

Supplementary Materials for

Targeting ocean conservation outcomes through threat reduction

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Tables S1 to S3
Captions for Data S1 to S5
Data S5 Marine_STAR_Layer_50km.tif

Other Supplementary Materials for this manuscript include the following:

Data S1 to S5

Supplementary_Data.xlsx (containing Data_S1_Threat_Summary_Level_1,
Data_S2_Threat_Summary_Level_2, Data_S3_Habitat_Crosswalk, Data_S4_Species)

Table S1.

Summary of data requirements and sources of uncertainty in the calculation of global STAR scores, and approaches to quantifying and reducing these uncertainties (as per Mair et al. 2021).

Component of STAR	Data requirements	Sources of uncertainty in estimated global STAR calculation	Approaches to quantify and reduce uncertainty
Species extinction risk category	IUCN Red List species extinction risk	Data Deficient and Not Evaluated species lack data to be included.	Conduct research on species that will allow threat status to be assessed.
		Extinction risk categories can change with improved data availability.	Metric updated in line with IUCN Red List assessment updates as data on species improves.
Threats to species	Threat documentation for species on IUCN Red List	Incomplete documentation of threats to species.	Metric updated as IUCN Red List assessments are updated; comprehensiveness of the documentation of threats is continually improving.
		Incomplete documentation of scope and severity of threats.	
		Spatial variation in occurrence and severity of threats	Verify presence and severity of threats at site; or supplement with accurate, comprehensive threat data
Current Area of Habitat (AOH)	Species distribution maps (IUCN Red List)	Current Area of Habitat shows the distribution of existing suitable habitat within a species' range, but the presence of the species within this habitat is uncertain.	Verify presence of species at site; Validation of Current Area of Habitat maps using current point locality data sources.
	Species habitat associations (IUCN Red List)		
	Species depth limitations (IUCN Red List)		
	Digital elevation maps		
	Habitat maps (IUCN Ecosystem Typology)		

Table S2.

Summary of threat information by class. Overall Threat Score relates to whether this was provided separately for a species (rather than calculated using the scope and severity scores).

Class	n	Severity		Scope		Overall Threat Score	
		Known	Unknown	Known	Unknown	Known	Unknown
ACTINOPTERYGII	282	23%	77%	29%	71%	43%	57%
ANTHOZOA	402	0%	100%	0%	100%	100%	0%
AVES	259	87%	13%	97%	3%	79%	21%
CHONDRICHTHYES	506	82%	18%	91%	9%	83%	17%
GASTROPODA	85	35%	65%	66%	34%	34%	66%
HYDROZOA	6	0%	100%	0%	100%	100%	0%
LILIOPSIDA	16	0%	100%	1%	99%	100%	0%
MAGNOLIOPSIDA	16	0%	100%	0%	100%	100%	0%
MALACOSTRACA	1	0%	100%	0%	100%	0%	100%
MAMMALIA	62	53.10%	46.90%	61%	39%	77%	23%
MYXINI	6	0%	100%	0%	100%	100%	0%
REPTILIA	24	57%	43%	64%	36%	77%	23%

Table S3.
Summary of species included.

Group	Sub-Group	Class	Order	No. Species
Birds	Birds	AVES	ACCIPITRIFORMES	6
Birds	Birds	AVES	ANSERIFORMES	22
Birds	Birds	AVES	CAPRIMULGIFORMES	2
Birds	Birds	AVES	CATHARTIFORMES	1
Birds	Birds	AVES	CHARADRIIFORMES	65
Birds	Birds	AVES	CICONIIFORMES	6
Birds	Birds	AVES	CORACIIFORMES	2
Birds	Birds	AVES	FALCONIFORMES	2
Birds	Birds	AVES	GALLIFORMES	3
Birds	Birds	AVES	GAVIIFORMES	1
Birds	Birds	AVES	GRUIFORMES	9
Birds	Birds	AVES	PASSERIFORMES	9
Birds	Birds	AVES	PELECANIFORMES	12
Birds	Birds	AVES	PHOENICOPTERIFORMES	2
Birds	Birds	AVES	PODICIPEDIFORMES	3
Birds	Birds	AVES	PROCELLARIIFORMES	80
Birds	Birds	AVES	SPHENISCIFORMES	11
Birds	Birds	AVES	SULIFORMES	16
Cartilaginous fishes	Chimeras	CHONDRICHTHYES	CHIMAERIFORMES	8
Cartilaginous fishes	Rays	CHONDRICHTHYES	MYLIOBATIFORMES	126
Cartilaginous fishes	Rays	CHONDRICHTHYES	RAJIFORMES	72
Cartilaginous fishes	Rays	CHONDRICHTHYES	RHINOPRISTIFORMES	51
Cartilaginous fishes	Rays	CHONDRICHTHYES	TORPEDINIFORMES	30
Cartilaginous fishes	Sharks	CHONDRICHTHYES	CARCHARHINIFORMES	114
Cartilaginous fishes	Sharks	CHONDRICHTHYES	HEXANCHIFORMES	4
Cartilaginous fishes	Sharks	CHONDRICHTHYES	LAMNIFORMES	10
Cartilaginous fishes	Sharks	CHONDRICHTHYES	ORECTOLOBIFORMES	23
Cartilaginous fishes	Sharks	CHONDRICHTHYES	PRISTIPHORIFORMES	1
Cartilaginous fishes	Sharks	CHONDRICHTHYES	SQUALIFORMES	44
Cartilaginous fishes	Sharks	CHONDRICHTHYES	SQUATINIFORMES	15
Flowering plants	Flowering plants	LILIOPSIDA	ARECALES	1
Flowering plants	Water plantains	LILIOPSIDA	ALISMATALES	15
Hagfish	Hagfish	MYXINI	MYXINIFORMES	6
Hydralike animals	Fire corals	HYDROZOA	MILLEPORINA	6
Magnolias	Flowering plants	MAGNOLIOPSIDA	CARYOPHYLLALES	1
Magnolias	Flowering plants	MAGNOLIOPSIDA	ERICALES	2
Magnolias	Flowering plants	MAGNOLIOPSIDA	FABALES	1

Group	Sub-Group	Class	Order	No. Species
Magnolias	Flowering plants	MAGNOLIOPSIDA	LAMIALES	4
Magnolias	Flowering plants	MAGNOLIOPSIDA	MALPIGHIALES	3
Magnolias	Flowering plants	MAGNOLIOPSIDA	MALVALES	3
Magnolias	Flowering plants	MAGNOLIOPSIDA	MYRTALES	2
Mammals	Carnivores	MAMMALIA	CARNIVORA	19
Mammals	Sea-cows	MAMMALIA	SIRENIA	4
Mammals	Whales, Dolphins, and hoofed mammals	MAMMALIA	CETARTIODACTYLA	39
Ray-finned bony fishes	Anglerfish	ACTINOPTERYGII	LOPHIIFORMES	6
Ray-finned bony fishes	Bonefishes	ACTINOPTERYGII	ALBULIFORMES	2
Ray-finned bony fishes	Eels	ACTINOPTERYGII	ANGUILLIFORMES	3
Ray-finned bony fishes	Herring and anchovies	ACTINOPTERYGII	CLUPEIFORMES	16
Ray-finned bony fishes	Lizardfishes	ACTINOPTERYGII	AULOPIIFORMES	1
Ray-finned bony fishes	Perch-like fishes	ACTINOPTERYGII	PERCIFORMES	190
Ray-finned bony fishes	Pipefishes	ACTINOPTERYGII	SYNGNATHIFORMES	15
Ray-finned bony fishes	Pufferfishes	ACTINOPTERYGII	TETRAODONTIFORMES	14
Ray-finned bony fishes	Silversides	ACTINOPTERYGII	ATHERINIFORMES	6
Ray-finned bony fishes	Sturgeons	ACTINOPTERYGII	ACIPENSERIFORMES	29
Reptiles	Crocodiles	REPTILIA	CROCODYLIA	1
Reptiles	Scaled reptiles	REPTILIA	SQUAMATA	8
Reptiles	Turtles	REPTILIA	TESTUDINES	15
Sea anemones and corals	Reef-building corals	ANTHOZOA	HELIOPORACEA	1
Sea anemones and corals	Reef-building corals	ANTHOZOA	SCLERACTINIA	400
Sea anemones and corals	Soft corals	ANTHOZOA	ALCYONACEA	1
Snails and slugs	Sea snails	GASTROPODA	LEPETELLIDA	20
Snails and slugs	Sea snails	GASTROPODA	NEOGASTROPODA	62

Data S1. (separate file: Supplementary_Data.xlsx)

Tab: Data_S1_Threat_Summary_Level_1

Provides overall split of marine STAR_T scores by level 1 threats in the IUCN threat classification scheme.

Data S2. (separate file: Supplementary_Data.xlsx)

Tab: Data_S2_Threat_Summary_Level_2

Provides overall split of marine STAR_T scores by level 2 threats in the IUCN threat classification scheme.

Data S3. (separate file: Supplementary_Data.xlsx)

Tab: Data_S3_Habitat_Crosswalk

Identifies the crosswalk taken between habitats from the IUCN threat classification and Level 3 of the IUCN Ecosystem Typology.

Data S4. (separate file: Supplementary_Data.xlsx)

Tab: Data_S4_Species

List the species used in the Marine STAR layer.

Data S5. (Marine_STAR_Layer_50km.tif)

Global marine STAR threat abatement ($STAR_T$) scores aggregated to 50x50 km resolution in raster (.tif) format. Projection is Mollweide. Geotiff available for download on [Zenodo](#).

