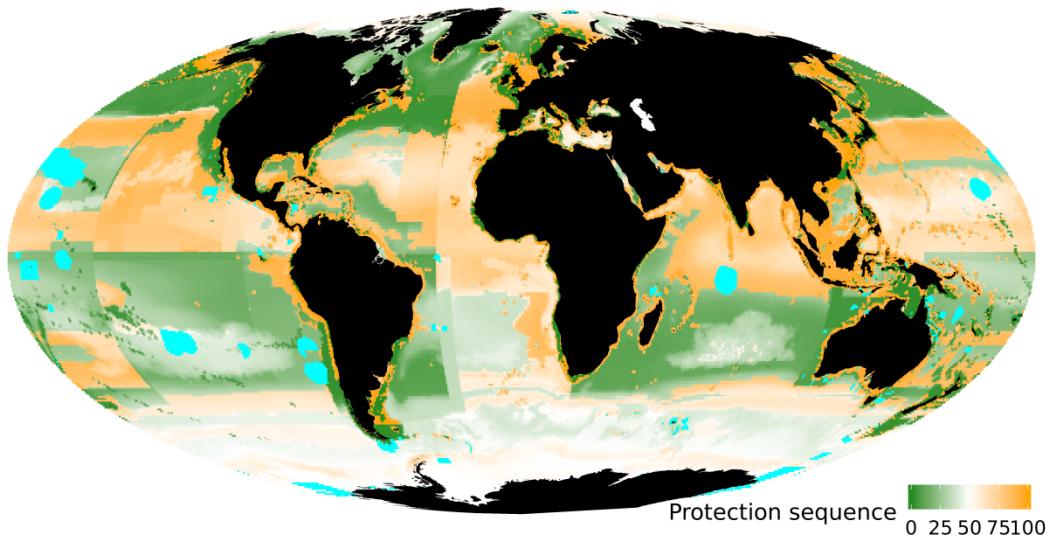


Fig. S2. Globally optimized marine protected area (MPA) network for food using the business-as-usual “all stocks” scenario for future fisheries. The color ramp indicates the relative importance of each pixel in an optimal, globally coordinated MPA network. Green indicates positive marginal change in ΔH , and orange indicates negative marginal change in ΔH , with white marking the transition from positive to negative marginal change in ΔH . Areas in cyan represent current fully- or highly-protected MPAs.

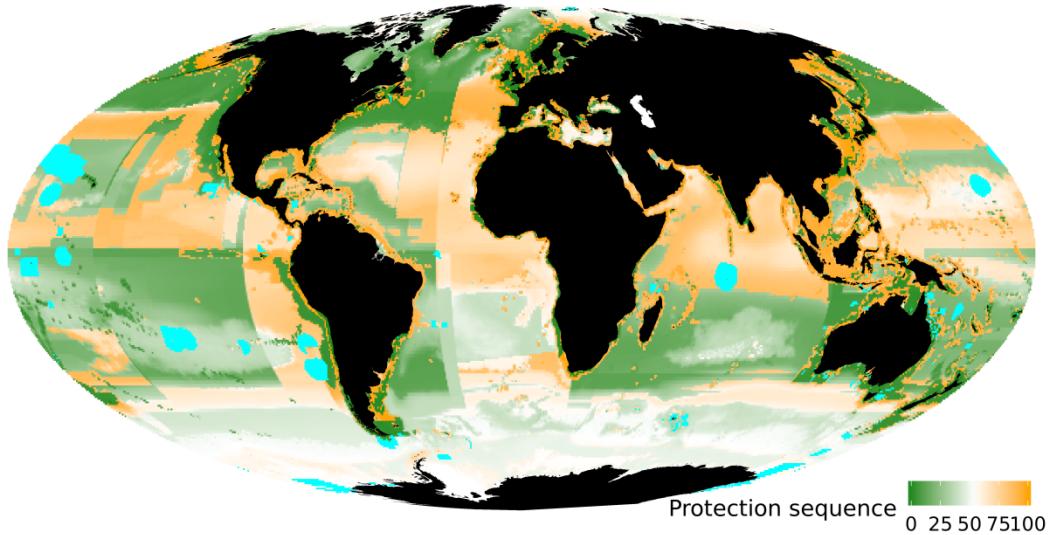


Fig. S3. Globally optimized marine protected area (MPA) network for food using the collapse scenario for future fisheries. The color ramp indicates the relative importance of each pixel in an optimal, globally coordinated MPA network. Green indicates positive marginal change in ΔH , and orange indicates negative marginal change in ΔH , with white marking the transition from positive to negative marginal change in ΔH . Areas in cyan represent current fully- or highly-protected MPAs.

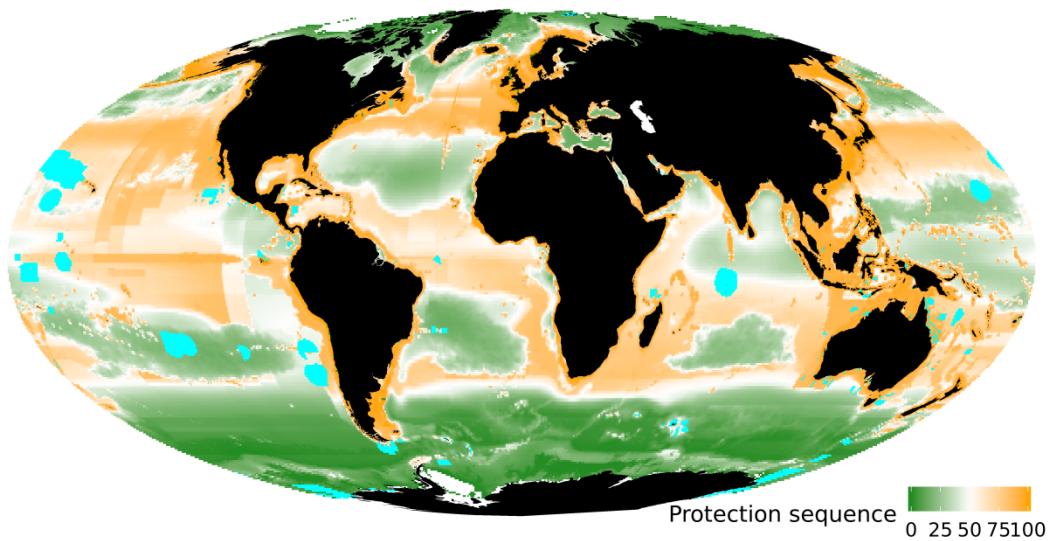


Fig. S4. Globally optimized marine protected area (MPA) network for food using the MSY scenario for future fisheries. The color ramp indicates the relative importance of each pixel in an optimal, globally coordinated MPA network. Green indicates positive marginal change in ΔH , and orange indicates negative marginal change in ΔH , with white marking the transition from positive to negative marginal change in ΔH . Areas in cyan represent current fully- or highly-protected MPAs.

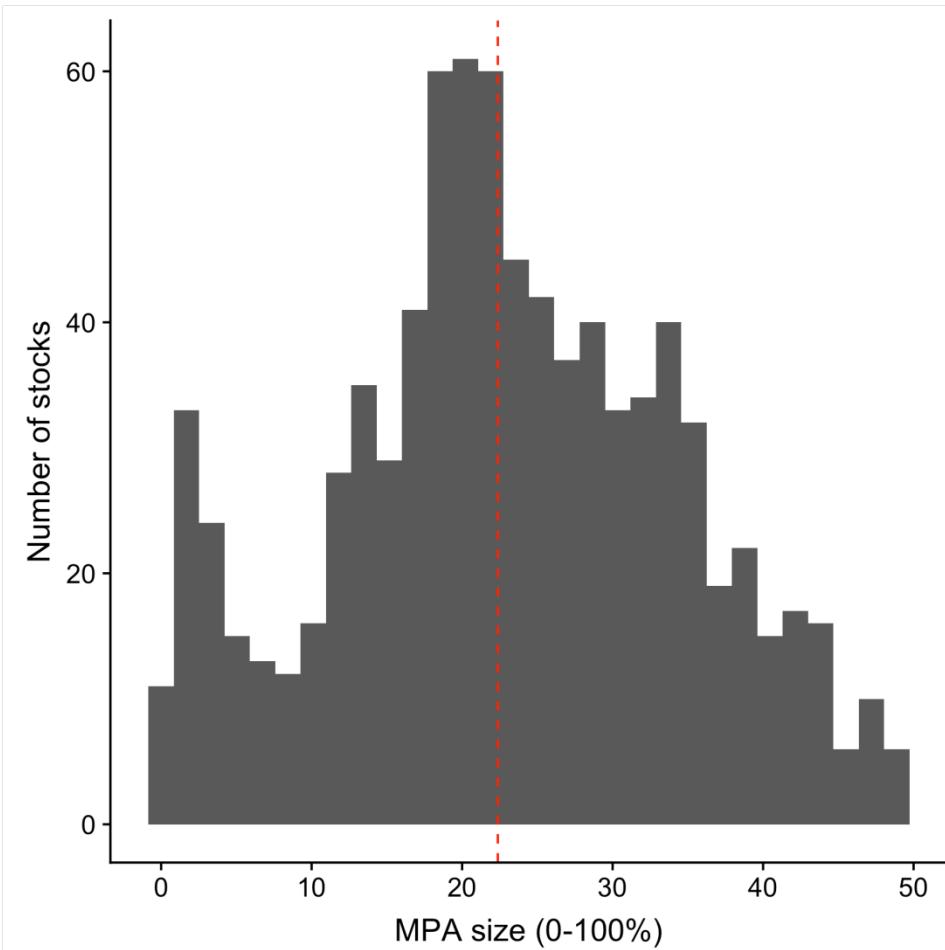


Fig. S5. Optimal sizes of marine protected areas (MPAs) for overfished stocks. The size of MPAs is defined as the proportion of the stock's range in MPAs. The median MPA size is 22.4% of the stock's range (red dashed line) while the mean is 23.0%.

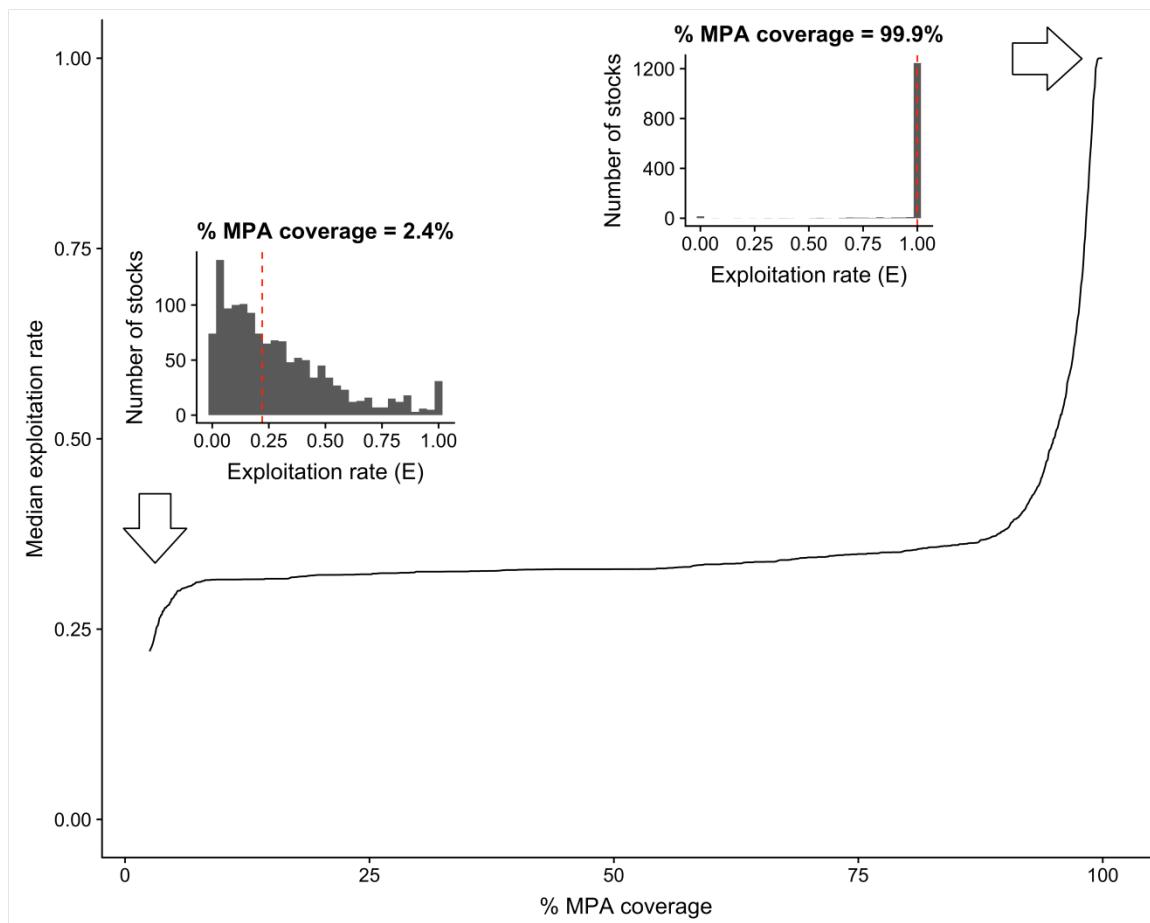


Fig. S6. Changes in the median steady-state exploitation rate (E) in fishing areas as the proportion of the global ocean in MPAs increases. The inset plots show the distribution of E at two different MPA network sizes (as indicated by the arrows): 1) Under the business-as-usual scenario where 2.4% of the global ocean is in MPAs (the median value is 2.2, indicated by the red dashed line); 2) 99.9% of the global ocean is in MPAs (the median value is 1, indicated by the red dashed line). The exploitation rate experienced by stocks in fishing areas increases as MPA size increases, because fishing effort displaces to remaining fishing areas outside MPAs.

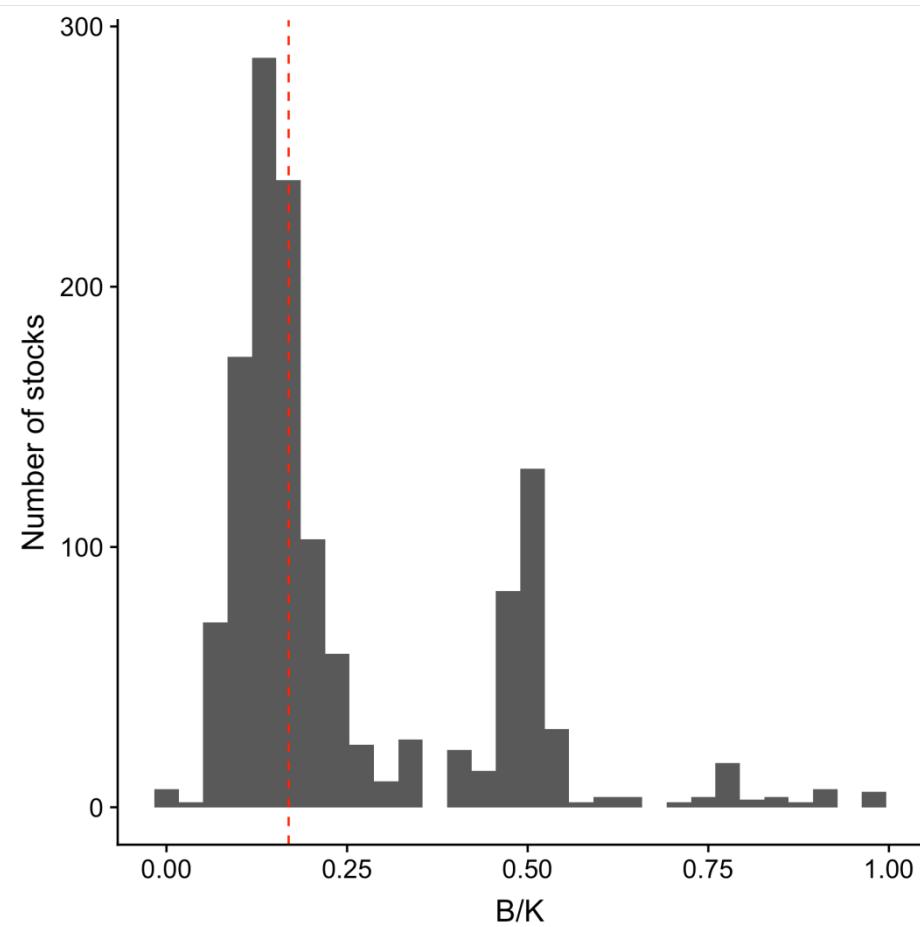


Fig. S7. Histogram of the ratio of estimated stock biomass to carrying capacity (B/K) in 2050 for the 1338 stocks included in this analysis. Data from Costello *et al.* (4). The median value (red dashed line) is 0.17.

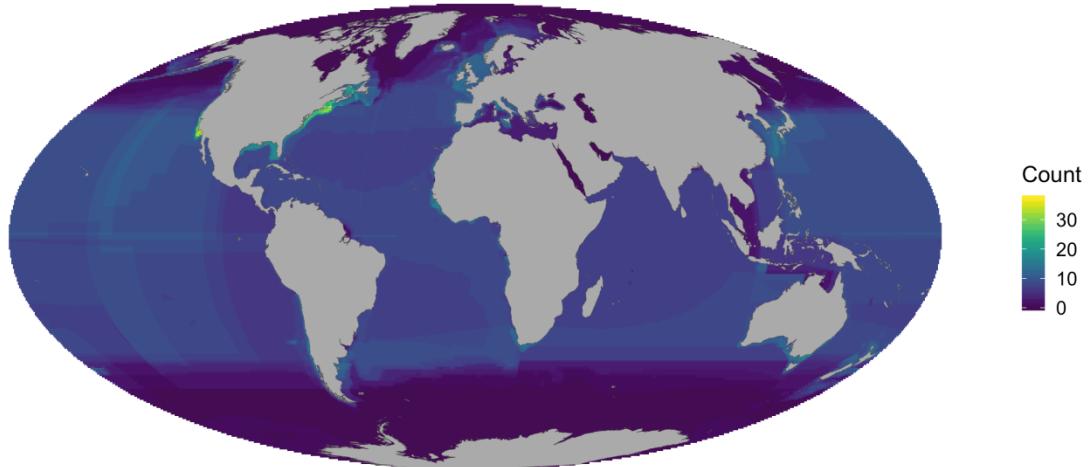


Fig. S8. Map of number of species with a stock assessment per cell (for $n=527$ managed stocks included in this analysis). Data from Free *et al.* (9).

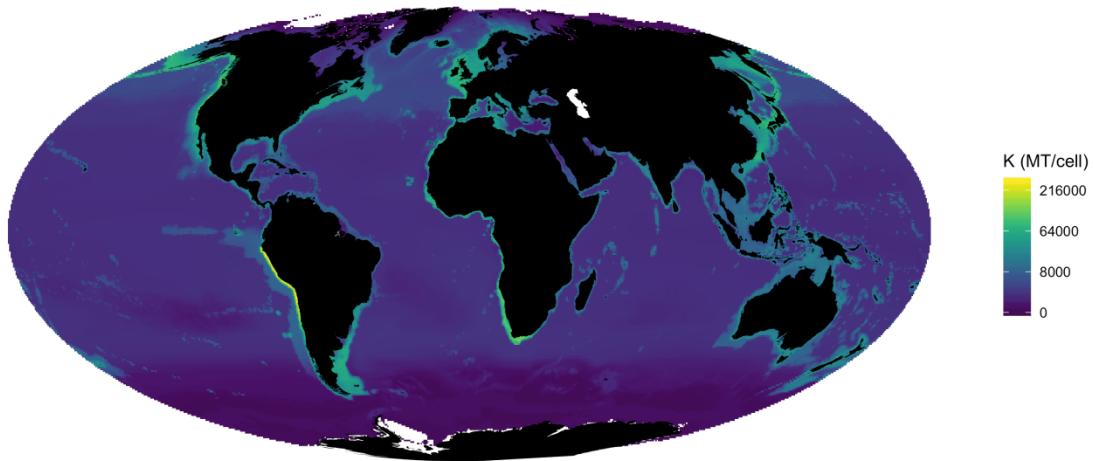


Fig. S9. Carrying capacity (K in metric tons) per cell.

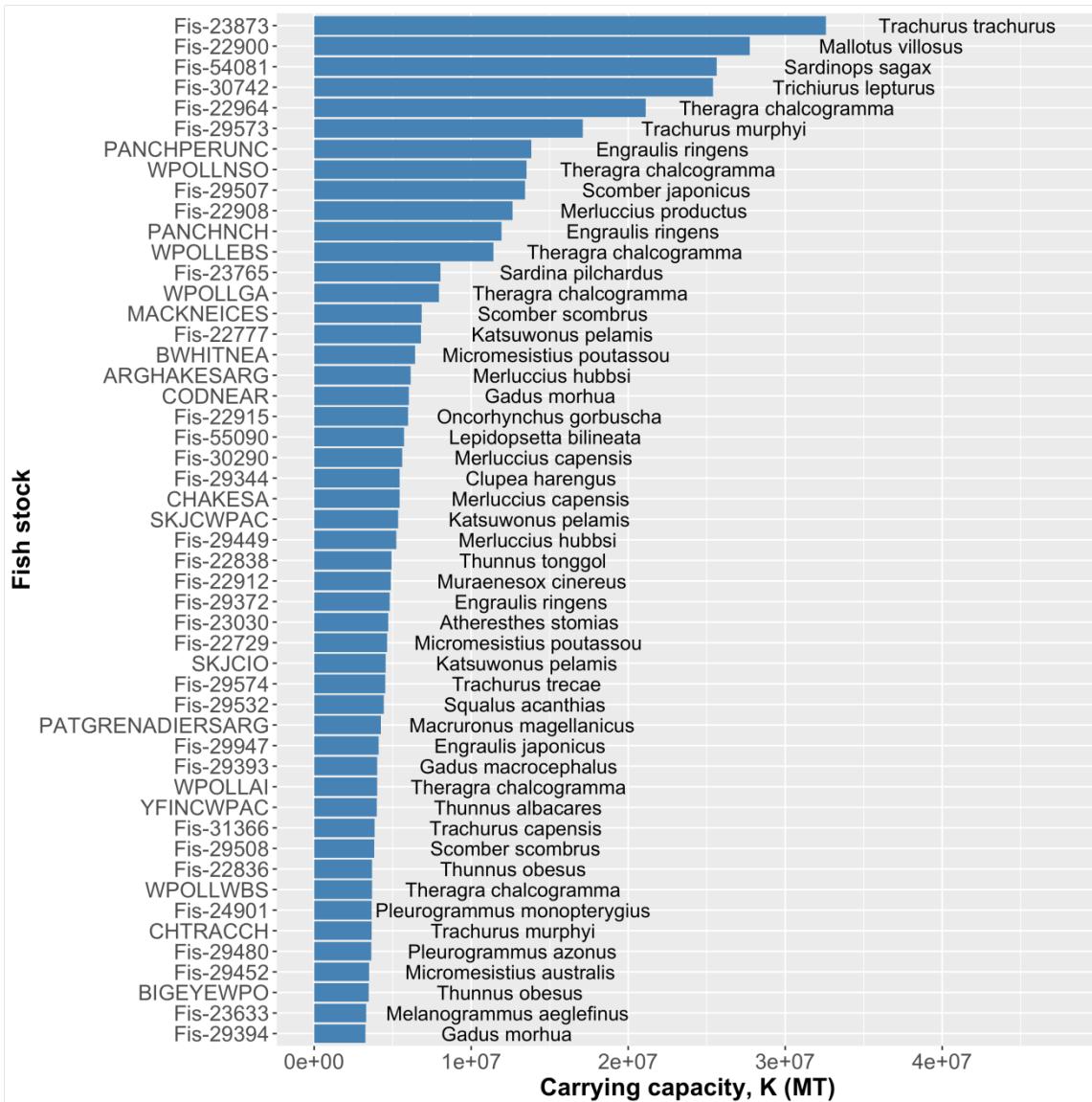


Fig. S10. Top 50 stocks (where a stock can represent the disaggregation of a species into multiple spatial units) with the highest carrying capacity (K) used in this analysis. The y-axis labels are the stock ID reported by AquaMaps or RAM with species name reported to the right of the bars.

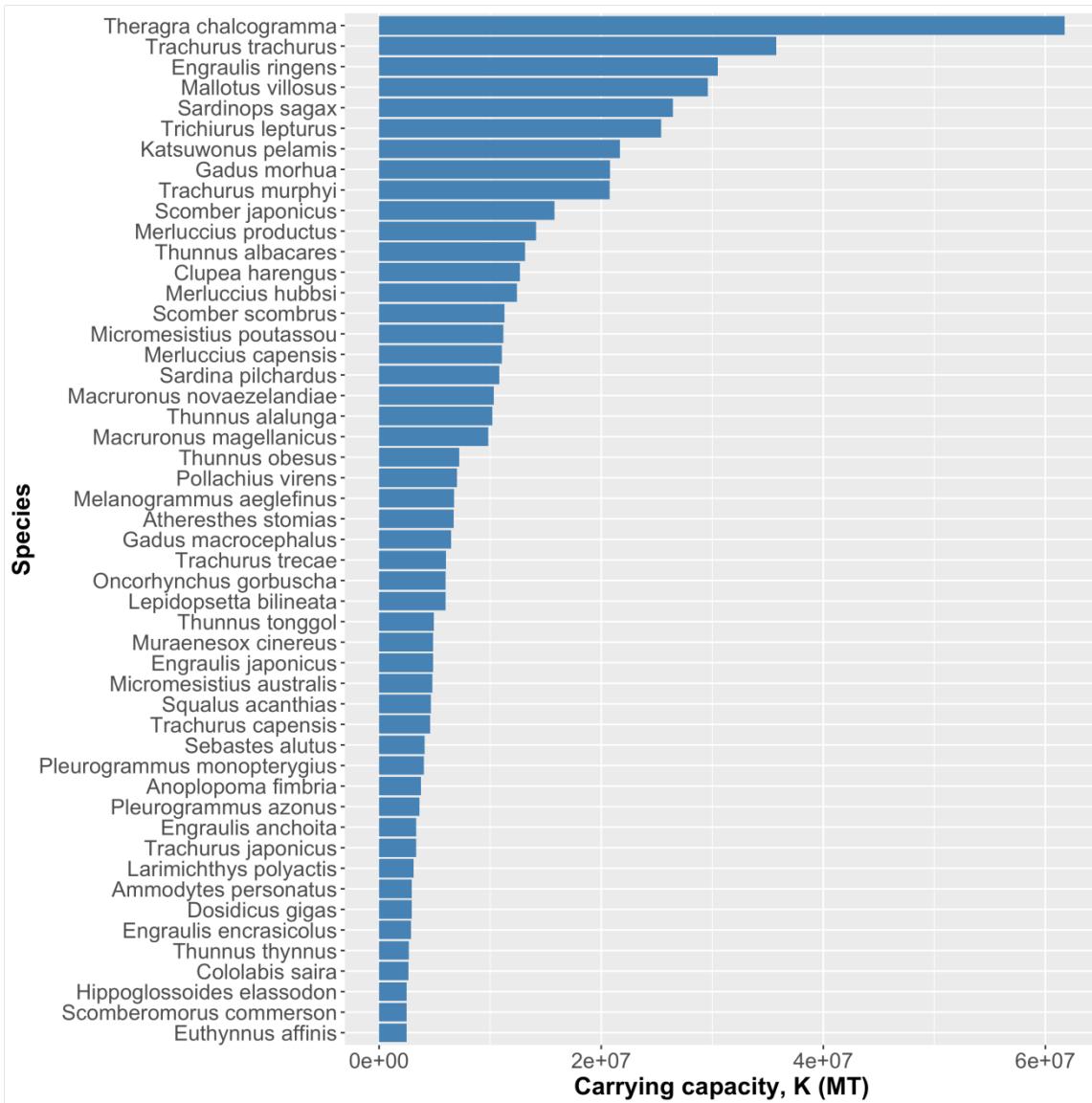


Fig. S11. Top 50 species with the highest carrying capacity (K) used in the analysis.

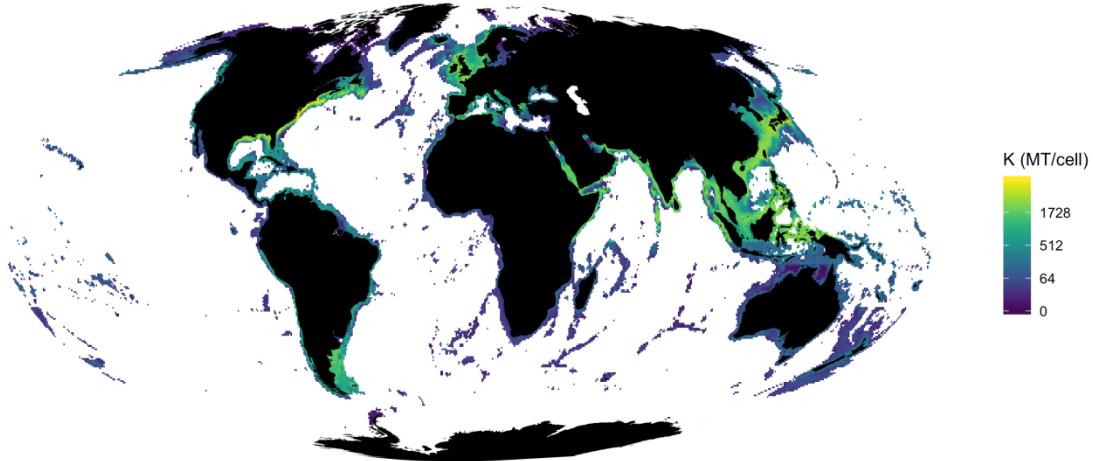


Fig. S12. Carrying capacity (K) per cell for low mobility species ($m=0.1$).

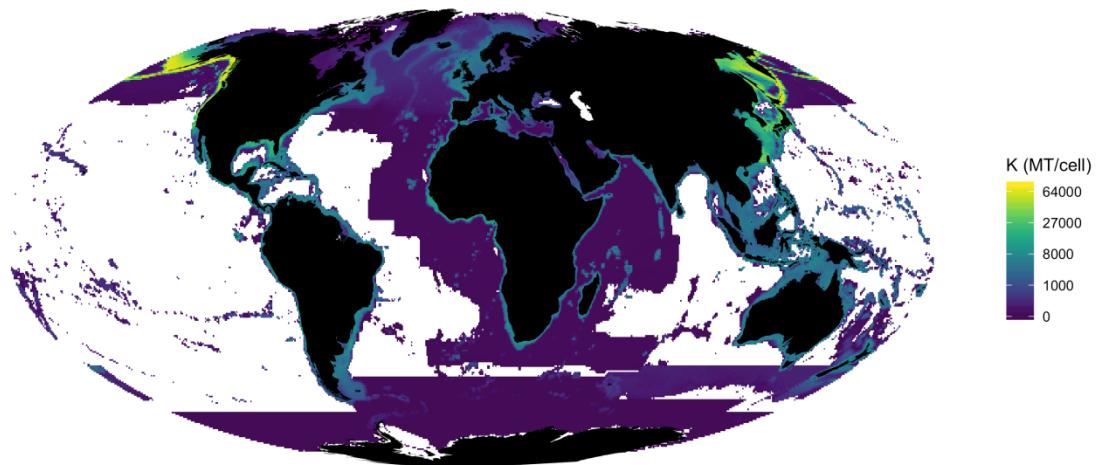


Fig. S13. Carrying capacity (K) per cell for moderate mobility species ($m=0.3$).

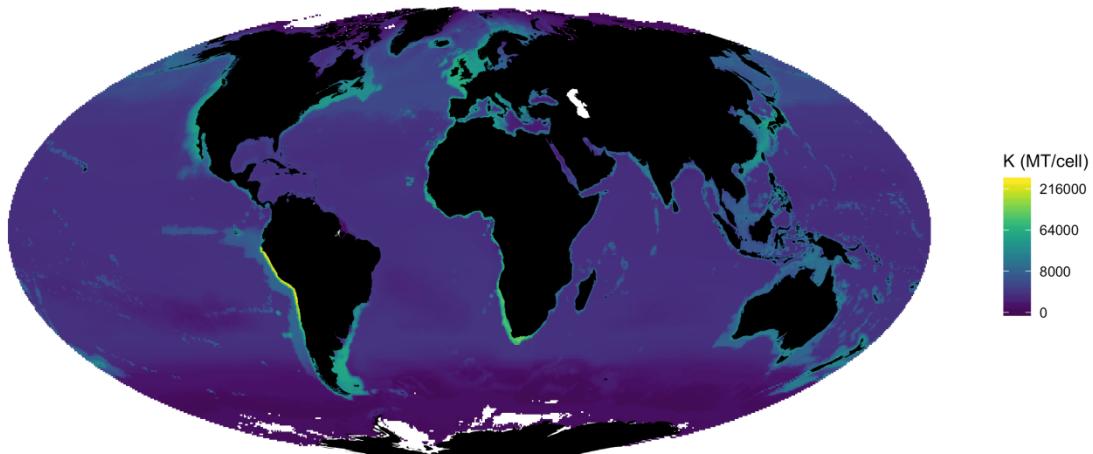


Fig. S14. Carrying capacity (K) per cell for high mobility species ($m=0.9$).

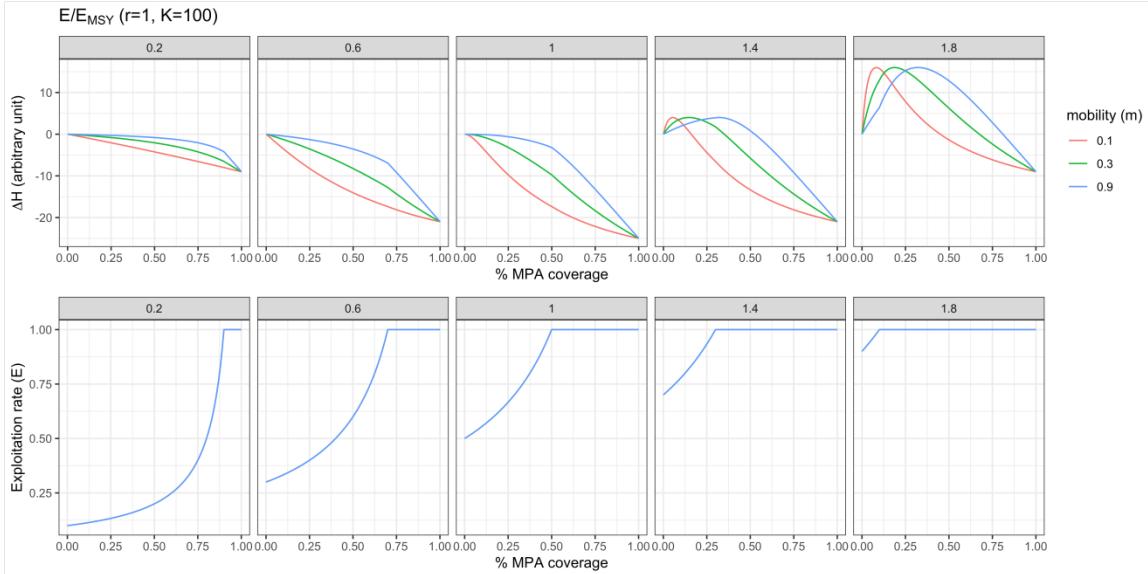


Fig. S15. The top panels show the change in food provisioning (ΔH) as a function of the proportion of the global ocean in an MPA (% MPA coverage). The condition of the fishery under a no MPA case is also varied, i.e., underfished fishery ($E/E_{MSY}=0.2$ and 0.6), fishery harvested at MSY ($E/E_{MSY}=1$), and overfished fishery ($E/E_{MSY} = 1.4$ and 1.6). Results are shown for each level of species mobility. ΔH is only positive in overfished fisheries (top right panels) at some levels of protection; ΔH is always negative in underfished fisheries and those harvested at MSY. The bottom panels show the change in exploitation rate (E) as a function of the proportion of the global ocean in an MPA (% MPA coverage). The exploitation rate in fished area increases as the size of the MPA increases due to the transfer of effort from the MPA to the fished area. Note, the exploitation rate is insensitive to species mobility. For all simulations, growth rate $r=1$ and carrying capacity $K=100$. This figure is used to illustrate the dynamics of our model and the units are arbitrary.

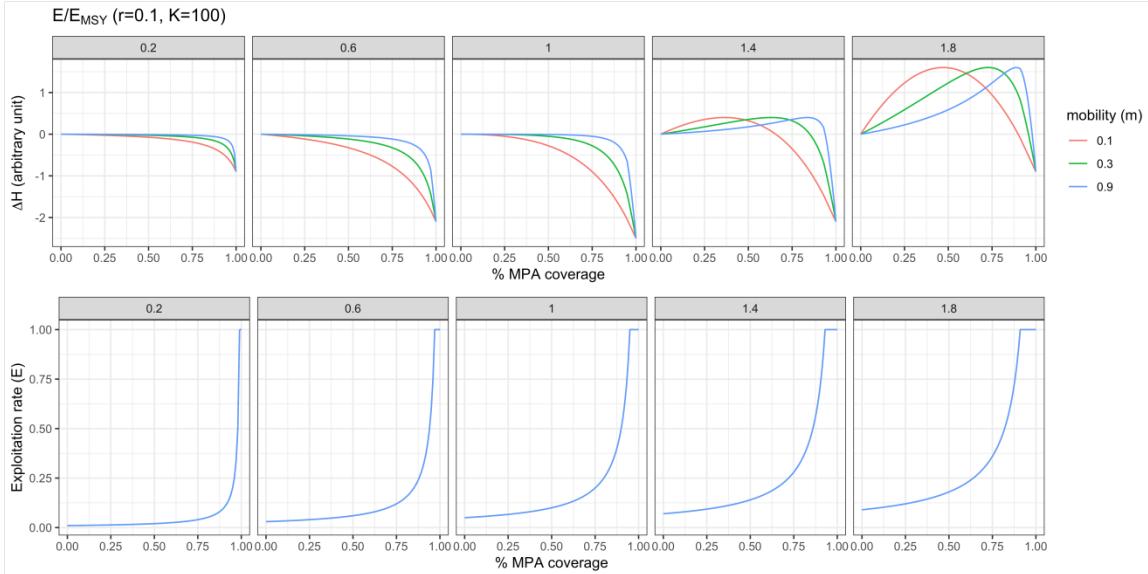


Fig. S16. The top panels show the change in food provisioning (ΔH) as a function of the proportion of the global ocean in an MPA (% MPA coverage). The condition of the fishery under a no MPA case is also varied, i.e., underfished fishery ($E/E_{MSY}=0.2$ and 0.6), fishery harvested at MSY ($E/E_{MSY}=1$), and overfished fishery ($E/E_{MSY}=1.4$ and 1.6). Results are shown for each level of species mobility. ΔH is only positive in overfished fisheries (top right panels) at some levels of protection; ΔH is always negative in underfished fisheries and those harvested at MSY. The bottom panels show the change in exploitation rate (E) as a function of the proportion of the global ocean in an MPA (% MPA coverage). The exploitation rate in fished area increases as the size of the MPA increases due to the transfer of effort from the MPA to the fished area. Note, the exploitation rate is insensitive to species mobility. For all simulations, growth rate $r=0.1$ and carrying capacity $K=100$. This figure is used to illustrate the dynamics of our model and the units are arbitrary.

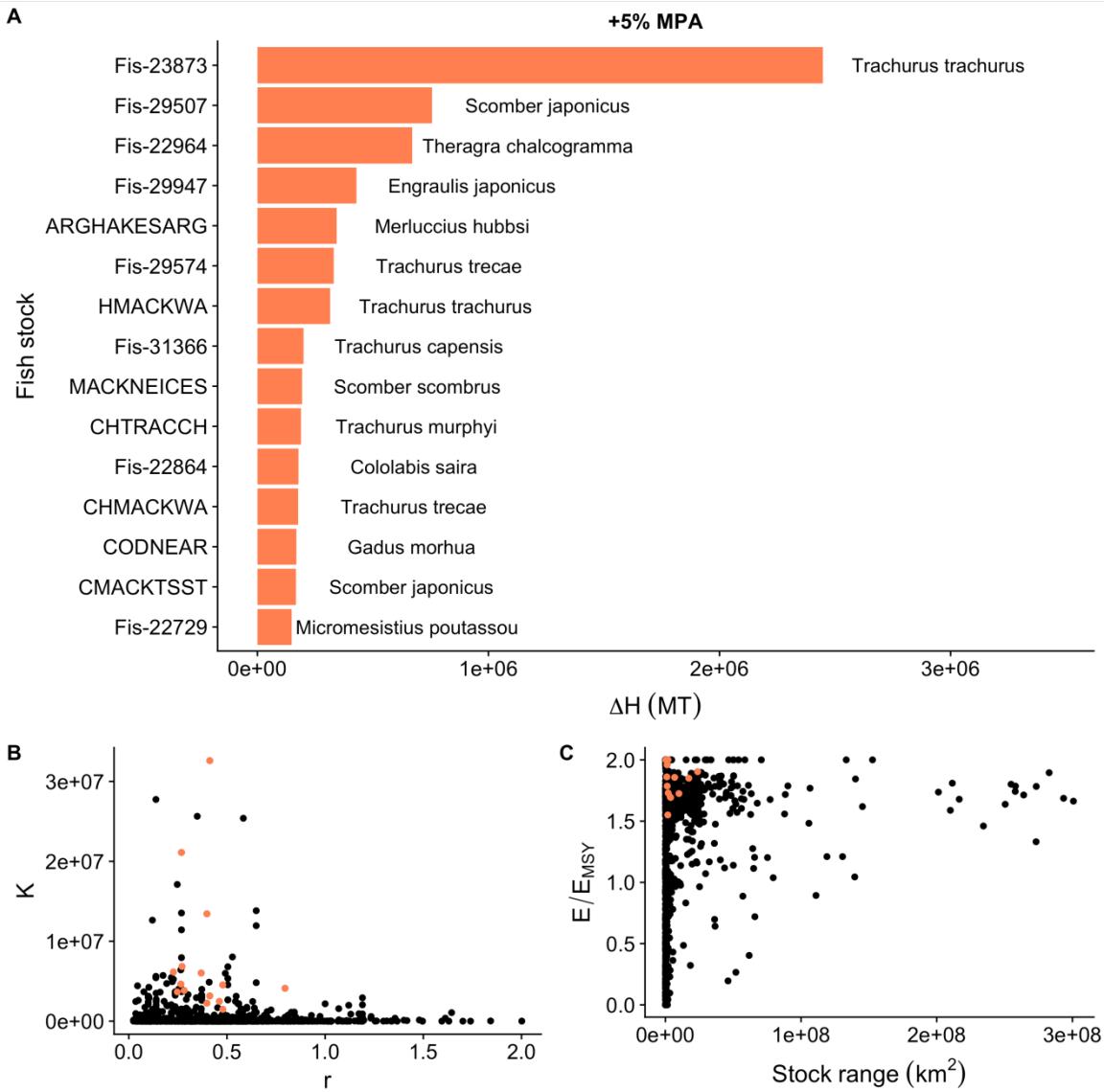


Fig. S17. Increase in food provisioning potential of individual fish stocks from strategically protecting an additional 5% of the global ocean. (A) Top 15 stocks that will experience the largest increase in food provisioning potential from additional protection along with the species name. (B) r and K values and (C) Stock ranges and exploitation rates of the top 15 stocks (orange) along with values for the rest of the stocks considered in our model (black).

Table S1. Mobility (m) categorization assigned to species in the analysis (note: scales of movement considered for adults only).

Mobility	Maximum linear distance
$m=0.1$	<1 km
$m=0.3$	1-50 km
$m=0.9$	>50 km

Table S2. Mobility classifications, descriptions, and keywords used to assign the three mobility categories used in the analysis.

Mobility	Classification	Description	FishBase/SealifeBase/FAO/IUCN keywords
$m=0.1$	sedentary	adults are sessile (e.g., barnacle), burrow (e.g., worms and mollusks), burrow/crawl/attached with limited movement (e.g., sea cucumber); sensu Welch (18)	"sessile"; "burrow"; "limited movement"; "sedentary"; "home ranging"
	territorial	adults are territorial with limited territory size	"territorial"; "home ranging"
$m=0.3$	habitat_reef	adults are associated with reef habitat (coral reef, rocky reef); generally found in coastal waters	"coral"; "rock"; "reef"; "inshore reef"; "associated with reefs"; "reef-associated"
	habitat_coastal	adults are associated with non-reef coastal waters (lagoons, estuaries, rivermouths, seagrass beds)	"coastal"; "inshore"; "lagoon"; "brackish waters"; "seagrass beds"; "continental shelf"; "pelagic inshore"
$m=0.9$	habitat_benthic	adults are associated with the benthos	"sandy bottom"; "benthic"; "mud"; "demersal"
	habitat_deep	adults are associated with deep ocean habitat (>100 m)	"deep water"; "outer continental shelves and upper slopes"; "bathydemersal"; "benthopelagic"
$m=0.9$	hms	adults are highly migratory species	"highly migratory species"
	migratory	adults undergo regular migrations >50 km	"strongly migratory"; "extensive migrations"; "migrant"
	pelagic	adults move throughout the pelagic zone	"pelagic"; "oceanic"; "open sea"; "offshore"; "free-living"
	deep	adults are transient at depths >100 m	"bottom browser"

Table S3. Growth rate (r) and mobility categorization (m) per species used in our model. The common name of the species is derived from FishBase. See Table S2 for the mobility classification. Movement sources are from FishBase (FB), SeaLifeBase (SLB), FAO, IUCN, or from other references as cited (REF).

	Scientific name	Family	Common name	Growth rate (r)	Mobility (m)	Mobility classification	Movement source	Movement information notes and references
1	<i>Beryx splendens</i>	Berycidae	Splendid alfonsino	0.242	0.3	habitat_deep	FB	FB: "Adults inhabit the outer shelf (180 m) and slope to at least 1,300 m depth, probably moving further from the bottom at night; often found over seamounts (Ref. 9833) and underwater ridges (Ref. 33648)."
2	<i>Thunnus alalunga</i>	Scombridae	Albacore	0.139	0.9	hms	FB	
3	<i>Hippoglossoides platessoides</i>	Pleuronectidae	American plaice	0.145	0.3	habitat_benthic	FB	
4	<i>Engraulis encrasicolus</i>	Engraulidae	European anchovy	0.557	0.9	migratory	FB	FB: "Tends to move further north and into surface waters in summer, retreating and descending in winter."
5	<i>Lophius budegassa</i>	Lophiidae	Blackbelled angler	0.403	0.3	habitat_benthic	FB	
6	<i>Theragra chalcogramma</i>	Gadidae	Alaska pollock	0.268	0.3	habitat_deep	REF	Secondary ref: (19)
7	<i>Atheresthes stomias</i>	Pleuronectidae	Arrow-tooth flounder	0.193	0.3	habitat_benthic	FB	
8	<i>Engraulis anchoita</i>	Engraulidae	Argentine anchovy	0.639	0.9	migratory	FB	FB: "Exhibits north-south and near shore-offshore migrations."
9	<i>Merluccius hubbsi</i>	Merlucciidae	Argentine hake	0.227	0.9	migratory	FB	FB: "Migrate inshore during spring and summer, and offshore into deep water wintering areas after spawning; also undertake diel vertical migrations (Ref. 1371)."
10	<i>Thunnus thynnus</i>	Scombridae	Atlantic bluefin tuna	0.082	0.9	pelagic	IUCN	
11	<i>Hippoglossus hippoglossus</i>	Pleuronectidae	Atlantic halibut	0.119	0.3	habitat_benthic	FB	
12	<i>Pleuragrammus monopterygius</i>	Hexagrammidae	Atka mackerel	0.077	0.3	habitat_coastal	FB	
13	<i>Micropogonias undulatus</i>	Sciaenidae	Atlantic croaker	0.874	0.3	habitat_coastal	FB	
14	<i>Dissostichus mawsoni</i>	Nototheniidae	Antarctic toothfish	0.104	0.9	deep	FB	
15	<i>Arripis trutta</i>	Arridae	Australian salmon	0.286	0.3	habitat_coastal	FB	FB: "Inhabit continental shelf waters including estuaries, bays and inlets (Ref. 6390). Found between depths of 30 m (Ref. 33616) and 39 m (Ref. 58489)."
16	<i>Callinectes sapidus</i>	Portunidae	blue crab	0.6	0.3	habitat_coastal	REF	"...net migratory speeds were on the order of 5 km day ⁻¹ . Ref: (20)
17	<i>Pseudotolithus elongatus</i>	Sciaenidae	Bobo croaker	0.263	0.3	habitat_coastal	FB	
18	<i>Macruronus novaezelandiae</i>	Merlucciidae	Blue grenadier	0.099	0.9	deep	FB	FB: "Migrates southward in spring and summer and northward in winter (Ref. 1371)"
19	<i>Sebastes melanostomus</i>	Sebastidae	Blackgill rockfish	0.057	0.3	habitat_deep	FB	FB: "Found on soft bottom in deep water, but young in shallower areas (Ref. 2850)."
20	<i>Brachydeuterus auritus</i>	Haemulidae	Bigeye grunt	0.674	0.3	habitat_coastal	IUCN	
21	<i>Merluccius pollii</i>	Merlucciidae	Benguela hake	0.234	0.3	habitat_deep	FB	
22	<i>Thunnus obesus</i>	Scombridae	Bigeye tuna	0.236	0.9	pelagic	IUCN	
23	<i>Epigonus telescopus</i>	Epigonidae	Black cardinal fish	0.097	0.3	habitat_deep	FB	FB: "Adults benthic or benthopelagic on the continental slopes... Non-territorial."
24	<i>Allocyttus niger</i>	Oreosomatidae	Black oreo	0.065	0.3	habitat_deep	FB	
25	<i>Sebastes melanops</i>	Sebastidae	Black rockfish	0.085	0.3	habitat_reef	FB	
26	<i>Pomatomus saltatrix</i>	Pomatomidae	Bluefish	0.525	0.9	migratory	FB	
27	<i>Sebastes mystinus</i>	Sebastidae	Blue rockfish	0.104	0.3	habitat_reef	FB	

28	<i>Scomber australasicus</i>	Scombridae	Blue mackerel	0.571	0.9	hms	FB	
29	<i>Makaira nigricans</i>	Istiophoridae	Blue marlin	0.268	0.9	hms	FB	
30	<i>Sebastes rufus</i>	Sebastidae	Bank rockfish	0.086	0.3	habitat_benthic	FB	FB: "Adults demersal and semi-pelagic (Ref. 36715)"
31	<i>Hyperoglyphe antarctica</i>	Centrolophidae	Bluenose warehou	0.181	0.3	habitat_reef	FB	
32	<i>Sebastes paucispinis</i>	Sebastidae	Boccaccio rockfish	0.106	0.3	habitat_reef	FB	
33	<i>Etmalosa fimbriata</i>	Clupeidae	Bonga shad	0.691	0.3	habitat_coastal	FB	
34	<i>Centropristes striata</i>	Serranidae	Black seabass	0.391	0.3	habitat_reef	FB	
35	<i>Carcharhinus limbatus</i>	Carcharhinidae	Blacktip shark	0.099	0.9	hms	FB	
36	<i>Peprius triacanthus</i>	Stromateidae	Atlantic butterfish	0.7	0.9	pelagic	FB	
37	<i>Micromesistius poutassou</i>	Gadidae	Blue whiting	0.265	0.9	migratory	FAO	
38	<i>Scorpaenichthys marmoratus</i>	Cottidae	Cabezon	0.322	0.3	habitat_benthic	FB	
39	<i>Mallotus villosus</i>	Osmeridae	Capelin	0.138	0.9	migratory	FB	
40	<i>Merluccius capensis</i>	Merlucciidae	Shallow-water Cape hake	0.138	0.9	migratory	FB	FB: "Migrates southward in the spring and northward in autumn (Ref. 1371)."
41	<i>Sebastes goodei</i>	Sebastidae	Chilipepper rockfish	0.093	0.3	habitat_reef	FB	
42	<i>Trachurus trecae</i>	Carangidae	Cunene horse mackerel	0.479	0.9	pelagic	FB	
43	<i>Trachurus murphyi</i>	Carangidae	Chilean jack mackerel	0.247	0.9	pelagic	FB	
44	<i>Scomber japonicus</i>	Scombridae	Chub mackerel	0.398	0.9	hms	FB	
45	<i>Gadus morhua</i>	Gadidae	Atlantic cod	0.369	0.9	migratory	FAO	FAO: "Although some groups of small cod are relatively stationary, individuals or groups may perform astonishingly long migrations."
46	<i>Pagellus erythrinus</i>	Sparidae	Common pandora	0.467	0.3	habitat_reef	FB	
47	<i>Jasus lalandii</i>	Palinuridae	Cape rock lobster	0.425	0.3	habitat_benthic	REF	Secondary ref: (21)
48	<i>Sebastes pinniger</i>	Sebastidae	Canary rockfish	0.039	0.3	habitat_reef	FB	
49	<i>Trachurus capensis</i>	Carangidae	Cape horse mackerel	0.282	0.9	pelagic	FB	
50	<i>Brosme brosme</i>	Lotidae	Tusk	0.105	0.3	habitat_benthic	FB	
51	<i>Sebastes crameri</i>	Sebastidae	Darkblotched rockfish	0.053	0.3	habitat_benthic	FB	
52	<i>Parapenaeus longirostris</i>	Penaeidae	deep-water rose shrimp	1.03	0.3	habitat_benthic	SLB	
53	<i>Microstomus pacificus</i>	Pleuronectidae	Dover sole	0.09	0.3	habitat_benthic	FB	
54	<i>Sebastes variabilis</i>	Sebastidae	NA	0.083	0.3	habitat_benthic	FB	
55	<i>Hippoglossoides elassodon</i>	Pleuronectidae	Flathead sole	0.18	0.3	habitat_benthic	FB	
56	<i>Lepidorhombus boscii</i>	Scophthalmidae	Four-spot megrim	0.513	0.3	habitat_benthic	FB	
57	<i>Caranx rhonchus</i>	Carangidae	False scad	0.643	0.3	habitat_coastal	FB	
58	<i>Mycteroperca microlepis</i>	Serranidae	Gag	0.177	0.3	habitat_reef	FB	
59	<i>Rexea solandri</i>	Gempylidae	Silver gemfish	0.235	0.3	migratory	FB	FB: "Dense schools of pre-spawners migrate along the continental slope at about 400 m during winter (Ref. 9563)."
60	<i>Phycis blennoides</i>	Phycidae	Greater forkbeard	0.397	0.9	migratory	REF	Secondary ref: (22) "Young are more coastal and found on the continental shelf while adults migrate along the slope."
61	<i>Reinhardtius hippoglossoides</i>	Pleuronectidae	Greenland halibut	0.172	0.3	habitat_benthic	FB	
62	<i>Sebastes carnatus</i>	Sebastidae	Gopher rockfish	0.086	0.1	territorial	FB	FB: "Inhabit holes or crevices in rocky areas (Ref. 2850). Territorial (Ref. 2850)"
63	<i>Seriola dumerili</i>	Carangidae	Greater amberjack	0.451	0.3	habitat_reef	FB	
64	<i>Sebastes elongatus</i>	Sebastidae	Greenstriped rockfish	0.092	0.3	habitat_benthic	FB	
65	<i>Aristaeomorpha foliacea</i>	Aristeidae	giant red shrimp	0.47	0.3	habitat_deep	SLB	
66	<i>Sebastes chlorostictus</i>	Sebastidae	Greenspotted rockfish	0.086	0.3	habitat_benthic	FB	
67	<i>Katophostoma</i>	Uranoscopidae	Giant stargazer	0.286	0.1	sedentary	FB	

	giganteum							
68	<i>Penaeus semisulcatus</i>	Penaeidae	green tiger prawn	1.18	0.9	migratory	REF	Secondary ref: (23) "Tagging studies by previous workers indicated that adults of <i>P. semisulcatus</i> also migrate offshore to deeper water as they mature (FAO, 1980; Farmer and Al-Attar, 1981; Muhammad et al., 1981; Somers and Kirkwood, 1984)"
69	<i>Melanogrammus aeglefinus</i>	Gadidae	Haddock	0.302	0.9	migratory	FB	
70	<i>Merluccius merluccius</i>	Merlucciidae	European hake	0.31	0.3	habitat_deep	FB	
71	<i>Clupea harengus</i>	Clupeidae	Atlantic herring	0.216	0.9	migratory	FB	FB: "Herring schools move between spawning and wintering grounds in coastal areas and feeding grounds in open water by following migration patterns learned from earlier year classes (Ref. 88171)."
72	<i>Clupea pallasii</i>	Clupeidae	Pacific herring	0.56	0.3	habitat_coastal	FB	FB: "non-migratory"
73	<i>Trachurus trachurus</i>	Carangidae	Atlantic horse mackerel	0.412	0.9	pelagic	FB	
74	<i>Illex illecebrosus</i>	Ommastrephidae	northern shortfin squid	0.76	0.9	pelagic	IUCN	
75	<i>Engraulis japonicus</i>	Engraulidae	Japanese anchovy	0.796	0.9	pelagic	FB	FB: "Occurs in large schools near the surface, mainly in coastal waters but as far out as over 1,000 km from the shore."
76	<i>Trachurus japonicus</i>	Carangidae	Japanese jack mackerel	0.601	0.9	pelagic	FB	
77	<i>Hexagrammos decagrammus</i>	Hexagrammidae	Kelp greenling	0.341	0.3	habitat_reef	FB	
78	<i>Genypterus capensis</i>	Ophidiidae	Kingklip	0.182	0.3	habitat_benthic	FB	
79	<i>Scomberomorus cavalla</i>	Scombridae	King mackerel	0.423	0.9	hms	FB	FB: "Large schools have been found to migrate over considerable distances along the Atlantic US coast, water temperature permitting."
80	<i>Dentex macrophthalmus</i>	Sparidae	Large-eye dentex	0.46	0.3	habitat_coastal	FB	
81	<i>Ophiodon elongatus</i>	Hexagrammidae	Lingcod	0.143	0.9	migratory	FB	FB: "Both migratory and non-migratory populations exist (Ref. 6885)."
82	<i>Raja rhina</i>	Rajidae	Longnose skate	0.068	0.3	habitat_benthic	FB	
83	<i>Homarus americanus</i>	Nephropidae	American lobster	0.57	0.3	habitat_benthic	SLB	SLB: "Migration does not occur, or only to a limited scale (Ref. 4)."
84	<i>Sebastolobus altivelis</i>	Sebastidae	Longspine thornyhead	0.095	0.3	habitat_deep	REF	Secondary ref: (24)
85	<i>Scomber scombrus</i>	Scombridae	Atlantic mackerel	0.271	0.9	hms	FB	FB: "They overwinter in deeper waters but move closer to shore in spring when water temperatures range between 11° and 14°C."
86	<i>Lepidorhombus whiffagonis</i>	Scophthalmidae	Megrim	0.443	0.3	habitat_benthic	FB	
87	<i>Brevoortia patronus</i>	Clupeidae	Gulf menhaden	0.843	0.3	habitat_coastal	FAO	
88	<i>Brevoortia tyrannus</i>	Clupeidae	Atlantic menhaden	0.724	0.9	migratory	FAO	FAO: "north/south migrations (spring and summer versus autumn) occur"
89	<i>Trachurus mediterraneus</i>	Carangidae	Mediterranean horse mackerel	0.393	0.9	pelagic	FB	
90	<i>Lophius americanus</i>	Lophiidae	American angler	0.343	0.3	habitat_benthic	FB	
91	<i>Nemadactylus macropterus</i>	Cheilodactylidae	Tarakiki	0.107	0.3	habitat_coastal	REF	Secondary ref: (25)
92	<i>Mugil cephalus</i>	Mugilidae	Flathead grey mullet	0.277	0.3	habitat_coastal	FB	
93	<i>Nephrops norvegicus</i>	Nephropidae	Norway lobster	0.52	0.1	sedentary	SLB	SLB: "Sedentary (Ref. 94799). Inhabits muddy bottoms in which it digs its

								burrows." "Burrowing." Ref: (26)
94	<i>Trisopterus esmarkii</i>	Gadidae	Norway pout	0.616	0.9	migratory	FAO	FAO: "Migrates for spawning between the Shetland Islands and Norway and out of the Skagerrak, the major spawning grounds being located between NW Scotland, Norway, Faeroe Islands and Iceland."
95	<i>Sebastes polypinus</i>	Sebastidae	Northern rockfish	0.05	0.3	habitat_benthic	FB	
96	<i>Genypterus blacodes</i>	Ophidiidae	Pink cusk-eel	0.131	0.3	habitat_benthic	FB	
97	<i>Octopus vulgaris</i>	Octopodidae	common octopus	0.81	0.3	habitat_reef	SLB	
98	<i>Paralichthys olivaceus</i>	Paralichthyidae	Bastard halibut	0.874	0.3	habitat_benthic	FAO	
99	<i>Hoplostethus atlanticus</i>	Trachichthyidae	Orange roughy	0.161	0.1	sedentary	FB	FB: "Based on parasite and trace-element analyses, orange roughy is a sedentary species with little movement between fish-management zones (Ref. 27089)"
100	<i>Thunnus orientalis</i>	Scombridae	Pacific bluefin tuna	0.192	0.9	hms	FB	
101	<i>Engraulis ringens</i>	Engraulidae	Anchoveta	0.649	0.9	pelagic	FB	
102	<i>Pandalus borealis</i>	Pandalidae	northern shrimp	0.58	0.9	deep	REF	Secondary ref: (27)
103	<i>Macruronus magellanicus</i>	Merlucciidae	Patagonian grenadier	0.102	0.9	migratory	REF	Secondary ref: (28)
104	<i>Gadus macrocephalus</i>	Gadidae	Pacific cod	0.255	0.3	habitat_deep	FAO	FAO: "Pacific cod does not undertake migrations as extensive as the Atlantic species but moves only for short distances, such as to and from the shore, or from one bank to the other within a limited region."
105	<i>Sebastes alutus</i>	Sebastidae	Pacific ocean perch	0.048	0.3	habitat_benthic	FB	
106	<i>Panopea generosa</i>	Hiatellidae	Pacific geoduck	0.37	0.1	sedentary	SLB	
107	<i>Merluccius productus</i>	Merlucciidae	North Pacific hake	0.12	0.9	migratory	FB	FB: "Adults live in large schools in waters overlying the continental shelf and slope except during the spawning season when they are found several hundred miles seaward (Ref. 1371)."
108	<i>Pleuronectes platessa</i>	Pleuronectidae	European plaice	0.26	0.9	migratory	FB	
109	<i>Pollachius virens</i>	Gadidae	Saithe	0.293	0.9	migratory	FAO	FAO: "Migrations are known to occur, especially for spawning, to coastal waters in spring and to deeper waters in winter."
110	<i>Lamna nasus</i>	Lamnidae	Porbeagle	0.044	0.9	migratory	FB	
111	<i>Trisopterus minutus</i>	Gadidae	Poor cod	0.709	0.3	habitat_benthic	FB	
112	<i>Eopsetta jordani</i>	Pleuronectidae	Petrale sole	0.113	0.3	habitat_benthic	FB	
113	<i>Dissostichus eleginoides</i>	Nototheniidae	Patagonian toothfish	0.107	0.9	deep	FB	
114	<i>Pagrus major</i>	Sparidae	Red seabream	0.389	0.3	habitat_reef	FB	
115	<i>Pagellus bogaraveo</i>	Sparidae	Blackspot seabream	0.318	0.3	habitat_reef	FB	
116	<i>Chaceon quinquedens</i>	Geryonidae	red deepsea crab	0.42	0.3	habitat_benthic	SLB	
117	<i>Aristeus antennatus</i>	Aristeidae	blue and red shrimp	0.48	0.3	habitat_deep	SLB	
118	<i>Glyptocephalus zachirus</i>	Pleuronectidae	Rex sole	0.187	0.3	habitat_benthic	FB	
119	<i>Sebastes aleutianus</i>	Sebastidae	Rougheye rockfish	0.038	0.3	habitat_benthic	FB	
120	<i>Epinephelus morio</i>	Serranidae	Red grouper	0.215	0.3	habitat_benthic	FB	
121	<i>Mullus barbatus</i>	Mullidae	Red mullet	0.68	0.3	habitat_benthic	FB	
122	<i>Cancer irroratus</i>	Cancridae	rock crab	0.46	0.1	sedentary	SLB	
123	<i>Pagellus bellottii</i>	Sparidae	Red pandora	0.678	0.3	habitat_reef	FB	
124	<i>Jasus edwardsii</i>	Palinuridae	red rock lobster	0.52	0.3	habitat_benthic	REF	Secondary ref: (29) "Of 32 large spiny lobsters tracked with acoustic tags for 14-355 days in north-east New Zealand, 25 moved detectable distances (>0.1 km) from their tag site while

								being monitored. Individual lobsters moved up to 12.3 km over a 12-month period but the furthest distance from a tagging site was only 3.1 km."
125	<i>Sardinella aurita</i>	Clupeidae	Round sardinella	0.674	0.3	habitat_coastal	IUCN	IUCN: "This pelagic species schools in subtropical coastal waters from inshore to the shelf edge."
126	<i>Lutjanus campechanus</i>	Lutjanidae	Northern red snapper	0.354	0.3	habitat_reef	FB	
127	<i>Lepidopsetta bilineata</i>	Pleuronectidae	Rock sole	0.174	0.3	habitat_benthic	FB	
128	<i>Anoplopoma fimbria</i>	Anoplopomatidae	Sablefish	0.035	0.9	deep	FB	FB: "Generally localized, but some juveniles have been found to migrate over 2,000 miles in 6 or 7 years (Ref. 28499)."
129	<i>Istiophorus albicans</i>	Istiophoridae	Atlantic sailfish	0.578	0.9	hms	FB	
130	<i>Sardinops sagax</i>	Clupeidae	South American pilchard	0.349	0.9	migratory	FB	FB: "In the California region, pilchards make northward migrations early in summer and travel back south again in autumn. With each year of life, the migration becomes farther (Ref. 6885)."
131	<i>Sardina pilchardus</i>	Clupeidae	European pilchard	0.528	0.9	pelagic	FAO	FAO: "Breeds at 20 to 25 m, near the shore or as much as 100 km out to sea"
132	<i>Cololabis saira</i>	Scomberesocidae	Pacific saury	0.461	0.9	pelagic	FAO	FAO: "migrates seasonally to southern Japan and adjacent waters in winter, and Hokkaido and the Kuril Islands in summer."
133	<i>Sebastes jordani</i>	Sebastidae	Shortbelly rockfish	0.096	0.3	habitat_benthic	FB	
134	<i>Thunnus maccoyii</i>	Scombridae	Southern bluefin tuna	0.102	0.9	hms	FB	
135	<i>Micromesistius australis</i>	Gadidae	Southern blue whiting	0.139	0.9	migratory	FAO	FAO: "In warm summers, the population of the Falkland/Malvinas current (on the Patagonian shelves of Argentina and southern Chile) migrates southward to S. Georgia, S. Shetland Islands, Elephant Island and the northern part of the Antarctic Peninsula."
136	<i>Placopecten magellanicus</i>	Pectinidae	deep sea scallop	0.56	0.1	sedentary	SLB	
137	<i>Stenotomus chrysops</i>	Sparidae	Scup	0.348	0.3	habitat_reef	FB	
138	<i>Squalus acanthias</i>	Squalidae	Picked dogfish	0.044	0.9	migratory	FB	FB: "Transoceanic migrations recorded, but rare (Ref. 88864)."
139	<i>Paralichthys dentatus</i>	Paralichthyidae	Summer flounder	1.336	0.3	habitat_benthic	FB	
140	<i>Isurus oxyrinchus</i>	Lamnidae	Shortfin mako	0.09	0.9	migratory	FB	
141	<i>Merluccius bilinearis</i>	Merlucciidae	Silver hake	0.154	0.9	migratory	FB	FB: "Exhibits seasonal onshore-offshore migration (Ref. 9988)."
142	<i>Seriola punctata</i>	Centrolophidae	Silver warehou	0.261	0.9	migratory	FB	FB: "During spring-summer in New Zealand, adult and juvenile fish migrate to feed along the continental slope off the east and southeast coast of the South Island (Ref. 9072)."
143	<i>Katsuwonus pelamis</i>	Scombridae	Skipjack tuna	0.504	0.9	pelagic	IUCN	
144	<i>Pseudocyttus maculatus</i>	Oreosomatidae	Smooth oreo dory	0.11	0.3	habitat_deep	FB	
145	<i>Squilla mantis</i>	Squillidae	spottail mantis shrimp	0.56	0.1	sedentary	SLB	
146	<i>Mullus surmuletus</i>	Mullidae	Surmullet	0.656	0.3	habitat_benthic	FB	
147	<i>Chionoecetes opilio</i>	Oregoniidae	snow crab	0.58	0.3	habitat_benthic	SLB	
148	<i>Sebastes diploproa</i>	Sebastidae	Splitnose rockfish	0.086	0.3	habitat_benthic	FB	
149	<i>Solea solea</i>	Soleidae	Common sole	0.314	0.3	habitat_benthic	FB	
150	<i>Merluccius australis</i>	Merlucciidae	Southern hake	0.056	0.9	migratory	FB	FB: "Adults probably migrate

								southward during the southern summer for feeding and return to the north in winter for spawning (Ref. 1371)"
151	<i>Scomberomorus maculatus</i>	Scombridae	Atlantic Spanish mackerel	0.553	0.9	hms	FB	FB: "Migrates in large schools over great distances along the shore."
152	<i>Scomberomorus niphonius</i>	Scombridae	Japanese Spanish mackerel	0.526	0.9	hms	FB	FB: "Undergoes a spawning migration in spring (March to June) and a feeding migration in fall (September to November) in the Inland Sea of Japan."
153	<i>Merluccius gayi</i>	Merlucciidae	South Pacific hake	0.418	0.9	migratory	FB	FAO: "Moves to southern coastal areas in summer and migrates to northern deeper waters (200-500 m depth) in winter and spring (Ref. 27363)."
154	<i>Sprattus sprattus</i>	Clupeidae	European sprat	0.476	0.9	migratory	FAO	FAO: "Some spawning almost throughout the year, near to the coast or up to 100 km out to sea"
155	<i>Squalus suckleyi</i>	Squalidae	Pacific spiny dogfish	0.024	0.9	migratory	FB	FB: "It appears to prefer water temperatures between 7 and 15°C, and often makes longitudinal and depth migrations to follow this temperature preference (Ref. 48844)."
156	<i>Palinurus gilchristi</i>	Palinuridae	Southern spiny lobster	0.22	0.3	habitat_benthic	REF	Secondary ref: (30) "Overall, 547 (25.8%) tagged lobsters of both sexes moved >20 km within or between sites."
157	<i>Sebastolobus alascanus</i>	Sebastidae	Shortspine thornyhead	0.054	0.3	habitat_benthic	FB	bathydemersal
158	<i>Platichthys stellatus</i>	Pleuronectidae	Starry flounder	0.256	0.3	habitat_benthic	IUCN	
159	<i>Morone saxatilis</i>	Moronidae	Striped bass	0.255	0.3	habitat_coastal	FB	
160	<i>Spisula solidissima</i>	Mactridae	Atlantic surfclam	0.47	0.1	sedentary	SLB	
161	<i>Xiphias gladius</i>	Xiphiidae	Swordfish	0.316	0.9	hms	FB	
162	<i>Raja clavata</i>	Rajidae	Thornback ray	0.066	0.3	habitat_benthic	FB	
163	<i>Galeoides decadactylus</i>	Polynemidae	Lesser African threadfin	0.51	0.3	habitat_coastal	FB	
164	<i>Lopholatilus chamaeleonticeps</i>	Malacanthidae	Great northern tilefish	0.145	0.1	sedentary	IUCN	IUCN: "This bottom dwelling species occurs mostly on silt-clay substrate and is more common where there is suitable substrate for burrow construction, such as scour depressions around boulders or rubble piles; also often near submarine canyons (Valentine et al. 1980, Able et al. 1982, Low and Ulrich 1983, Grossman et al. 1985)."
165	<i>Pseudocaranx dentex</i>	Carangidae	White trevally	0.382	0.3	habitat_coastal	FB	
166	<i>Rhomboplites aurorubens</i>	Lutjanidae	Vermilion snapper	0.393	0.3	habitat_reef	FB	or habitat_deep
167	<i>Seriola brama</i>	Centrolophidae	Common warehou	0.25	0.3	habitat_coastal	FB	
168	<i>Cynoscion regalis</i>	Sciaenidae	Squeteague	0.331	0.3	habitat_coastal	FB	
169	<i>Urophycis tenuis</i>	Phycidae	White hake	0.178	0.9	migratory	REF	Secondary ref: (31) "Mature <i>U. tenuis</i> migrate inshore in the northern Gulf of Maine in the summer, disperse in the fall, and move into the deepest area of the Gulf in winter."
170	<i>Merlangius merlangus</i>	Gadidae	Whiting	0.396	0.9	migratory	FB	
171	<i>Scophthalmus aquosus</i>	Scophthalmidae	Windowpane flounder	0.592	0.3	habitat_benthic	FB	
172	<i>Pseudopleuronectes americanus</i>	Pleuronectidae	Winter flounder	0.307	0.3	habitat_benthic	FB	
173	<i>Glyptocephalus cynoglossus</i>	Pleuronectidae	Witch flounder	0.15	0.3	habitat_benthic	FB	

174	<i>Sebastes entomelas</i>	Sebastidae	Widow rockfish	0.086	0.3	habitat_reef	FB	
175	<i>Buccinum undatum</i>	Buccinidae	waved whelk	0.57	0.1	sedentary	SLB	
176	<i>Limanda ferruginea</i>	Pleuronectidae	Yellowtail flounder	0.327	0.3	habitat_benthic	FB	
177	<i>Sebastes ruberrimus</i>	Sebastidae	Yelloweye rockfish	0.036	0.3	habitat_reef	FB	
178	<i>Thunnus albacares</i>	Scombridae	Yellowfin tuna	0.372	0.9	hms	FB	
179	<i>Zearaja chilensis</i>	Rajidae	Yellownose skate	0.037	0.3	habitat_benthic	FB	
180	<i>Limanda aspera</i>	Pleuronectidae	Yellowfin sole	0.196	0.3	habitat_benthic	FB	
181	<i>Sebastes flavidus</i>	Sebastidae	Yellowtail rockfish	0.059	0.3	habitat_reef	FB	
182	<i>Polydactylus quadrifilis</i>	Polynemidae	Giant African threadfin	0.564	0.3	habitat_coastal	FB	
183	<i>Pseudopercis semifasciata</i>	Pinguipedidae	Argentinian sandperch	0.637	0.3	habitat_benthic	FB	
184	<i>Cottoperca gobio</i>	Bovichtidae	Channel bull blenny	0.63	0.1	territorial	REF	Secondary ref: (32)
185	<i>Cilus gilberti</i>	Sciaenidae	Corvina drum	0.625	0.3	habitat_benthic	IUCN	
186	<i>Cynoscion guatucupa</i>	Sciaenidae	Stripped weakfish	0.547	0.3	habitat_coastal	FB	
187	<i>Limanda limanda</i>	Pleuronectidae	Common dab	0.461	0.3	habitat_benthic	FB	
188	<i>Liza klunzingeri</i>	Mugilidae	Klunzinger's mullet	0.49	0.3	habitat_coastal	IUCN	IUCN: "Liza klunzingeri lives in shallow coastal waters. In Iraq, Liza klunzingeri is known to ascend rivers for feeding (M. Almukhtar pers. comm. 2014)."
189	<i>Dipturus innominatus</i>	Rajidae	New Zealand smooth skate	0.077	0.3	habitat_benthic	FB	
190	<i>Alectis alexandrinus</i>	Carangidae	Alexandria pompano	0.28	0.3	habitat_coastal	FB	
191	<i>Coelorinchus chilensis</i>	Macrouridae	Chilean grenadier	0.207	0.3	habitat_deep	FB	FB: "Marine; bathydemersal; non-migratory"
192	<i>Larimichthys polyacanthus</i>	Sciaenidae	Yellow croaker	0.547	0.3	habitat_coastal	FB	
193	<i>Haemulon plumieri</i>	Haemulidae	White grunt	0.579	0.3	habitat_reef	FB	
194	<i>Salvelinus alpinus</i>	Salmonidae	Arctic char	0.2	0.9	migratory	FB	
195	<i>Scolopsis taeniata</i>	Nemipteridae	Black-streaked monocle bream	1.108	0.3	habitat_reef	FB	
196	<i>Ilisha africana</i>	Pristigasteridae	West African ilisha	1.11	0.3	habitat_coastal	IUCN	IUCN: "This species occurs in inshore waters, along sandy beaches, in estuaries to nearly freshwater"
197	<i>Percophis brasiliensis</i>	Percophidae	Brazilian flathead	0.258	0.3	habitat_coastal	REF	Secondary ref: (33)
198	<i>Platycephalus indicus</i>	Platycephalidae	Bartail flathead	0.479	0.3	habitat_benthic	FB	
199	<i>Salmo trutta</i>	Salmonidae	Sea trout	0.746	0.9	migratory	FB	
200	<i>Sarda chiliensis</i>	Scombridae	Eastern Pacific bonito	0.474	0.9	pelagic	IUCN	
201	<i>Pennahia argentata</i>	Sciaenidae	Silver croaker	0.805	0.3	habitat_coastal	FB	
202	<i>Bothus pantherinus</i>	Bothidae	Leopard flounder	0.786	0.3	habitat_benthic	FB	
203	<i>Mugil curema</i>	Mugilidae	White mullet	0.52	0.3	habitat_coastal	FB	
204	<i>Seriola rivoliana</i>	Carangidae	Longfin yellowtail	0.506	0.9	pelagic	REF	Secondary ref: (34)
205	<i>Trachurus lathami</i>	Carangidae	Rough scad	0.704	0.9	pelagic	FB	
206	<i>Coryphaena hippurus</i>	Coryphaenidae	Common dolphinfish	0.796	0.9	hms	FB	
207	<i>Lutjanus purpureus</i>	Lutjanidae	Southern red snapper	0.308	0.3	habitat_reef	FB	
208	<i>Diapterus auratus</i>	Gerreidae	Irish mojarra	1.367	0.3	habitat_coastal	FB	
209	<i>Larimus breviceps</i>	Sciaenidae	Shorthead drum	0.717	0.3	habitat_coastal	FB	
210	<i>Mugil liza</i>	Mugilidae	Lebranché mullet	0.478	0.9	migratory	FB	FB: "Appear to undergo trophic migrations along the coasts (Ref. 35237)."
211	<i>Aphia minuta</i>	Gobiidae	Transparent goby	1.701	0.3	habitat_coastal	REF	Secondary ref: (35)
212	<i>Belone belone</i>	Belonidae	Garfish	0.479	0.9	pelagic	FB	FB: "Lives close to the surface and has a migratory pattern similar to the mackerel (Ref. 35388)."
213	<i>Epinephelus striatus</i>	Serranidae	Nassau grouper	0.263	0.3	habitat_reef	FB	
214	<i>Molva molva</i>	Lotidae	Ling	0.112	0.3	habitat_benthic	FB	or habitat_deep
215	<i>Pollachius pollachius</i>	Gadidae	Pollack	0.437	0.9	habitat_coastal	FB	FB: "Found in inshore waters but also down to 200 m depth, in areas with hard bottoms."
216	<i>Acanthocybium solandri</i>	Scombridae	Wahoo	0.523	0.9	pelagic	FB	
217	<i>Auxis thazard</i>	Scombridae	Frigate tuna	0.704	0.9	pelagic	FB	
218	<i>Capros aper</i>	Caproidae	Boarfish	0.435	0.3	habitat_reef	FB	
219	<i>Caranx hippos</i>	Carangidae	Crevalle jack	0.871	0.3	habitat_reef	FB	FB: "Generally in neritic"

								waters over the continental shelf (Ref. 5217), from the coastline, where it is common on shallow flats, to offshore waters (Ref. 57392)."
220	<i>Cepola macrophthalmus</i>	Cepolidae	Red bandfish	0.663	0.1	sedentary	FB	FB: "Found on sand and mud bottom (Ref. 26999). Lives in vertical burrows but may be found swimming in midwater."
221	<i>Chanos chanos</i>	Chanidae	Milkfish	0.566	0.3	habitat_reef	FB	FB: "They occur in small to large schools near the coasts or around islands where reefs are well developed."
222	<i>Ctenolabrus rupestris</i>	Labridae	Goldsinny-wrasse	0.492	0.3	habitat_reef	FB	
223	<i>Dicentrarchus labrax</i>	Moronidae	European seabass	0.531	0.3	habitat_coastal	REF	Secondary ref: (36)
224	<i>Euthynnus affinis</i>	Scombridae	Kawakawa	0.631	0.9	pelagic	IUCN	
225	<i>Euthynnus alletteratus</i>	Scombridae	Little tunny	0.33	0.9	hms	IUCN	
226	<i>Eutrigla gurnardus</i>	Triglidae	Grey gurnard	0.182	0.3	habitat_benthic	FB	
227	<i>Helicolenus dactylopterus</i>	Sebastidae	Blackbelly rosefish	0.149	0.3	habitat_benthic	IUCN	
228	<i>Istiophorus platypterus</i>	Istiophoridae	Indo-Pacific sailfish	0.466	0.9	hms	FB	
229	<i>Gymnosarda unicolor</i>	Scombridae	Dogtooth tuna	0.597	0.9	pelagic	FAO	
230	<i>Lutjanus guttatus</i>	Lutjanidae	Spotted rose snapper	0.37	0.3	habitat_reef	FB	
231	<i>Lutjanus kasmira</i>	Lutjanidae	Common bluestripe snapper	0.454	0.3	habitat_reef	FB	
232	<i>Lutjanus malabaricus</i>	Lutjanidae	Malabar blood snapper	0.3	0.3	habitat_reef	FB	
233	<i>Lutjanus peru</i>	Lutjanidae	Pacific red snapper	0.269	0.3	habitat_reef	FB	
234	<i>Lutjanus quinquefasciatus</i>	Lutjanidae	Five-lined snapper	0.327	0.3	habitat_reef	FB	
235	<i>Lutjanus synagris</i>	Lutjanidae	Lane snapper	0.661	0.3	habitat_reef	FB	
236	<i>Lutjanus vivanus</i>	Lutjanidae	Silk snapper	0.252	0.3	habitat_reef	FB	
237	<i>Ocyurus chrysurus</i>	Lutjanidae	Yellowtail snapper	0.474	0.3	habitat_reef	FB	
238	<i>Orcynopsis unicolor</i>	Scombridae	Plain bonito	0.597	0.9	hms	FB	
239	<i>Rastrelliger brachysoma</i>	Scombridae	Short mackerel	1.172	0.9	pelagic	IUCN	
240	<i>Rastrelliger kanagurta</i>	Scombridae	Indian mackerel	1.13	0.9	pelagic	FAO	
241	<i>Sarda orientalis</i>	Scombridae	Striped bonito	0.341	0.9	pelagic	IUCN	
242	<i>Sarda sarda</i>	Scombridae	Atlantic bonito	0.703	0.9	hms	FB	
243	<i>Scomberomorus commerson</i>	Scombridae	Narrow-barred Spanish mackerel	0.543	0.9	hms	FB	FB: "Known to undertake lengthy long-shore migrations, but permanent resident populations also seem to exist."
244	<i>Scomberomorus guttatus</i>	Scombridae	Indo-Pacific king mackerel	0.5	0.9	hms	FB	FB: "A pelagic migratory fish inhabiting coastal waters at depths between 15-200 m"
245	<i>Scomberomorus lineolatus</i>	Scombridae	Streaked seerfish	0.298	0.9	pelagic	IUCN	
246	<i>Scomberomorus regalis</i>	Scombridae	Cero	0.603	0.9	pelagic	IUCN	
247	<i>Scomberomorus tritor</i>	Scombridae	West African Spanish mackerel	1.01	0.9	pelagic	IUCN	
248	<i>Thunnus atlanticus</i>	Scombridae	Blackfin tuna	0.411	0.9	hms	FB	
249	<i>Thunnus tonggol</i>	Scombridae	Longtail tuna	0.222	0.9	pelagic	IUCN	
250	<i>Acanthistius brasiliensis</i>	Serranidae	Argentine seabass	0.393	0.3	habitat_benthic	IUCN	
251	<i>Albulua vulpes</i>	Albulidae	Bonefish	0.463	0.3	habitat_lagoon	FB	
252	<i>Glossanodon semifasciatus</i>	Argentinidae	Deep-sea smelt	0.519	0.9	pelagic	FB	
253	<i>Arripis georgianus</i>	Arripidae	Ruff	0.388	0.3	habitat_coastal	FB	FB: "Usually found inshore in bays and estuaries over seagrass beds or near areas of seaweed (e.g. kelp), on rocky reefs, and along ocean beaches. Juveniles are found in inshore coastal waters, bays and inlets (Ref. 6390)."

254	<i>Conger myriaster</i>	Congridae	Whitespotted conger	0.27	0.1	habitat_benthic	FB	
255	<i>Boops boops</i>	Sparidae	Bogue	0.471	0.9	pelagic	FB	
256	<i>Boreogadus saida</i>	Gadidae	Polar cod	0.371	0.9	migratory	FAO	FAO: "also found at 50-175 km offshore in the Beaufort and Chukchi Seas, at depths of 40 to 400 m... Migration patterns are unknown, except for a prespawning migration to nearshore waters in late summer in the Beaufort Sea."
257	<i>Brama brama</i>	Bramidae	Atlantic pomfret	0.254	0.9	migratory	FB	FB: "Seasonal migrant occurring in small schools, movements apparently temperature-related."
258	<i>Centropomus undecimalis</i>	Centropomidae	Common snook	0.642	0.3	habitat_coastal	FB	FB: "Adults inhabit coastal waters, estuaries and lagoons, penetrating into freshwater; usually at depths less than 20 m (Ref. 3713)."
259	<i>Chloroscombrus chrysurus</i>	Carangidae	Atlantic bumper	0.817	0.3	habitat_coastal	FB	
260	<i>Conger conger</i>	Congridae	European conger	0.208	0.3	habitat_benthic	FB	
261	<i>Conger oceanicus</i>	Congridae	American conger	0.27	0.1	territorial	IUCN	IUCN: "is usually associated with structured habitats such as piers, wrecks, jetties, reefs, or burrows shared with tilefish, <i>Lopholatilus chamaeleonticeps</i> (Able and Fahay 1998, Collette and Klein-MacPhee 2002, Correia et al. 2004)."
262	<i>Coregonus albula</i>	Salmonidae	Vendace	0.421	0.9	migratory	FB	
263	<i>Decapterus russelli</i>	Carangidae	Indian scad	1.233	0.9	pelagic	FB	
264	<i>Dicentrarchus punctatus</i>	Moronidae	Spotted seabass	0.493	0.3	habitat_coastal	FB	
265	<i>Eleginops gracilis</i>	Gadidae	Saffron cod	0.307	0.3	habitat_coastal	FAO	FAO: "Migrations are not extensive."
266	<i>Eleutheronema tetradactylum</i>	Polynemidae	Fourfinger threadfin	0.644	0.3	habitat_coastal	FB	
267	<i>Harpodon nehereus</i>	Synodontidae	Bombay-duck	0.452	0.3	habitat_benthic	FB	
268	<i>Isacia conceptionis</i>	Haemulidae	Cabinza grunt	0.655	0.3	habitat_coastal	FB	
269	<i>Lactarius lactarius</i>	Lactariidae	False trevally	0.894	0.3	habitat_coastal	FB	
270	<i>Lates calcarifer</i>	Latidae	Barramundi	0.707	0.3	habitat_coastal	FB	
271	<i>Lutjanus gibbus</i>	Lutjanidae	Humpback red snapper	0.436	0.3	habitat_reef	FB	
272	<i>Lutjanus griseus</i>	Lutjanidae	Grey snapper	0.329	0.3	habitat_reef	FB	
273	<i>Lutjanus johnii</i>	Lutjanidae	John's snapper	0.365	0.3	habitat_reef	FB	
274	<i>Megalaspis cordyla</i>	Carangidae	Torpedo scad	0.855	0.9	pelagic	FB	FB: "Adults are primarily oceanic, pelagic schooling species rarely seen on reefs (Ref. 48635, 90102)."
275	<i>Megalops cyprinoides</i>	Megalopidae	Indo-Pacific tarpon	0.22	0.3	habitat_coastal	FB	
276	<i>Mene maculata</i>	Menidae	Moonfish	0.681	0.3	habitat_reef	FB	
277	<i>Menidia menidia</i>	Atherinopsidae	Atlantic silverside	0.883	0.3	habitat_coastal	FB	
278	<i>Microgadus tomcod</i>	Gadidae	Atlantic tomcod	0.461	0.3	habitat_coastal	FB	
279	<i>Muraenesox cinereus</i>	Muraenesocidae	Daggetooth pike conger	0.409	0.1	sedentary	REF	Secondary ref: (37)
280	<i>Nemipterus virgatus</i>	Nemipteridae	Golden threadfin bream	0.957	0.3	habitat_benthic	FB	
281	<i>Oncorhynchus gorbuscha</i>	Salmonidae	Pink salmon	0.492	0.9	migratory	FB	
282	<i>Oncorhynchus keta</i>	Salmonidae	Chum salmon	0.332	0.9	migratory	FB	
283	<i>Oncorhynchus kisutch</i>	Salmonidae	Coho salmon	0.528	0.9	migratory	FB	
284	<i>Oncorhynchus masou</i>	Salmonidae	Masu salmon	0.488	0.9	migratory	FB	
285	<i>Oncorhynchus nerka</i>	Salmonidae	Sockeye salmon	0.343	0.9	migratory	FB	
286	<i>Oncorhynchus tshawytscha</i>	Salmonidae	Chinook salmon	0.492	0.9	migratory	FB	
287	<i>Osmorus mordax</i>	Osmeridae	Rainbow smelt	0.088	0.3	habitat_coastal	IUCN	
288	<i>Paralabrax humeralis</i>	Serranidae	Peruvian rock seabass	0.275	0.3	habitat_benthic	IUCN	
289	<i>Parona signata</i>	Carangidae	Parona leatherjacket	0.935	0.3	habitat_coastal	FB	

290	Pentanemus quinquarius	Polynemidae	Royal threadfin	0.687	0.3	habitat_coastal	FB	
291	Plectrohinchus mediterraneus	Haemulidae	Rubberlip grunt	0.295	0.3	habitat_benthic	IUCN	
292	Polypyron americanus	Polyprionidae	Wreckfish	0.097	0.3	habitat_benthic	FB	or habitat_deep
293	Pomadasys argenteus	Haemulidae	Silver grunt	0.806	0.3	habitat_coastal	FB	
294	Salilota australis	Moridae	Tadpole codling	0.247	0.9	deep	FB	
295	Sarpa salpa	Sparidae	Salema	0.511	0.3	habitat_reef	FB	
296	Selar crumenophthalmus	Carangidae	Bigeye scad	1.356	0.9	pelagic	FB	FB: "Adults prefer clear oceanic waters around islands to neritic waters (Ref. 5217). Occasionally in turbid waters (Ref. 9283). Pelagic (Ref. 58302)."
297	Selaroides leptolepis	Carangidae	Yellowstripe scad	1.612	0.3	habitat_coastal	FB	
298	Selene dorsalis	Carangidae	African moonfish	0.655	0.3	habitat_coastal	FB	
299	Selene setapinnis	Carangidae	Atlantic moonfish	0.895	0.3	habitat_coastal	FB	
300	Trachinotus carolinus	Carangidae	Florida pompano	0.843	0.3	habitat_coastal	FB	
301	Trachurus declivis	Carangidae	Greenback horse mackerel	0.29	0.9	pelagic	FB	
302	Trachurus symmetricus	Carangidae	Pacific jack mackerel	0.238	0.9	pelagic	FB	
303	Urophycis brasiliensis	Phycidae	Brazilian codling	0.375	0.3	habitat_benthic	FB	FB: "Marine; demersal; non-migratory"
304	Urophycis chuss	Phycidae	Red hake	0.304	0.9	migratory	REF	Secondary ref: (38) "Red hake make extensive seasonal, depth- and temperature-related migrations"
305	Zenopsis conchifer	Zeidae	Silvery John dory	0.246	0.3	habitat_reef	FB	
306	Ablennes hians	Belonidae	Flat needlefish	0.581	0.3	habitat_coastal	FB	
307	Amphichthys cryptocentrus	Batrachoididae	Bocon toadfish	0.572	0.1	sedentary	FB	FB: "Inhabits littoral (subtidal) waters; usually found on sandy or rock bottom; large fish may be found in waters less than 1 m of depth hiding in crevices or caves (Ref. 3273)."
308	Archosargus probatocephalus	Sparidae	Sheepshead	0.61	0.3	habitat_reef	FB	
309	Arctoscopus japonicus	Trichodontidae	Japanese sandfish	0.63	0.3	habitat_benthic	FB	
310	Argyrops spinifer	Sparidae	King soldier bream	0.494	0.3	habitat_coastal	FB	
311	Argyrosomus hololepidotus	Sciaenidae	Southern meagre	0.228	0.3	habitat_coastal	FB	
312	Argyrosomus regius	Sciaenidae	Meagre	0.149	0.9	migratory	FB	FB: "Both adults and juveniles are migratory moving along shore or offshore-onshore in response to temperature change (Ref. 11025)"
313	Argyrozonaa argyrozona	Sparidae	Carpenter seabream	0.338	0.3	habitat_reef	IUCN	IUCN: "Tagging studies have shown that adults are fairly resident with a small percentage of fish that disperse (Brouwer et al. 2003, Griffiths and Wilke 2002) including some nomadic behaviour involving migrations of more than 100 km (Griffiths and Mann 2000)."
314	Atractoscion aequidens	Sciaenidae	Geelbeck croaker	0.312	0.3	habitat_coastal	FB	
315	Atrobucca nibe	Sciaenidae	Blackmouth croaker	0.461	0.3	habitat_coastal	FB	
316	Austroglossus microlepis	Soleidae	West coast sole	0.186	0.3	habitat_benthic	FB	
317	Austroglossus pectoralis	Soleidae	Mud sole	0.268	0.3	habitat_benthic	FB	
318	Brotula barbata	Ophidiidae	Bearded brotula	0.276	0.3	habitat_benthic	FB	
319	Carcharhinus brachyurus	Carcharhinidae	Copper shark	0.069	0.9	hms	FB	
320	Carcharhinus falciformis	Carcharhinidae	Silky shark	0.067	0.9	hms	FB	

321	<i>Carcharhinus longimanus</i>	Carcharhinidae	Oceanic whitetip shark	0.093	0.9	hms	FB	
322	<i>Carcharhinus sorrah</i>	Carcharhinidae	Spot-tail shark	0.181	0.9	hms	FB	
323	<i>Centrophorus granulosus</i>	Centrophoridae	Gulper shark	0.044	0.9	deep	FB	
324	<i>Centrophorus squamosus</i>	Centrophoridae	Leafscale gulper shark	0.031	0.9	deep	FB	
325	<i>Cephaloscyllium isabellum</i>	Scyliorhinidae	Draughtsboard shark	0.188	0.3	habitat_reef	FB	or habitat_benthic; FB: "Found in crevices and caves of rocky reefs during the day, but may move to adjacent sandy areas at night"
326	<i>Cetengraulis edentulus</i>	Engraulidae	Atlantic anchoveta	0.508	0.3	habitat_coastal	FB	
327	<i>Cetengraulis mysticetus</i>	Engraulidae	Pacific anchoveta	0.828	0.3	habitat_coastal	FB	FB: "Apparently not making long migrations along sandy or rocky areas."
328	<i>Cheimerius nufar</i>	Sparidae	Santer seabream	0.438	0.3	habitat_reef	FB	
329	<i>Chelidonichthys kumu</i>	Triglidae	Bluefin gurnard	0.231	0.3	habitat_benthic	FB	
330	<i>Conodon nobilis</i>	Haemulidae	Barred grunt	0.655	0.3	habitat_benthic	IUCN	
331	<i>Cynoscion analis</i>	Sciaenidae	Peruvian weakfish	0.552	0.3	habitat_coastal	FB	
332	<i>Cynoscion nebulosus</i>	Sciaenidae	Spotted weakfish	0.437	0.3	habitat_coastal	FB	
333	<i>Cynoscion striatus</i>	Sciaenidae	Striped weakfish	0.562	0.3	habitat_reef	FOA	
334	<i>Dalatias licha</i>	Dalatiidae	Kitefin shark	0.13	0.9	deep	FB	
335	<i>Dentex dentex</i>	Sparidae	Common dentex	0.295	0.3	habitat_reef	FB	
336	<i>Drepane punctata</i>	Drepaneidae	Spotted sicklefish	0.537	0.3	habitat_coastal	FB	
337	<i>Eleginops maclovinus</i>	Eleginopsidae	Patagonian blennie	0.185	0.3	habitat_coastal	REF	Secondary ref: (39)
338	<i>Epinephelus aeneus</i>	Serranidae	White grouper	0.173	0.9	migratory	FB	
339	<i>Etmopterus spinax</i>	Etmopteridae	Velvet belly	0.042	0.3	deep	IUCN	
340	<i>Galeocerdo cuvier</i>	Carcharhinidae	Tiger shark	0.076	0.9	hms	FB	FB: "The seasonal migration of the species off the coast of Senegal is influenced by the seasonal upwelling off Senegal and Mauritania."
341	<i>Genyonemus lineatus</i>	Sciaenidae	White croaker	0.625	0.3	habitat_benthic	IUCN	
342	<i>Hexanchus griseus</i>	Hexanchidae	Bluntnose sixgill shark	0.164	0.9	deep	FB	
343	<i>Lepidotopus caudatus</i>	Trichiuridae	Silver scabbardfish	0.293	0.3	habitat_deep	FB	
344	<i>Lichia amia</i>	Carangidae	Leerfish	0.935	0.3	habitat_coastal	FB	
345	<i>Lithognathus mormyrus</i>	Sparidae	Sand steenbras	0.517	0.3	habitat_reef	FB	
346	<i>Macrodon ancylodon</i>	Sciaenidae	King weakfish	0.617	0.3	habitat_coastal	FB	
347	<i>Menticirrhus littoralis</i>	Sciaenidae	Gulf kingcroaker	0.552	0.3	habitat_coastal	FB	
348	<i>Menticirrhus saxatilis</i>	Sciaenidae	Northern kingfish	0.498	0.3	habitat_coastal	FB	
349	<i>Naucrates ductor</i>	Carangidae	Pilotfish	1.065	0.9	pelagic	FB	FB: "Oceanic species with a semi-obligate commensal relationship with sharks, rays, other bony fishes and turtles (Ref. 5217)."
350	<i>Oblada melanura</i>	Sparidae	Saddled seabream	0.431	0.3	habitat_reef	FB	
351	<i>Oxynotus centrina</i>	Oxynotidae	Angular roughshark	0.13	0.3	habitat_benthic	FB	
352	<i>Pagellus acarne</i>	Sparidae	Axillary seabream	0.478	0.3	habitat_reef	FB	
353	<i>Pampus argenteus</i>	Stromateidae	Silver pomfret	0.666	0.3	habitat_coastal	FB	
354	<i>Paralonchurus peruanus</i>	Sciaenidae	Peruvian banded croaker	0.625	0.3	habitat_coastal	FB	
355	<i>Parapercis colias</i>	Pinguipedidae	New Zealand blue cod	0.447	0.1	habitat_coastal	REF	Ref: (40)
356	<i>Petrus rupestris</i>	Sparidae	Red steenbras	0.257	0.9	migratory	REF	Secondary ref: (41)
357	<i>Pogonias cromis</i>	Sciaenidae	Black drum	0.187	0.3	habitat_coastal	FB	
358	<i>Prionace glauca</i>	Carcharhinidae	Blue shark	0.055	0.9	hms	FB	
359	<i>Psenopsis anomala</i>	Centrolophidae	Pacific rudderfish	0.702	0.3	habitat_coastal	FAO	FAO: "Epipelagic layer to 370m. Adults inhabit bottom, but migrate upward at night."
360	<i>Psettodes erumei</i>	Psettodidae	Indian halibut	0.855	0.3	habitat_benthic	FB	
361	<i>Pseudotolithus senegalensis</i>	Sciaenidae	Cassava croaker	0.477	0.3	habitat_coastal	FB	
362	<i>Pterogymnus</i>	Sparidae	Panga seabream	0.384	0.3	habitat_reef	FB	

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363	Pteroscion peli	Sciaenidae	Boe drum	0.625	0.3	habitat_benthic	FB	
364	Pterygotrigla polyommata	Triglidae	Latchet	0.388	0.3	habitat_benthic	FB	
365	Rhabdosargus globiceps	Sparidae	White stumpnose	0.441	0.3	habitat_reef	FB	
366	Scophthalmus rhombus	Scophthalmidae	Brill	0.837	0.3	habitat_benthic	FB	
367	Scyliorhinus stellaris	Scyliorhinidae	Nursehound	0.165	0.3	habitat_benthic	FB	FB: "found over rough, even rocky or coralline ground, and algal-covered bottoms. Feed on bottom-living invertebrates..."
368	Sphyraна lewini	Sphyrnidae	Scalloped hammerhead	0.06	0.9	migratory	FB	FB: "Huge schools of small migrating individuals move pole ward in the summer in certain areas (Ref. 244)."
369	Sphyraна zygaena	Sphyrnidae	Smooth hammerhead	0.115	0.9	migratory	FB	FB: "Migrates northward in summer; young often in large aggregations of hundreds of individuals (Ref. 13562)."
370	Squatina argentina	Squatinidae	Argentine angelshark	0.101	0.3	habitat_benthic	FB	
371	Stephanolepis cirrifer	Monacanthidae	Threadsail filefish	0.843	0.3	habitat_coastal	IUCN	
372	Tautoga onitis	Labridae	Tautog	0.359	0.3	habitat_coastal	REF	Secondary ref: (42)
373	Thryssites atun	Gempylidae	Snoek	0.349	0.3	habitat_coastal	REF	Secondary ref: (43)
374	Zoarces viviparus	Zoarcidae	Eelpout	0.331	0.1	sedentary	REF	Secondary ref: (44)
375	Alepes djedaba	Carangidae	Shrimp scad	1.017	0.3	habitat_reef	FB	
376	Alosа pseudoharengus	Clupeidae	Alewife	1.843	0.3	habitat_coastal	FB	FB: "Movement of schooling adults apparently restricted to coastal areas proximal to natal estuaries (Ref. 4639)."
377	Alosа sapidissima	Clupeidae	American shad	1.013	0.9	pelagic	FB	FB: "Spends most of its life at sea, returning to freshwater streams to breed (Ref. 27547)."
378	Amblygaster sirm	Clupeidae	Spotted sardinella	1.417	0.3	habitat_coastal	FB	
379	Anchoa nasus	Engraulidae	Longnose anchovy	1.297	0.3	habitat_coastal	FB	
380	Anodontostoma chacunda	Clupeidae	Chacunda gizzard shad	1.401	0.3	habitat_coastal	FB	
381	Atule mate	Carangidae	Yellowtail scad	1.255	0.3	habitat_reef	FB	FB: "Adults inhabit mangroves and coastal bays in pelagic waters (Ref. 58302). They form schools to about 50 m in inshore waters (Ref. 9894), or singly (Ref. 46635)."
382	Brevoortia aurea	Clupeidae	Brazilian menhaden	0.939	0.3	habitat_coastal	REF	Secondary ref: (45)
383	Carangoides bajad	Carangidae	Orangespotted trevally	0.976	0.3	habitat_reef	FB	FB: "Adults are common along coastal reef slopes or around large coral heads in lagoons (Ref. 48635)."
384	Caranx cryos	Carangidae	Blue runner	0.711	0.3	habitat_coastal	FB	
385	Carangoides fulvoguttatus	Carangidae	Yellowspotted trevally	1.01	0.3	habitat_reef	FB	
386	Caranx ignobilis	Carangidae	Giant trevally	0.422	0.3	habitat_reef	FB	
387	Caranx ruber	Carangidae	Bar jack	0.824	0.3	habitat_reef	FB	
388	Chirocentrus nudus	Chirocentridae	Whitefin wolf-herring	0.27	0.3	habitat_coastal	FB	FB: "An inshore pelagic species that feeds mainly on small fishes, but also crabs (Ref. 5213)."
389	Clupanodon thrissa	Clupeidae	Chinese gizzard shad	1.165	0.3	habitat_coastal	FB	
390	Clupeonella cultriventris	Clupeidae	Black and Caspian Sea sprat	0.908	0.9	migratory	FB	FB: "Migratory between winter or autumn feeding and summer spawning grounds."
391	Cynoscion acoupa	Sciaenidae	Acoupa weakfish	0.392	0.3	habitat_coastal	FB	
392	Cynoscion jamaicensis	Sciaenidae	Jamaica weakfish	0.661	0.3	habitat_coastal	FB	
393	Cynoscion leiarchus	Sciaenidae	Smooth weakfish	0.647	0.3	habitat_coastal	FB	
394	Cynoscion virescens	Sciaenidae	Green weakfish	0.562	0.3	habitat_coastal	FB	
395	Dactylopterus volitans	Dactylopteridae	Flying gurnard	0.639	0.3	habitat_coastal	IUCN	IUCN: "It is a pelagic spawner."
396	Decapterus	Carangidae	Japanese scad	1.48	0.9	pelagic	FB	FB: "In Guam, it is

	maruadsi							encountered in large numbers around fish aggregating devices, buoys anchored offshore to attract pelagic game fishes."
397	Diplodus annularis	Sparidae	Annular seabream	0.781	0.3	habitat_coastal	FB	
398	Diplodus sargus	Sparidae	White seabream	0.54	0.3	habitat_reef	FB	
399	Diplodus vulgaris	Sparidae	Common two-banded seabream	0.583	0.3	habitat_reef	FB	
400	Etmhidium maculatum	Clupeidae	Pacific menhaden	1.165	0.3	habitat_coastal	FB	
401	Hemiramphus brasiliensis	Hemiramphidae	Ballyhoo halfbeak	0.747	0.3	habitat_coastal	REF	Secondary ref: (46)
402	Hilsa kelee	Clupeidae	Kelee shad	1.08	0.3	habitat_coastal	FB	
403	Ilisha elongata	Pristigasteridae	Elongate ilisha	0.974	0.3	habitat_coastal	FB	
404	Isopisthus parvipinnis	Sciaenidae	Bigtooth corvina	0.625	0.3	habitat_coastal	FB	
405	Konosirus punctatus	Clupeidae	Dotted gizzard shad	0.793	0.3	habitat_coastal	FB	
406	Lachnolaimus maximus	Labridae	Hogfish	0.503	0.3	habitat_reef	FB	
407	Lampris guttatus	Lampridae	Opah	0.605	0.9	pelagic	FB	
408	Lepidocybium flavobrunneum	Gempylidae	Escarlar	0.416	0.9	migratory	REF	Secondary ref: (47)
409	Lethrinus harak	Lethrinidae	Thumbprint emperor	0.396	0.3	habitat_reef	FB	
410	Lethrinus lentjan	Lethrinidae	Pink ear emperor	0.428	0.3	habitat_reef	FB	
411	Lethrinus nebulosus	Lethrinidae	Spangled emperor	0.335	0.3	habitat_reef	FB	
412	Lethrinus obsoletus	Lethrinidae	Orange-striped emperor	0.457	0.3	habitat_reef	FB	
413	Liza aurata	Mugilidae	Golden grey mullet	0.461	0.3	habitat_coastal	FB	
414	Liza saliens	Mugilidae	Leaping mullet	0.498	0.3	habitat_coastal	FB	
415	Lutjanus analis	Lutjanidae	Mutton snapper	0.375	0.3	habitat_reef	FB	
416	Lutjanus argentimaculatus	Lutjanidae	Mangrove red snapper	0.346	0.3	habitat_reef	FB	
417	Lutjanus argentiventralis	Lutjanidae	Yellow snapper	0.313	0.3	habitat_reef	FB	
418	Lutjanus bohar	Lutjanidae	Two-spot red snapper	0.403	0.3	habitat_reef	FB	
419	Lutjanus buccanella	Lutjanidae	Blackfin snapper	0.522	0.3	habitat_coastal	FB	
420	Lutjanus cyanopterus	Lutjanidae	Cubera snapper	0.381	0.3	habitat_reef	FB	
421	Merluccius albidus	Merlucciidae	Offshore silver hake	0.365	0.9	pelagic	REF	Secondary ref: (48)
422	Microstomus kitt	Pleuronectidae	Lemon sole	0.121	0.3	habitat_benthic	FB	
423	Molva dypterygia	Lotidae	Blue ling	0.122	0.3	habitat_benthic	FB	or habitat_deep
424	Monotaxis grandoculis	Lethrinidae	Humphnoise big-eye bream	0.551	0.3	habitat_reef	FB	
425	Mora moro	Moridae	Common mora	0.146	0.9	deep	FB	FB: Ref. 9563, Ref. 4774
426	Naso unicornis	Acanthuridae	Bluespine unicornfish	0.337	0.3	habitat_reef	FB	
427	Nematalosa nasus	Clupeidae	Bloch's gizzard shad	1.124	0.3	habitat_coastal	FB	
428	Opisthonema libertate	Clupeidae	Pacific thread herring	0.701	0.3	habitat_coastal	FAO	
429	Opisthonema oglinum	Clupeidae	Atlantic thread herring	1.027	0.3	habitat_coastal	FB	
430	Osmerus eperlanus	Osmeridae	European smelt	0.095	0.3	habitat_coastal	FB	
431	Pagrus pagrus	Sparidae	Red porgy	0.394	0.3	habitat_reef	FB	
432	Parastromateus niger	Carangidae	Black pomfret	1.07	0.3	habitat_coastal	FB	
433	Phycis phycis	Phycidae	Forkbeard	0.512	0.3	habitat_benthic	FB	
434	Platichthys flesus	Pleuronectidae	European flounder	0.34	0.3	habitat_benthic	IUCN	IUCN: "It migrates into the open sea to breed from March to June, during which time it can migrate up to 300 km offshore, although it will more often migrate just 30 km."
435	Sardinella brasiliensis	Clupeidae	Brazilian sardinella	0.788	0.3	habitat_coastal	FB	
436	Sardinella gibbosa	Clupeidae	Goldstripe sardinella	1.234	0.3	habitat_coastal	IUCN	IUCN: "Sardinella gibbosa is a marine, reef-associated species that occurs in tropical waters between depths of 10 to 70 m (Pauly et al. 1996, FAO-FIGIS 2005). This species forms schools in coastal waters; it

								is found in inshore waters of the continental shelf (Sousa and Dias 1981, Fischer et al. 1990)."
437	<i>Sardinella maderensis</i>	Clupeidae	Madeiran sardinella	0.811	0.9	migratory	IUCN	IUCN: "Juveniles and adults show clear north-south migrations in the Gabon-Congo-Angola sector of their range and also in the Sierra Leone-Mauritania sector, each area having nurseries."
438	<i>Sardinella zunasi</i>	Clupeidae	Japanese sardinella	0.938	0.3	habitat_coastal	IUCN	IUCN: "Sardinella zunasi is a coastal, marine, pelagic species that is found near shore, including semi-enclosed sea areas over sandy and mud bottom habitats (Yamada et al. 1995)."
439	<i>Saurida undosquamis</i>	Synodontidae	Brushtooth lizardfish	0.594	0.3	habitat_benthic	FB	
440	<i>Sciaenops ocellatus</i>	Sciaenidae	Red drum	0.347	0.3	habitat_benthic	FB	
441	<i>Scomberoides lysan</i>	Carangidae	Doublespotted queenfish	0.861	0.3	habitat_reef	FB	
442	<i>Scomberoides tol</i>	Carangidae	Needlescaled queenfish	0.911	0.3	habitat_reef	FB	
443	<i>Seriolina nigrofasciata</i>	Carangidae	Blackbanded trevally	0.935	0.3	habitat_reef	FB	
444	<i>Serranus cabrilla</i>	Serranidae	Comber	0.511	0.3	habitat_benthic	FB	
445	<i>Sphyraena barracuda</i>	Sphyraenidae	Great barracuda	0.283	0.3	habitat_coastal	FB	
446	<i>Sphyraena sphyraena</i>	Sphyraenidae	European barracuda	0.489	0.3	habitat_coastal	FB	
447	<i>Spondyliosoma cantharus</i>	Sparidae	Black seabream	0.395	0.3	habitat_reef	FB	
448	<i>Sprattus fuegensis</i>	Clupeidae	Falkland sprat	0.593	0.3	habitat_coastal	FB	
449	<i>Tenualosa ilisha</i>	Clupeidae	Hilsa shad	1.644	0.9	migratory	FB	
450	<i>Tenualosa toli</i>	Clupeidae	Toli shad	2.002	0.3	habitat_coastal	FB	
451	<i>Trachinotus blochii</i>	Carangidae	Snubnose pompano	0.843	0.3	habitat_reef	FB	
452	<i>Trisopterus luscus</i>	Gadidae	Pouting	0.881	0.3	habitat_coastal	FB	Secondary ref: (49)
453	<i>Umbrina cirrosa</i>	Sciaenidae	Shi drum	0.434	0.3	habitat_reef	FB	
454	<i>Lethrinus mahsena</i>	Lethrinidae	Sky emperor	0.322	0.3	habitat_reef	FB	
455	<i>Alopias superciliosus</i>	Alopiidae	Bigeye thresher	0.077	0.9	hms	FB	
456	<i>Alopias vulpinus</i>	Alopiidae	Thresher	0.047	0.9	hms	FB	
457	<i>Antimora rostrata</i>	Moridae	Blue antimora	0.117	0.9	deep	FB	
458	<i>Argentina silus</i>	Argentinidae	Greater argentine	0.073	0.9	pelagic	FB	
459	<i>Dasyatis pastinaca</i>	Dasyatidae	Common stingray	0.527	0.3	habitat_benthic	FB	
460	<i>Ginglymostoma cirratum</i>	Ginglymostomatidae	Nurse shark	0.072	0.3	habitat_reef	FB	
461	<i>Gymnura altavela</i>	Gymnuridae	Spiny butterfly ray	0.329	0.3	habitat_benthic	IUCN	
462	<i>Pseudophycis batus</i>	Moridae	Red codling	0.201	0.3	habitat_benthic	FB	or habitat_deep
463	<i>Atractoscion nobilis</i>	Sciaenidae	White weakfish	0.297	0.3	habitat_coastal	FB	
464	<i>Caulolatilus princeps</i>	Malacanthidae	Ocean whitefish	0.361	0.3	habitat_reef	FB	
465	<i>Citharichthys sordidus</i>	Paralichthyidae	Pacific sanddab	0.949	0.3	habitat_benthic	FB	
466	<i>Hyperoglyphe bythites</i>	Centrolophidae	Black driftfish	0.292	0.3	habitat_coastal	IUCN	
467	<i>Malacanthus plumieri</i>	Malacanthidae	Sand tilefish	0.402	0.3	habitat_benthic	FB	
468	<i>Paralichthys californicus</i>	Paralichthyidae	California flounder	0.686	0.3	habitat_benthic	REF	Secondary ref: (50)
469	<i>Rachycentron canadum</i>	Rachycentridae	Cobia	0.444	0.9	hms	IUCN	
470	<i>Semicossyphus pulcher</i>	Labridae	California sheephead	0.707	0.3	habitat_reef	IUCN	IUCN: "The fish tend to stay in the same reef and do not move around a lot, as shown by tag-recapture research (DeMartini et al. 1994)."
471	<i>Taractichthys steindachneri</i>	Bramidae	Sickle pomfret	0.47	0.9	hms	FB	FB: "Highly migratory species, Annex I of the 1982 Convention on the Law of the Sea (Ref. 26139)."
472	<i>Tautogolabrus adspersus</i>	Labridae	Cunner	0.542	0.3	habitat_coastal	FB	
473	<i>Trachipterus</i>	Trachipteridae	Dealfish	0.142	0.3	habitat_deep	FB	

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474	<i>Myliobatis aquila</i>	Myliobatidae	Common eagle ray	0.238	0.3	habitat_coastal	FB	
475	<i>Carangoides malabaricus</i>	Carangidae	Malabar trevally	1.169	0.3	habitat_reef	FB	
476	<i>Epinephelus fuscoguttatus</i>	Serranidae	Brown-marbled grouper	0.27	0.3	habitat_reef	FB	
477	<i>Epinephelus tauvina</i>	Serranidae	Greasy grouper	0.187	0.3	habitat_reef	FB	
478	<i>Gnathanodon speciosus</i>	Carangidae	Golden trevally	0.706	0.3	habitat_reef	FB	
479	<i>Diagramma pictum</i>	Haemulidae	Painted sweetlips	0.515	0.3	habitat_reef	FB	
480	<i>Acanthopagrus bifasciatus</i>	Sparidae	Twobar seabream	0.487	0.3	habitat_reef	FB	
481	<i>Sillago sihama</i>	Sillaginidae	Silver sillago	0.713	0.3	habitat_coastal	FB	
482	<i>Megalops atlanticus</i>	Megalopidae	Tarpon	0.15	0.9	migratory	IUCN	IUCN: "Tarpon may have resident, migratory, or mixed populations (Robins et al. 1977). Tagging studies indicate that some mature tarpon may undertake substantial and alongshore migrations (Ault et al. 2005, Luo et al. 2008), while others are residents of particular locations (Guindon unpublished data, sensu Robichaud and Rose 2004). These movements may represent repeated migratory patterns, or there may be significant annual variation in the movement pattern of individuals (Ault et al. 2008). Seasonal migrations may also occur. Migrations cross state and federal boundaries, which may impact regulation."
483	<i>Nemipterus japonicus</i>	Nemipteridae	Japanese threadfin bream	1.262	0.3	habitat_benthic	FB	
484	<i>Miichthys miuy</i>	Sciaenidae	Mi-iuy croaker	0.562	0.3	habitat_coastal	FB	
485	<i>Xyrichtys novacula</i>	Labridae	Pearly razorfish	0.651	0.3	habitat_coastal	FB	
486	<i>Lateolabrax japonicus</i>	Lateolabracidae	Japanese seabass	0.28	0.3	habitat_reef	FB	
487	<i>Galeorhinus galeus</i>	Triakidae	Tope shark	0.043	0.9	hms	FB	FB: "Occurs in small schools that are highly migratory in higher latitudes in their range (Ref. 244)."
488	<i>Pomadasys jubelini</i>	Haemulidae	Sompat grunt	0.753	0.3	habitat_coastal	FB	
489	<i>Acanthurus sohal</i>	Acanthuridae	Sohal surgeonfish	0.53	0.3	habitat_reef	FB	
490	<i>Otolithes ruber</i>	Sciaenidae	Tigertooth croaker	0.865	0.3	habitat_coastal	FB	
491	<i>Plectropomus leopardus</i>	Serranidae	Leopard coralgrouper	0.262	0.3	habitat_reef	FB	
492	<i>Spicara maena</i>	Centracanthidae	Blotched picarel	0.661	0.3	habitat_coastal	FB	
493	<i>Epinephelus goreensis</i>	Serranidae	Dungat grouper	0.287	0.3	habitat_benthic	IUCN	
494	<i>Mustelus mustelus</i>	Triakidae	Smooth-hound	0.132	0.3	habitat_coastal	FB	
495	<i>Pontinus kuhlii</i>	Scorpaenidae	Offshore rockfish	0.282	0.3	habitat_deep	FB	
496	<i>Promethichthys prometheus</i>	Gempylidae	Roudi escolar	0.283	0.3	habitat_deep	FB	
497	<i>Epinephelus morrhua</i>	Serranidae	Comet grouper	0.271	0.3	habitat_reef	FB	FB: "Marine; reef-associated; non-migratory"
498	<i>Variola louti</i>	Serranidae	Yellow-edged lyretail	0.375	0.3	habitat_reef	FB	
499	<i>Alosa fallax</i>	Clupeidae	Twaite shad	0.806	0.9	migratory	FB	FB: "Amphihaline species (Ref. 51442), schooling and strongly migratory, but apparently not penetrating far up rivers (Ref. 188, 6683). Adults are usually found in open waters along the coast (Refs. 59043, 89486)"
500	<i>Epinephelus areolatus</i>	Serranidae	Areolate grouper	0.323	0.3	habitat_coastal	FB	FB: "Usually found in seagrass beds or on fine sediment bottoms near rocky reefs, dead coral, or alcyonarians (Ref. 5222), in shallow continental shelf waters"

501	Rhynchosatius djiddensis	Rhinobatidae	Giant guitarfish	0.205	0.3	habitat_benthic	FB	
502	Chelidonichthys capensis	Triglidae	Cape gurnard	0.277	0.3	habitat_benthic	FB	
503	Epinephelus chlorostigma	Serranidae	Brownspotted grouper	0.315	0.3	habitat_coastal	FB	FB: "Found over a wide range of habitats like seagrass beds and outer reef slopes (Ref. 5213), also on mud bottoms."
504	Acanthopagrus berda	Sparidae	Goldsilk seabream	0.548	0.3	habitat_coastal	FB	
505	Cymatoceps nasutus	Sparidae	Black musselcracker	0.189	0.3	habitat_coastal	FB	
506	Bolbometopon muricatum	Scaridae	Green humphead parrotfish	0.237	0.3	habitat_reef	FB	
507	Mulloidichthys flavolineatus	Mullidae	Yellowstripe goatfish	0.798	0.3	habitat_reef	FB	
508	Gerres oyena	Gerreidae	Common silver-biddy	1.594	0.3	habitat_coastal	FB	
509	Pomadasys kaakan	Haemulidae	Javelin grunter	0.627	0.3	habitat_coastal	FB	
510	Acanthopagrus latus	Sparidae	Yellowfin seabream	0.419	0.3	habitat_coastal	FB	
511	Chirocentrus dorab	Chirocentridae	Dorab wolf-herring	0.401	0.3	habitat_coastal	FB	FB: "Occurs inshore, including brackish waters (Ref. 12743)."
512	Pagrus auratus	Sparidae	Silver seabream	0.213	0.3	habitat_reef	FB	
513	Aethaloperca rogaa	Serranidae	Redmouth grouper	0.393	0.3	habitat_reef	FB	FB: "Marine; reef-associated; non-migratory"
514	Cephalopholis boenak	Serranidae	Chocolate hind	0.477	0.3	habitat_reef	FB	
515	Cephalopholis hemistictos	Serranidae	Yellowfin hind	0.369	0.1	territorial	FB	FB: "It is a monogamous species, the pair jointly defends a common territory of up to 62 square m (Ref. 6480)."
516	Cephalopholis miniata	Serranidae	Coral hind	0.453	0.1	territorial	FB	FB: "These groups occupy territories of up to 475 sq m subdivided into secondary territories and defended by a single female (Ref. 6480)."
517	Cromileptes altivelis	Serranidae	Humpback grouper	0.152	0.3	habitat_reef	FB	
518	Epinephelus marginatus	Serranidae	Dusky grouper	0.11	0.1	territorial	FB	FB: "Solitary and territorial (Ref. 12382)."
519	Saurida tumbil	Synodontidae	Greater lizardfish	0.476	0.3	habitat_benthic	FB	
520	Sargocentron spiniferum	Holocentridae	Sabre squirrelfish	1.094	0.3	habitat_reef	FB	
521	Bathyraja eatonii	Arhynchobatidae	Eaton's skate	0.116	0.3	habitat_benthic	FB	
522	Macrourus carinatus	Macrouridae	Ridge scaled rattail	0.131	0.3	habitat_deep	FB	
523	Macrourus whitsoni	Macrouridae	Whitson's grenadier	0.131	0.3	habitat_deep	FB	
524	Epinephelus multinitatus	Serranidae	White-blotched grouper	0.273	0.3	habitat_reef	FB	
525	Epinephelus summa	Serranidae	Summan grouper	0.287	0.3	habitat_reef	FB	
526	Microgongias furnieri	Sciaenidae	Whitemouth croaker	0.541	0.3	habitat_coastal	FB	
527	Plectrohinchus sordidus	Haemulidae	Sordid rubberlip	0.55	0.3	habitat_reef	FB	
528	Plectrohinchus gaterinus	Haemulidae	Blackspotted rubberlip	0.447	0.3	habitat_reef	FB	
529	Plectrohinchus schotaf	Haemulidae	Minstrel sweetlips	0.447	0.3	habitat_reef	FB	
530	Pomadasys stridens	Haemulidae	Striped piggy	0.779	0.3	habitat_coastal	FB	
531	Pomacanthus maculosus	Pomacanthidae	Yellowbar angelfish	0.205	0.3	habitat_reef	FB	
532	Crenidens crenidens	Sparidae	Karanteen seabream	0.519	0.3	habitat_coastal	FB	
533	Pelates quadrilineatus	Terapontidae	Fourlined terapon	0.814	0.3	habitat_coastal	FB	
534	Rhabdosargus haaffara	Sparidae	Haffara seabream	0.561	0.3	habitat_reef	FB	
535	Odontesthes regia	Atherinidae	Chilean silverside	0.646	0.3	habitat_coastal	REF	Secondary ref: (51)
536	Plectrohinchus pictus	Haemulidae	Trout sweetlips	0.289	0.3	habitat_reef	IUCN	IUCN: "This species inhabits coastal rocky and coral reefs (Carpenter et al. 1997)."
537	Callorhinchus callorynchus	Callorhinchidae	Plownose chimaera	0.167	0.3	habitat_benthic	FB	
538	Cephalopholis fulva	Serranidae	Coney	0.435	0.3	habitat_reef	FB	
539	Patagonotothen	Nototheniidae	Longtail southern	0.471	0.9	deep		

	ramsayi		cod					
540	<i>Tragulichthys jaculiferus</i>	Diodontidae	Longspine burrfish	0.824	0.3	habitat_benthic	FB	
541	<i>Paristiopterus labiosus</i>	Pentacerotidae	Giant boarfish	0.566	0.3	habitat_benthic	FB	
542	<i>Prolatilus jugularis</i>	Pinguipedidae	Pacific sandperch	0.637	0.3	habitat_benthic	FB	
543	<i>Sparisoma cretense</i>	Scaridae	Parrotfish	0.486	0.3	habitat_coastal	FB	
544	<i>Hydrolagus novaezealandiae</i>	Chimaeridae	Dark ghost shark	0.192	0.9	deep	FB	
545	<i>Cynoponticus coniceps</i>	Muraenesocidae	Red pike conger	0.409	0.1	sedentary	FB	
546	<i>Centroberyx affinis</i>	Berycidae	Redfish	0.322	0.3	habitat_coastal	FB	
547	<i>Centriscops humerosus</i>	Centriscidae	Banded yellowfish	0.866	0.3	habitat_benthic	FB	
548	<i>Lepidopercapulchella</i>	Serranidae	Orange perch	0.393	0.3	habitat_reef	FB	
549	<i>Caprodon longimanus</i>	Serranidae	Pink maomao	0.393	0.3	habitat_reef	FB	
550	<i>Allothunnus fallai</i>	Scombridae	Slender tuna	0.597	0.9	pelagic	FB	
551	<i>Ammodytes personatus</i>	Ammodytidae	Pacific sandlance	0.344	0.3	habitat_coastal	FB	FB: "Marine; demersal; oceanodromous (Ref. 51243)"
552	<i>Aphanopus carbo</i>	Trichiuridae	Black scabbardfish	0.346	0.9	deep	REF	Secondary ref: (52)
553	<i>Aphareus rutilans</i>	Lutjanidae	Rusty jobfish	0.312	0.3	habitat_reef	FB	
554	<i>Aprion virescens</i>	Lutjanidae	Green jobfish	0.588	0.3	habitat_reef	FB	
555	<i>Apsilus fuscus</i>	Lutjanidae	African forktail snapper	0.591	0.3	habitat_reef	FB	
556	<i>Argentina sphyraena</i>	Argentinidae	Argentine	0.228	0.9	pelagic	FB	FB: "Feeds on bottom-living polychaetes, mollusks and crustaceans, also on pelagic invertebrates and fishes."
557	<i>Atheresthes evermanni</i>	Pleuronectidae	Kamchatka flounder	0.172	0.3	habitat_benthic	FB	
558	<i>Caulolatilus microps</i>	Malacanthidae	Grey tilefish	0.346	0.1	sedentary	IUCN	IUCN: "It is generally not migratory and most likely inhabits burrows as do most of its congeners."
559	<i>Champscephalus gunnari</i>	Channichthyidae	Mackerel icefish	0.303	0.3	habitat_coastal	REF	Secondary ref: (53)
560	<i>Channichthys rhinoceratus</i>	Channichthyidae	Unicorn icefish	0.239	0.3	habitat_coastal	FB	
561	<i>Coryphaenoides rupestris</i>	Macrouridae	Roundnose grenadier	0.072	0.3	habitat_deep	FB	
562	<i>Cyclopterus lumpus</i>	Cyclopteridae	Lumpfish	0.144	0.9	migratory	FB	FB: "They migrate considerable distances in an annual cycle between deeper waters in winter and shallower waters in summer (Ref. 26141)."
563	<i>Dentex angelensis</i>	Sparidae	Angolan dentex	0.459	0.3	habitat_coastal	FB	
564	<i>Drepane africana</i>	Drepaneidae	African sicklefish	0.478	0.3	habitat_coastal	FB	
565	<i>Elops saurus</i>	Elopidae	Ladyfish	0.574	0.3	habitat_coastal	FB	FB: "Spawn in the open sea (Ref. 5217)."
566	<i>Encrasicholina punctifer</i>	Engraulidae	Buccaneer anchovy	1.63	0.9	pelagic	FB	FB: "A schooling species found inshore and in oceanic waters, hundreds of miles from land."
567	<i>Euthynnus lineatus</i>	Scombridae	Black skipjack	0.516	0.9	pelagic	IUCN	
568	<i>Gadus ogac</i>	Gadidae	Greenland cod	0.385	0.3	habitat_coastal	FAO	FAO: "Usually lives close to the coast, from 0 to 200 m depth, and is rarely found offshore, in deeper water."
569	<i>Galeus melastomus</i>	Pentanchidae	Blackmouth catshark	0.188	0.3	habitat_deep	FB	
570	<i>Gasterochisma melampus</i>	Scombridae	Butterfly kingfish	0.597	0.9	deep	FB	
571	<i>Joturus pictardi</i>	Mugilidae	Bobo mullet	0.636	0.3	habitat_coastal	FB	
572	<i>Labrus bergylta</i>	Labridae	Ballan wrasse	0.208	0.3	habitat_reef	FB	
573	<i>Leiostomus xanthurus</i>	Sciaenidae	Spot croaker	0.766	0.3	habitat_coastal	FB	
574	<i>Lophius piscatorius</i>	Lophiidae	Angler	0.394	0.3	habitat_benthic	FB	
575	<i>Macrourus berglax</i>	Macrouridae	Roughhead grenadier	0.088	0.3	habitat_deep	FB	
576	<i>Merluccius senegalensis</i>	Merlucciidae	Senegalese hake	0.196	0.9	migratory	FB	FB: "Undergoes seasonal latitudinal migrations (Ref. 9709)."
577	<i>Pleuragrammus azonus</i>	Hexagrammidae	Okhotsk atka mackerel	0.16	0.3	habitat_benthic	FB	
578	<i>Priacanthus</i>	Priacanthidae	Red bigeye	0.901	0.3	habitat_reef	FB	

	macracanthus							
579	Pseudupeneus prayensis	Mullidae	West African goatfish	0.897	0.3	habitat_benthic	FB	
580	Salmo salar	Salmonidae	Atlantic salmon	0.73	0.9	migratory	FB	
581	Scomberomorus brasiliensis	Scombridae	Serra Spanish mackerel	0.495	0.3	habitat_coastal	FB	FB: "Does not migrate extensively, although some seasonal movement appears to occur off Trinidad."
582	Scomberomorus sierra	Scombridae	Pacific sierra	0.626	0.9	pelagic	IUCN	
583	Seriola lalandi	Carangidae	Yellowtail amberjack	0.434	0.3	habitat_reef	FB	
584	Squatina californica	Squatinidae	Pacific angelshark	0.076	0.3	habitat_benthic	FB	
585	Tetrapurus pfluegeri	Istiophoridae	Longbill spearfish	0.49	0.9	hms	FB	
586	Umbrina canosai	Sciaenidae	Argentine croaker	0.681	0.3	habitat_benthic	FB	
587	Acipenser transmontanus	Acipenseridae	White sturgeon	0.086	0.3	habitat_coastal	FB	FB: "Spends most of its time in the sea, usually close to shore (Ref. 27547)."
588	Anarhichas denticulatus	Anarhichadidae	Northern wolffish	0.101	0.3	habitat_deep	FB	FB: "Inhabits offshore waters in midwater; adults also near bottom from 60-970 m, mainly 100-900 m (Ref. 4694)."
589	Anarhichas lupus	Anarhichadidae	Atlantic wolffish	0.105	0.3	habitat_coastal	FB	
590	Atherina boyeri	Atherinidae	Big-scale sand smelt	0.813	0.3	habitat_coastal	FB	
591	Beryx decadactylus	Berycidae	Alfonsino	0.159	0.3	habitat_deep	FB	
592	Caranx melampygus	Carangidae	Bluefin trevally	0.562	0.3	habitat_reef	FB	
593	Caranx sexfasciatus	Carangidae	Bigeye trevally	0.731	0.3	habitat_reef	FB	
594	Chimaera monstrosa	Chimaeridae	Rabbit fish	0.116	0.9	deep	FB	
595	Chloroscombrus orqueta	Carangidae	Pacific bumper	0.884	0.3	habitat_coastal	FB	
596	Cynoscion arenarius	Sciaenidae	Sand weakfish	0.79	0.3	habitat_coastal	FB	
597	Dasyatis americana	Dasyatidae	Southern stingray	0.54	0.3	habitat_benthic	FB	
598	Decapterus macrosoma	Carangidae	Shortfin scad	1.34	0.9	pelagic	FB	FB: "A predominately pelagic schooling species (Ref. 9283, 48635, 58302)."
599	Dussumieri acuta	Dussumieriidae	Rainbow sardine	0.898	0.3	habitat_coastal	FB	
600	Dussumieri elopsoides	Dussumieriidae	Slender rainbow sardine	0.787	0.3	habitat_coastal	FB	
601	Engraulis mordax	Engraulidae	Californian anchovy	0.452	0.9	pelagic	FB	FB: "Usually found in coastal waters within about 30 km from shore, but as far out as 480 km, forming large, tightly packed schools."
602	Etrumeus whiteheadi	Dussumieriidae	Whitehead's round herring	0.424	0.3	habitat_coastal	FB	
603	Gadilus argenteus	Gadidae	Silvery pout	0.917	0.3	habitat_deep	FB	FB: "Marine; pelagic-oceanic; non-migratory; depth range 100 - 1000 m (Ref. 35388)."
604	Gasterosteus aculeatus	Gasterosteidae	Three-spined stickleback	0.998	0.3	habitat_coastal	FB	
605	Hemiramphus balao	Hemiramphidae	Balao halfbeak	0.889	0.9	pelagic	IUCN	IUCN: "This offshore, surface dwelling species forms large schools and can be associated with pelagic Sargassum in the North Atlantic Ocean and Gulf of Mexico (Coston-Clements et al. 1991, Collette 1999)."
606	Lethrinus atlanticus	Lethrinidae	Atlantic emperor	0.43	0.3	habitat_reef	FB	
607	Lethrinus borbonicus	Lethrinidae	Snubnose emperor	0.636	0.3	habitat_reef	FB	
608	Lethrinus microdon	Lethrinidae	Smalltooth emperor	0.405	0.3	habitat_reef	FB	
609	Lethrinus xanthurus	Lethrinidae	Yellowlip emperor	0.313	0.3	habitat_reef	FB	
610	Lophius gastrophysus	Lophiidae	Blackfin goosefish	0.425	0.3	habitat_benthic	FB	
611	Muraena helena	Muraenidae	Mediterranean moray	0.189	0.1	territorial	FB	
612	Mycteroperca phenax	Serranidae	Scamp	0.216	0.3	habitat_reef	FB	
613	Pellona ditchela	Pristigasteridae	Indian pellona	0.764	0.9	pelagic	IUCN	

614	<i>Petromyzon marinus</i>	Petromyzontidae	Sea lamprey	0.292	0.9	migratory	FB	FB: "Amphihaline species making important migrations. Spends its adult life in the sea for about 20-36 months, moving further offshore as it grows (Ref. 59043)."
615	<i>Ruvettus pretiosus</i>	Gempylidae	Oilfish	0.416	0.9	migratory	FB	FB: "Migrates far offshore (Ref. 26139). Pelagic (Ref. 5951)."
616	<i>Sardinella lemuru</i>	Clupeidae	Bali sardinella	1.197	0.3	habitat_coastal	FB	
617	<i>Sardinella longiceps</i>	Clupeidae	Indian oil sardine	1.069	0.9	migratory	FB	FB: "Coastal pelagic (Ref. 68964). Forms schools in coastal waters and strongly migratory."
618	<i>Scomberoides commersonnianus</i>	Carangidae	Talang queenfish	0.911	0.3	habitat_reef	FB	
619	<i>Selene peruviana</i>	Carangidae	Peruvian moonfish	0.882	0.3	habitat_coastal	FB	
620	<i>Stereolepis gigas</i>	Polymixiidae	Giant seabass	0.278	0.3	habitat_benthic	IUCN	
621	<i>Stromateus fiatola</i>	Stromateidae	Blue butterfish	0.839	0.9	pelagic	FB	
622	<i>Tetrapturus angustirostris</i>	Istiophoridae	Shortbill spearfish	0.49	0.9	hms	FB	
623	<i>Tetrapturus belone</i>	Istiophoridae	Mediterranean spearfish	0.49	0.9	hms	FB	
624	<i>Trachinotus mookalee</i>	Carangidae	Indian pompano	0.843	0.3	habitat_coastal	FB	
625	<i>Trachinus draco</i>	Trachinidae	Greater weever	0.63	0.3	habitat_benthic	FB	FB: "At night they swim around freely, even pelagically (Ref. 35388)."
626	<i>Trichiurus lepturus</i>	Trichiuridae	Largehead hairtail	0.583	0.3	habitat_coastal	FB	
627	<i>Uranoscopus scaber</i>	Uranoscopidae	Stargazer	0.645	0.1	sedentary	FB	
628	<i>Zeus faber</i>	Zeidae	John dory	0.214	0.3	habitat_reef	FB	
629	<i>Psettichthys melanostictus</i>	Pleuronectidae	Pacific sand sole	0.306	0.3	habitat_benthic	FB	
630	<i>Normanichthys crockeri</i>	Normanichthyidae	Mote sculpin	0.459	0.3	habitat_coastal	REF	Secondary ref: (54)
631	<i>Sphyraena obtusata</i>	Sphyraenidae	Obtuse barracuda	0.681	0.3	habitat_coastal	FB	
632	<i>Umbrina canariensis</i>	Sciaenidae	Canary drum	0.379	0.3	habitat_benthic	FB	
633	<i>Dentex congogensis</i>	Sparidae	Congo dentex	0.553	0.3	habitat_coastal	FB	
634	<i>Callorhinchus milii</i>	Callorhinchidae	Ghost shark	0.114	0.3	habitat_benthic	FB	
635	<i>Sphyraena jello</i>	Sphyraenidae	Pickhandle barracuda	0.598	0.3	habitat_coastal	FB	
636	<i>Epinephelus merra</i>	Serranidae	Honeycomb grouper	0.431	0.3	habitat_reef	FB	
637	<i>Elops lacerta</i>	Elopidae	West African ladyfish	0.594	0.3	habitat_coastal	FB	FB: "The reproduction takes place in the sea (Ref. 81265)."
638	<i>Scarus ghobban</i>	Scaridae	Blue-barred parrotfish	0.573	0.3	habitat_reef	FB	
639	<i>Cheilinus undulatus</i>	Labridae	Humphead wrasse	0.377	0.3	habitat_reef	FB	
640	<i>Gerres oblongus</i>	Gerreidae	Slender silver-biddy	1.496	0.3	habitat_reef	FB	
641	<i>Mustelus lenticulatus</i>	Triakidae	Spotted estuary smooth-hound	0.101	0.9	migratory	FB	FB: "Makes seasonal inshore-offshore movements (Ref. 244). Makes extensive coastal migrations, with one tagged female moving at least 1160 km (Ref. 54100)."
642	<i>Mustelus schmitti</i>	Triakidae	Narrownose smooth-hound	0.147	0.3	habitat_coastal	FB	
643	<i>Mustelus asterias</i>	Triakidae	Starry smooth-hound	0.133	0.3	habitat_coastal	FB	
644	<i>Mustelus antarcticus</i>	Triakidae	Gummy shark	0.09	0.9	migratory	FB	FB: "These sharks are capable of long migrations, females traveling longer distances than males (Ref. 6390). Utilized fresh for human consumption (Ref. 6871)."
645	<i>Plectropomus areolatus</i>	Serranidae	Squaretail coralgrouper	0.322	0.3	migratory	IUCN	IUCN: "Individuals of both sexes appear to use reproductive migratory corridors to reach aggregation sites, which increase their vulnerability to fisheries (Rhodes and Tupper 2008)."
646	<i>Cephalopholis argus</i>	Serranidae	Peacock hind	0.453	0.3	habitat_reef	FB	

647	<i>Diastobranchus capensis</i>	Synaphobranchidae	Basketwork eel	0.368	0.3	habitat_deep	REF	Secondary ref: (55)
648	<i>Epinephelus polylepis</i>	Serranidae	Smallscaled grouper	0.281	0.3	habitat_benthic	IUCN	
649	<i>Plectropomus pessuliferus</i>	Serranidae	Roving coralgrouper	0.322	0.3	habitat_reef	FB	
650	<i>Girella tricuspidata</i>	Kyphosidae	Parore	0.178	0.3	habitat_coastal	FB	
651	<i>Fistularia corneta</i>	Fistulariidae	Pacific cornetfish	0.859	0.3	habitat_reef	FB	FB: "Adults occur at depths greater than 30 m, along continental and insular margins (Ref. 36710), over rocky substrates (Ref. 37955)."
652	<i>Seriolella porosa</i>	Centrolophidae	Choicy ruff	0.319	0.3	habitat_coastal	FB	
653	<i>Bregmaceros mcclellandi</i>	Bregmacerotidae	Unicorn cod	0.39	0.9	pelagic	FB	
654	<i>Lepidorhynchus denticulatus</i>	Macrouridae	Thorntooth grenadier	0.176	0.3	habitat_deep	FB	
655	<i>Solea senegalensis</i>	Soleidae	Senegalese sole	0.141	0.3	habitat_benthic	FB	
656	<i>Chelidonichthys lucerna</i>	Triglidae	Tub gurnard	0.346	0.3	habitat_benthic	FB	
657	<i>Gerres nigri</i>	Gerreidae	Guinean striped mojarra	1.496	0.3	habitat_benthic	FB	
658	<i>Lophius vomerinus</i>	Lophiidae	Devil anglerfish	0.446	0.3	habitat_benthic	FB	
659	<i>Cytthus traversi</i>	Cyttidae	King dory	0.431	0.3	habitat_deep	FB	
660	<i>Aplodactylus punctatus</i>	Aplodactylidae	NA	0.63	0.3	habitat_coastal	FB	FB: "This species is most abundant littoral species on the coast of central Chile, found in close association with the brown kelp <i>Lessonia trabeculata</i> ."
661	<i>Seriolella caerulea</i>	Centrolophidae	White warehou	0.332	0.3	habitat_coastal	FB	
662	<i>Stromateus brasiliensis</i>	Stromateidae	Southwest Atlantic butterfish	0.839	0.9	pelagic	FB	
663	<i>Scarus persicus</i>	Scaridae	Gulf parrotfish	0.62	0.3	habitat_reef	IUCN	
664	<i>Cheilodactylus variegatus</i>	Cheilodactylidae	Peruvian morwong	0.331	0.3	habitat_coastal	REF	Secondary ref: (56)
665	<i>Genypterus chilensis</i>	Ophidiidae	Red cusk-eel	0.203	0.3	habitat_benthic	FB	
666	<i>Genypterus maculatus</i>	Ophidiidae	Black cusk-eel	0.203	0.3	habitat_benthic	FB	
667	<i>Rhinobatos planiceps</i>	Rhinobatidae	Pacific guitarfish	0.213	0.3	habitat_benthic	FB	
668	<i>Pennahia anea</i>	Sciaenidae	Donkey croaker	1.314	0.3	habitat_coastal	FB	
669	<i>Rhynchobatus australiae</i>	Rhinobatidae	Whitespotted wedgefish	0.205	0.3	habitat_benthic	FB	
670	<i>Himantura gerrardi</i>	Dasyatidae	Sharpnose stingray	0.4	0.3	habitat_benthic	FB	
671	<i>Elagatis bipinnulata</i>	Carangidae	Rainbow runner	0.893	0.9	pelagic	FB	
672	<i>Pseudotolithus senegallus</i>	Sciaenidae	Law croaker	0.454	0.3	habitat_coastal	FB	
673	<i>Coregonus lavaretus</i>	Salmonidae	European whitefish	0.391	0.3	habitat_coastal	IUCN	IUCN: "Spawns on gravel, near shore, in shallow water, in December."
674	<i>Eptatretus cirrhatus</i>	Myxinidae	Broadgilled hagfish	0.149	0.3	habitat_benthic	FB	
675	<i>Hoplopagrus guentherii</i>	Lutjanidae	Mexican barred snapper	0.503	0.3	habitat_reef	FB	
676	<i>Scomberesox saurus</i>	Scomberesocidae	Atlantic saury	0.634	0.9	pelagic	FB	
677	<i>Tylosurus crocodilus</i>	Belonidae	Hound needlefish	0.696	0.3	habitat_coastal	FB	FB: "A pelagic species (Ref. 26340) found over lagoon and seaward reefs."
678	<i>Plagiogeneion rubiginosum</i>	Emmelichthyidae	Rubyfish	0.467	0.9	deep	IUCN	IUCN: "Plagiogeneion rubiginosum inhabits deep waters along the edges of continental shelves and seamounts (Horn et al. 2012, O'Driscoll et al. 2012)...Based on radiocarbon analyses and otolith interpretations, it has a maximum longevity of about 100 years (Horn et al. 2012, Trnski 2015)."
679	<i>Mullus argentinae</i>	Mullidae	Argentine goatfish	0.777	0.3	habitat_benthic	FB	
680	<i>Sparus aurata</i>	Sparidae	Gilthead seabream	0.38	0.3	habitat_reef	IUCN	IUCN: "This species has reduced home ranges and shows site fidelity when displaced (Abecassis and

								Erzini 2008) and may be solitary or form small aggregations."
681	<i>Grammoplites suppositus</i>	Platycephalidae	Spotfin flathead	0.421	0.3	habitat_benthic	FB	
682	<i>Pepirus paru</i>	Stromateidae	American harvestfish	0.911	0.3	habitat_coastal	FB	FB: "A pelagic fish forming large schools in coastal bays, inshore waters over the continental shelf and around islands at moderate depths (50 to 70 m) where it occurs throughout the year (Ref. 53006)."
683	<i>Sparidentex hasta</i>	Sparidae	Sobaity seabream	0.509	0.3	habitat_reef	FB	
684	<i>Dicologlossa cuneata</i>	Soleidae	Wedge sole	0.219	0.3	habitat_benthic	FB	
685	<i>Palinurus delagoae</i>	Palinuridae	Natal spiny lobster	0.22	0.3	habitat_benthic	REF	Secondary ref: (57) "...only 2.1% of larger lobsters migrated further than 20 km."
686	<i>Palinurus mauritanicus</i>	Palinuridae	pink spiny lobster	0.22	0.3	habitat_benthic	IUCN	
687	<i>Panulirus cygnus</i>	Palinuridae	Australian spiny lobster	1.15	0.3	habitat_benthic	IUCN	
688	<i>Panulirus gracilis</i>	Palinuridae	green spiny lobster	1.018	0.9	migratory	IUCN	IUCN: "In the northern hemisphere, this species migrates to coastal shallow waters in November and December and remains there until May (Guzman et al. 2008)."
689	<i>Panulirus homarus</i>	Palinuridae	scalloped spiny lobster	1.018	0.3	habitat_benthic	REF	Secondary ref: (58) "Mark-recovery experiments conducted with the help of suture tags on Indian spiny lobster <i>Panulirus homarus</i> (Linn.) showed that their movement in the fishing ground is of a very restricted nature. Long migratory movements were not observed."
690	<i>Panulirus longipes</i>	Palinuridae	longlegged spiny lobster	1.018	0.3	habitat_benthic	SLB	
691	<i>Penaeus monodon</i>	Penaeidae	giant tiger prawn	1.19	0.3	habitat_benthic	SLB	
692	<i>Xiphopenaeus kroyeri</i>	Penaeidae	Atlantic seabob	0.88	0.3	habitat_benthic	SLB	
693	<i>Artemesia longinaris</i>	Penaeidae	Argentine stileto shrimp	0.52	0.3	habitat_benthic	SLB	
694	<i>Metapenaeus endeavouri</i>	Penaeidae	endeavour shrimp	0.93	0.3	habitat_benthic	SLB	
695	<i>Metapenaeus joyneri</i>	Penaeidae	Shiba shrimp	1.02	0.3	habitat_coastal	REF	Secondary ref: (59)
696	<i>Metapenaeus monoceros</i>	Penaeidae	speckled shrimp	1.11	0.1	sedentary	SLB	SLB: "Frequently burrows (Ref. 106912)."
697	<i>Acetes erythraeus</i>	Sergestidae	tsivakihini paste shrimp	1.19	0.3	habitat_coastal	SLB	
698	<i>Acetes japonicus</i>	Sergestidae	akiami paste shrimp	1.19	0.3	habitat_coastal	SLB	
699	<i>Pleoticus muelleri</i>	Solenoceridae	Argentine red shrimp	1.19	0.3	habitat_benthic	SLB	
700	<i>Haliporoides diomedae</i>	Solenoceridae	Chilean knife shrimp	0.96	0.3	habitat_benthic	SLB	
701	<i>Haliporoides trianthrus</i>	Solenoceridae	knife shrimp	0.96	0.3	habitat_benthic	SLB	
702	<i>Sicyonia brevirostris</i>	Sicyoniidae	brown rock shrimp	0.81	0.3	habitat_benthic	SLB	
703	<i>Sicyonia ingentis</i>	Sicyoniidae	ridgeback rock shrimp	0.81	0.3	habitat_benthic	SLB	
704	<i>Aristeus varidens</i>	Aristeidae	striped red shrimp	0.48	0.3	habitat_deep	SLB	
705	<i>Nematopalaemon schmitti</i>	Palaemonidae	whitebelly prawn	1.19	0.3	habitat_coastal	SLB	
706	<i>Pandalus jordani</i>	Pandalidae	ocean shrimp	0.54	0.3	habitat_benthic	SLB	
707	<i>Pandalus hypsinotus</i>	Pandalidae	coonstriped shrimp	0.56	0.3	habitat_benthic	SLB	
708	<i>Homarus gammarus</i>	Nephropidae	European lobster	0.37	0.1	territorial	SLB	SLB: "Nocturnal and territorial living in holes or crevices." (60)
709	<i>Panulirus argus</i>	Palinuridae	Caribbean spiny lobster	0.55	0.3	habitat_benthic	IUCN	

710	<i>Palinurus elephas</i>	Palinuridae	Common spiny lobster	0.22	0.3	habitat_benthic	IUCN	
711	<i>Lithodes santolla</i>	Lithodidae	Southern king crab	0.57	0.3	habitat_benthic	SLB	
712	<i>Nematopalaemon hastatus</i>	Palaemonidae	estuarine prawn	1.19	0.3	habitat_coastal	SLB	
713	<i>Pandalus kessleri</i>	Pandalidae	Hokkai shrimp	0.56	0.3	habitat_benthic	SLB	
714	<i>Panopea abrupta</i>	Hiatellidae	Pacific geoduck clam	0.37	0.1	sedentary	SLB	
715	<i>Tivela mactroides</i>	Veneridae	trigonal tivela	1.18	0.1	sedentary	SLB	
716	<i>Penaeus penicillatus</i>	Penaeidae	NA	1.083	0.3	habitat_benthic	SLB	
717	<i>Cancer pagurus</i>	Cancridae	ox crab	0.46	0.1	sedentary	SLB	
718	<i>Chaceon affinis</i>	Geryoniidae	deep-sea red crab	0.42	0.3	habitat_benthic	SLB	
719	<i>Callinectes danae</i>	Portunidae	Dana swimming crab	0.6	0.3	habitat_coastal	REF	Secondary ref: (61) "C. danae breeds in the estuarine bay complex, with males and juvenile females concentrated in the estuary."
720	<i>Portunus pelagicus</i>	Portunidae	flower crab	1.19	0.3	habitat_coastal	SLB	"In all, 1003 tagged crabs (14.7%) were recaptured, with 79% of these recaptured less than 2 km from their release points and 4% recaptured more than 10 km from their release points." Ref: (62)
721	<i>Cancer borealis</i>	Cancridae	Jonah crab	0.46	0.1	sedentary	SLB	
722	<i>Portunus trituberculatus</i>	Portunidae	horse crab	1.19	0.9	migratory	REF	Secondary ref: (63) "P. trituberculatus is characterized by long-distance migration and is a repeat spawner (Dai, 1977, 1986; Xue et al., 1997)."
723	<i>Scylla serrata</i>	Portunidae	giant mud crab	1.17	0.3	habitat_coastal	REF	Secondary ref: (64)
724	<i>Chaceon maritae</i>	Geryoniidae	West African geryon	0.42	0.3	habitat_benthic	SLB	
725	<i>Chaceon fenneri</i>	Geryoniidae	Gulf of Mexico golden crab	0.42	0.3	habitat_benthic	SLB	
726	<i>Cancer productus</i>	Cancridae	red rock crab	0.46	0.1	sedentary	SLB	SLB: "Buries itself in the substrate during periods of inactivity (Ref. 78491)."
727	<i>Chionoecetes japonicus</i>	Oregoniidae	red snow crab	0.58	0.3	habitat_benthic	SLB	
728	<i>Loxechinus albus</i>	Parechinidae	Chilean sea urchin	0.57	0.1	sedentary	SLB	
729	<i>Cerastoderma edule</i>	Cardiidae	common edible cockle	0.49	0.1	sedentary	SLB	
730	<i>Loligo vulgaris</i>	Loliginidae	European squid	0.34	0.9	migratory	IUCN	IUCN: "Horizontal migrations also take place due to environmental factors; animals migrate into deeper waters during the winter. Offshore and onshore migrations also take place in relation to reproduction."
731	<i>Spisula solidida</i>	Mactridae	solid surf clam	0.47	0.1	sedentary	SLB	
732	<i>Mytilus edulis</i>	Mytilidae	blue mussel	0.54	0.1	sedentary	SLB	
733	<i>Mytilus galloprovincialis</i>	Mytilidae	Mediterranean mussel	0.5	0.1	sedentary	SLB	
734	<i>Eleidone cirrhosa</i>	Eledonidae	horned octopus	0.54	0.3	habitat_benthic	SLB	
735	<i>Illex coindetii</i>	Ommastrephidae	shortfin squid	0.52	0.9	migratory	SLB	SLB: "Performs diel vertical movements (Ref. 275) as well as seasonal migrations (Ref. 64257)."
736	<i>Todarodes sagittatus</i>	Ommastrephidae	European flying squid	0.38	0.9	migratory	SLB	SLB: "Migrates to offshore waters during winter; spawning is thought to occur in the continental slope (Ref. 2614)."
737	<i>Crassostrea gigas</i>	Ostreidae	giant cupped oyster	0.57	0.1	sedentary	SLB	
738	<i>Crassostrea virginica</i>	Ostreidae	American cupped oyster	0.57	0.1	sedentary	SLB	
739	<i>Aequipecten opercularis</i>	Pectinidae	queen scallop	0.56	0.1	sedentary	SLB	(65)
740	<i>Pecten maximus</i>	Pectinidae	great Atlantic scallop	0.57	0.1	sedentary	SLB	(65)
741	<i>Sepia officinalis</i>	Sepiidae	common cuttlefish	0.56	0.3	habitat_benthic	SLB	
742	<i>Chamelea gallina</i>	Veneridae	Striped venus clam	0.5	0.1	sedentary	SLB	
743	<i>Mercenaria</i>	Veneridae	northern quahog	0.43	0.1	sedentary	SLB	

	mercenaria							
744	Argopecten irradians	Pectinidae	Atlantic bay scallop	1.01	0.1	sedentary	SLB	
745	Octopus maya	Octopodidae	Mexican four-eyed octopus	0.65	0.3	habitat_coastal	SLB	
746	Illex argentinus	Ommastrephidae	Argentine shortfin squid	1	0.9	pelagic	REF	Secondary ref: (66)
747	Todarodes pacificus	Ommastrephidae	Japanese flying squid	1.12	0.9	pelagic	SLB	
748	Dosidicus gigas	Ommastrephidae	jumbo flying squid	1.19	0.9	pelagic	REF	Secondary ref: (67) "Horizontal movements of nearly 100 km over 3 d were observed"
749	Ruditapes philippinarum	Veneridae	Japanese carpet shell	1.19	0.1	sedentary	SLB	
750	Pecten novaezelandiae	Pectinidae	scallop	0.51	0.1	sedentary	SLB	
751	Argopecten ventricosus	Pectinidae	Pacific calico scallop	1.01	0.1	sedentary	SLB	SLB: "Moves by expelling water between valves propelling to a distance of 1m upwards or several meters sideways, i.e., flying motion"
752	Pecten jacobaeus	Pectinidae	great Mediterranean scallop	0.43	0.1	sedentary	SLB	
753	Turbo cornutus	Turbinidae	horned turban	1.19	0.1	sedentary	SLB	
754	Ruditapes decussatus	Veneridae	grooved carpet shell	1.19	0.1	sedentary	SLB	
755	Haliotis rubra	Haliotidae	blacklip abalone	0.57	0.1	sedentary	SLB	
756	Mytilus coruscus	Mytilidae	Far eastern mussel	0.49	0.1	sedentary	SLB	
757	Trachysalambria curvirostris	Penaeidae	southern rough shrimp	1.19	0.3	habitat_benthic	SLB	
758	Litopenaeus setiferus	Penaeidae	northern white shrimp	0.56	0.3	habitat_benthic	SLB	
759	Doryteuthis opalescens	Loliginidae	opalescent inshore squid	0.93	0.9	pelagic	SLB	
760	Doryteuthis gahi	Loliginidae	Patagonian squid	0.48	0.9	migratory	SLB	
761	Larimichthys crocea	Sciaenidae	Large yellow croaker	0.601	0.3	habitat_coastal	FB	
762	Liza haematochella	Mugilidae	So-iyu mullet	0.293	0.3	habitat_coastal	FB	
763	Tegillarca granosa	Arcidae	granular ark	0.85	0.1	sedentary	SLB	
764	Fennerpopenaeus chinensis	Penaeidae	fleshy prawn	0.88	0.9	migratory	REF	Secondary ref: (68)
765	Fennerpopenaeus merguiensis	Penaeidae	banana prawn	1.18	0.3	habitat_benthic	FB	
766	Sebastes norvegicus	Sebastidae	Golden redfish	0.057	0.3	habitat_benthic	FB	
767	Metacarcinus magister	Cancridae	Dungeness crab	0.57	0.3	habitat_coastal	SLB	
768	Doryteuthis pealeii	Loliginidae	longfin inshore squid	0.705	0.9	migratory	IUCN	
769	Pleuronectes quadrifasciatus	Pleuronectidae	Alaska plaice	0.12	0.3	habitat_benthic	REF	Secondary ref: (69)
770	Pseudopleuronectes herzensteini	Pleuronectidae	Yellow striped flounder	0.483	0.3	habitat_benthic	FAO	
771	Farfantepenaeus notialis	Penaeidae	southern pink shrimp	0.46	0.3	habitat_benthic	SLB	
772	Farfantepenaeus aztecus	Penaeidae	northern brown shrimp	0.52	0.3	habitat_benthic	SLB	
773	Scophthalmus maximus	Scophthalmidae	Turbot	0.445	0.3	habitat_benthic	FB	
774	Kajikia audax	Istiophoridae	Striped marlin	0.347	0.9	pelagic	FB	
775	Nemadactylus bergi	Cheilodactylidae	Castaneta	0.189	0.3	habitat_benthic	REF	Secondary ref: (70)
776	Leucoraja naevus	Rajidae	Cuckoo ray	0.067	0.3	habitat_benthic	IUCN	
777	Farfantepenaeus duorarum	Penaeidae	pink shrimp	0.51	0.9	pelagic	REF	Secondary ref: (71)
778	Istiompax indica	Istiophoridae	Black marlin	0.362	0.9	hms	FB	
779	Melicerthus kerathurus	Penaeidae	caramote prawn	0.57	0.3	habitat_benthic	SLB	
780	Farfantepenaeus californiensis	Penaeidae	yellowleg shrimp	0.92	0.3	habitat_benthic	SLB	
781	Farfantepenaeus brevirostris	Penaeidae	crystal shrimp	0.55	0.3	habitat_benthic	SLB	
782	Lithodes aequispinus	Lithodidae	golden king crab	0.57	0.3	habitat_benthic	SLB	
783	Eleginus nawaga	Gadidae	Navaga	0.38	0.3	habitat_coastal	FB	
784	Melicerthus	Penaeidae	western king	1.12	0.3	habitat_benthic	SLB	

	latisulcatus		prawn					
785	<i>Parophrys vetulus</i>	Pleuronectidae	English sole	0.314	0.9	migratory	FB	
786	<i>Amblyraja radiata</i>	Rajidae	Starry ray	0.108	0.9	migratory	FB	
787	<i>Chelidonichthys cuculus</i>	Triglidae	Red gurnard	0.231	0.3	habitat_benthic	FB	
788	<i>Moolgarda sebели</i>	Mugilidae	Bluespot mullet	0.655	0.3	habitat_coastal	FB	
789	<i>Kajikia albida</i>	Istiophoridae	Atlantic white marlin	0.387	0.9	hms	FB	
790	<i>Litopenaeus occidentalis</i>	Penaeidae	western white shrimp	0.89	0.3	habitat_benthic	SLB	
791	<i>Zenopsis nebulosa</i>	Zeidae	Mirror dory	0.199	0.9	deep	FB	
792	<i>Netuma thalassinus</i>	Ariidae	Giant catfish	0.31	0.3	habitat_coastal	FB	
793	<i>Litopenaeus vannamei</i>	Penaeidae	whiteleg shrimp	0.7	0.3	habitat_benthic	SLB	
794	<i>Meuschenia scaber</i>	Monacanthidae	Velvet leatherjacket	1.032	0.3	habitat_coastal	FB	
795	<i>Dipturus batis</i>	Rajidae	Blue skate	0.066	0.3	habitat_benthic	FB	
796	<i>Alosa immaculata</i>	Clupeidae	Pontic shad	0.989	0.9	migratory	FB	
797	<i>Conger orbignianus</i>	Congridae	Argentine conger	0.27	0.3	habitat_benthic	FB	
798	<i>Acanthopagrus schlegelii</i>	Sparidae	Blackhead seabream	0.445	0.3	habitat_coastal	FB	
799	<i>Pegusa lascaris</i>	Soleidae	Sand sole	0.191	0.3	habitat_benthic	IUCN	
800	<i>Leucoraja circularis</i>	Rajidae	Sandy ray	0.108	0.3	habitat_benthic	FB	
801	<i>Balistes capriscus</i>	Balistidae	Grey triggerfish	0.825	0.3	habitat_reef	FB	
802	<i>Hyporthodus flavolimbatus</i>	Serranidae	Yellowwedge grouper	0.175	0.3	habitat_benthic	FB	
803	<i>Dipturus oxyrinchus</i>	Rajidae	Longnosed skate	0.162	0.3	habitat_benthic	FB	
804	<i>Leucoraja fullonica</i>	Rajidae	Shagreen ray	0.108	0.3	habitat_benthic	FB	
805	<i>Hyporthodus niveatus</i>	Serranidae	Snowy grouper	0.166	0.3	habitat_reef	FB	
806	<i>Pentaceros richardsoni</i>	Pentacerotidae	Pelagic armourhead	0.393	0.3	habitat_benthic	FB	
807	<i>Trigloporus lastoviza</i>	Triglidae	Streaked gurnard	0.195	0.3	habitat_benthic	FB	
808	<i>Herklotischthys quadrimaculatus</i>	Clupeidae	Bluestripe herring	1.74	0.3	habitat_coastal	FB	
809	<i>Lepidonotothen squamifrons</i>	Nototheniidae	Grey rockcod	0.234	0.3	habitat_benthic	REF	Secondary ref: (72)
810	<i>Hyporthodus nigritus</i>	Serranidae	Warsaw grouper	0.139	0.3	habitat_reef	FB	
811	<i>Hyporthodus mystacinus</i>	Serranidae	Misty grouper	0.193	0.3	habitat_deep	FB	

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