

UNESCO environmental DNA (eDNA) Expeditions in marine World Heritage sites

Biodiversity survey for Cocos Island National Park

Interim Results
Not for public distribution



Credit: Ana Maria Monge Ortiz / Área de Conservación Marina Coco

About eDNA Expeditions

UNESCO's eDNA Expeditions is a global, citizen science initiative that is conducted with the intention to measure marine biodiversity and predict the impact climate change on marine community composition across UNESCO World Heritage marine sites.

eDNA is a cost effective and minimally invasive method to measure biodiversity in any given area. Marine species continuously shed DNA into the water around them in the form of waste, mucus, or cells. By extracting this DNA from water samples, and subsequently multiplying and sequencing specific regions within these DNA strands, a wide variety of species can be detected without removing any organisms from their environment. The regions in the DNA targeted for sequencing are selected depending on the scope of the study: while some markers are suitable to obtain a broad overview of biodiversity across many groups of species, other markers are particularly suited to get high resolution insight for a more specific taxonomic group such as fish. The UNESCO eDNA Expeditions initiative combines a number of markers tailored for marine vertebrates (fish, mammals, and turtles). A general marker was added to also allow detection of species from other groups such as invertebrates, which can give a broader insight in the marine species diversity in a given area.

Between September 2022 and May 2023, UNESCO organized eDNA sampling campaigns in 21 marine World Heritage sites across 17 countries around the world. At every World Heritage site, about 20 samples were collected from different habitats. Over 250 young people participated in the local sampling expeditions. They were guided by local experts and park management staff, using protocols and eDNA sampling equipment provided by UNESCO.

Biodiversity inventories generated from the samples are being combined with existing species distribution data from public biodiversity databases such as the Ocean Biodiversity Information System (OBIS) in view of obtaining a comprehensive overview of marine life across marine World Heritage sites. Through the use of climate scenarios and species distribution models, an estimate will be made of the impact of climate change, in particular rising temperatures, on local biodiversity and its potential future distribution patterns.

More information about the initiative and a press kit are available on the UNESCO website: <https://www.unesco.org/en/edna-expeditions>.

Results

Sampling and sample processing

eDNA sampling was conducted in Cocos Island National Park in December 2022. A total of 23 samples were collected at 14 locations in the park covering different habitats: montagne, roca_sucia, juan_bautista, dos_amigos, roca sucia, taza_de_te, manuelita, and pni (Figure 1). Up to 1,620 mL of seawater was filtered through filter cartridges containing a filter with a 0.8 μm pore size. After sampling, the filter cartridges were flushed with preservation liquid and shipped to UNESCO. DNA from the samples was extracted and amplified, and subsequently sent to the sequencing facility at KU Leuven in Belgium, a specialized university eDNA lab contracted by UNESCO for this work. PCR amplification was done using five primer pairs selected to capture as much biodiversity as possible in the target groups of the study: fish, mammals, and turtles.

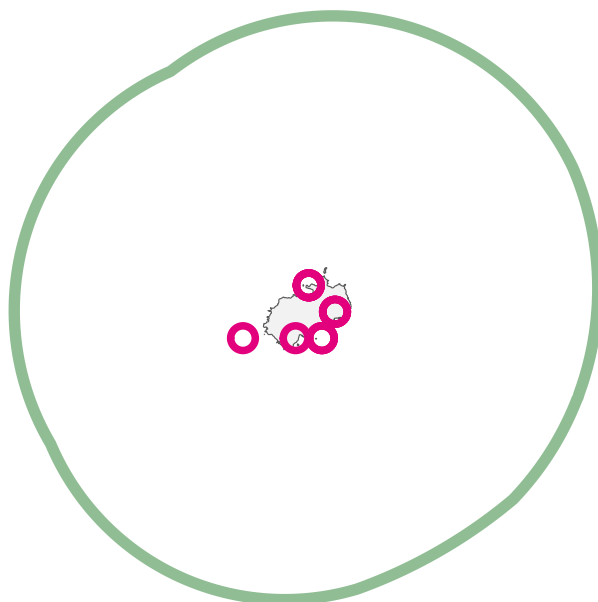


Figure 1: Map of the sampling locations.

DNA sequencing

Sequencing of the DNA from 23 samples resulted in over 43 million sequence reads, from which we collected 33,854 unique sequences or ASVs (Tables 1 and 2).

reads	asvs
43863110	33854

Table 1: Reads, ASVs, and species across all samples.

Species identification

The marker sequences obtained from sequencing were matched with sequence reference databases built using public data available from the National Center for Biotechnology Information (NCBI). This resulted in the identification of 308 species, including 145 fish species, 3 mammalian species, and 3 turtle species (Table 3). Species from other groups, such as cnidarians, copepods, sponges, algae, and echinoderms, were also detected (Figures 2 and 3). This number of species detected represents about 25% of the 1,443 species known from Cocos Island National Park in the OBIS database. Of the 308 species detected, 176 are not among the species

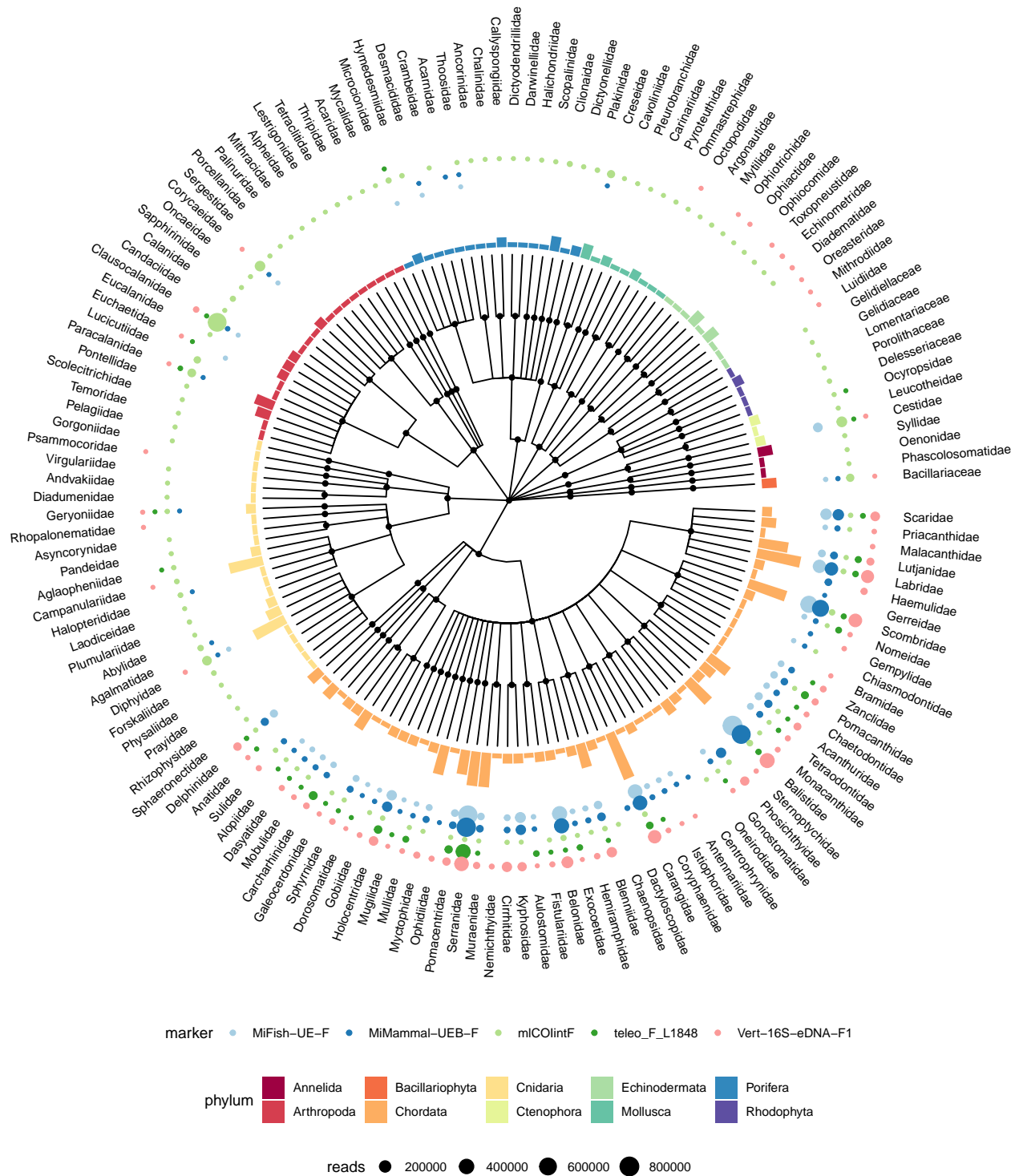
locality	materialSampleID	sampleSize	reads	asvs	species
ISLA DEL COCO MONTAGNE	EE0166	1200	2458273	9377	92
ISLA DEL COCO, roca sucia	EE0186		1700521	10539	111
Isla del Coco Juan Bautista	EE0253	420	1662848	6648	54
Isla del Coco Montagne	EE0165	1200	2416758	10726	115
Isla del Coco, Dos Amigos	EE0168	300	2078335	6398	45
Isla del Coco, Dos Amigos	EE0177	1260	1731066	10518	89
Isla del Coco, Dos Amigos	EE0182	720	2058097	9071	73
Isla del Coco, Dos Amigos	EE0187	1260	2255953	9868	82
Isla del Coco, Juan Bautista	EE0190		2074326	10257	126
Isla del Coco, Juan Bautista	EE0400	1500	2519760	9754	95
Isla del Coco, Mogtagne	EE0179	1200	1428376	9567	90
Isla del Coco, Roca Sucia	EE0167	1620	1733881	11460	125
Isla del Coco, Roca Sucia	EE0183		1549803	10319	121
Isla del Coco, Roca Sucia	EE0185		2111493	10097	114
Isla del Coco, Taza de Te	EE0163	1260	1713367	10139	94
Isla del Coco, Taza de Te	EE0178	1200	1581008	9346	90
Isla del Coco, Taza de Te	EE0188	1200	2243034	8161	71
Isla del Coco, Juan Bautista	EE0189	1380	1885930	9291	72
Isla del coco Montagne	EE0181	1200	1487074	9253	104
Manuelita	EE0175	0	2407552	10827	73
PNI	EE0164	1500	1951845	11118	73
PNI	EE0174	1500	1509327	10723	70
PNI	EE0176	1500	1304483	8930	59

Table 2: Reads, ASVs, and species by sample.

previously reported from Cocos Island National Park to the UNESCO OBIS database. 15 of the detected species are listed as threatened on the IUCN Red List (Table 4). A full list of species is added at the end of this report.

group	eDNA species	total species	fraction
fish	145	576	0.25
mammals	3	10	0.30
turtles	0	3	

Table 3: Number of species in the three target groups, from the OBIS database and from eDNA sampling.



category	eDNA species	total species	fraction
CR	1	6	0.17
EN	4	12	0.33
VU	10	52	0.19

Table 4: Number of species by IUCN Red List category, from the OBIS database and from eDNA sampling.

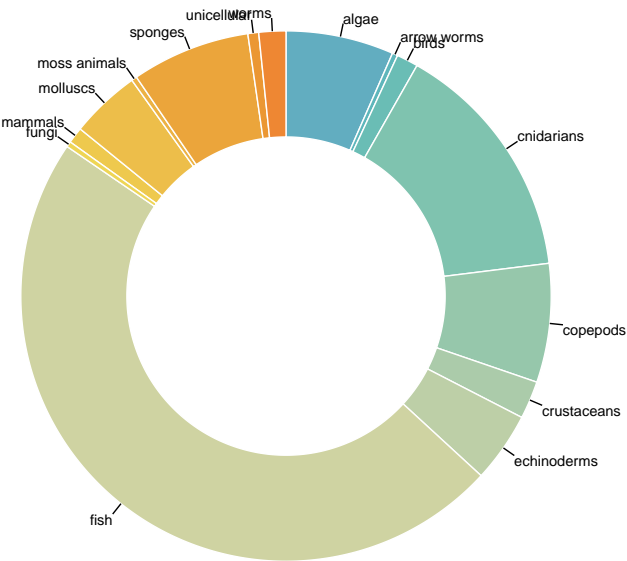


Figure 3: Distribution of detected species across groups.

phylum	class	species	group	category	new	vernacular
Amoebozoa	Myxogastrea	Craterium leucocephalum	unicellular		yes	
Annelida	Polychaeta	Myrianida pachycera	worms		yes	
Annelida	Polychaeta	Odontosyllis phosphorea	worms		yes	
Annelida	Polychaeta	Oenone fulgida	worms			
Annelida	Polychaeta	Syllis ypsiloides	worms		yes	
Annelida		Phascolosoma (Phascolosoma) perlucens	worms			
Arthropoda	Arachnida	Tyrophagus putrescentiae			yes	
Arthropoda	Copepoda	Acrocalanus gracilis	copepods		yes	
Arthropoda	Copepoda	Calanopia minor	copepods		yes	
Arthropoda	Copepoda	Calocalanus minutus	copepods		yes	
Arthropoda	Copepoda	Calocalanus pavo	copepods		yes	
Arthropoda	Copepoda	Candacia catula	copepods		yes	
Arthropoda	Copepoda	Candacia pachydactyla	copepods		yes	
Arthropoda	Copepoda	Clausocalanus furcatus	copepods		yes	
Arthropoda	Copepoda	Clausocalanus jobei	copepods		yes	
Arthropoda	Copepoda	Ditrichocorycaeus andrewsi	copepods		yes	
Arthropoda	Copepoda	Euchaeta marina	copepods		yes	
Arthropoda	Copepoda	Farranula gibbula	copepods		yes	
Arthropoda	Copepoda	Labidocera detruncata	copepods		yes	
Arthropoda	Copepoda	Lucicutia flavicornis	copepods		yes	
Arthropoda	Copepoda	Oncaea scottodiarloi	copepods		yes	
Arthropoda	Copepoda	Paracalanus indicus	copepods		yes	
Arthropoda	Copepoda	Pareucalanus attenuatus	copepods		yes	
Arthropoda	Copepoda	Pontellina plumata	copepods		yes	
Arthropoda	Copepoda	Sapphirina stellata	copepods		yes	
Arthropoda	Copepoda	Scolecithrix danae	copepods		yes	
Arthropoda	Copepoda	Subeucalanus subtenuis	copepods		yes	
Arthropoda	Copepoda	Temora discaudata	copepods		yes	
Arthropoda	Copepoda	Undinula vulgaris	copepods		yes	
Arthropoda	Hexapoda	Aptinotrips rufus			yes	
Arthropoda	Malacostraca	Hyperietta vosseleri	crustaceans		yes	
Arthropoda	Malacostraca	Neosergestes edwardsii	crustaceans		yes	
Arthropoda	Malacostraca	Pachycheles biocellatus	crustaceans		yes	
Arthropoda	Malacostraca	Panulirus penicillatus	crustaceans	LC		pronghorn spiny lobster, grosses têtes
Arthropoda	Malacostraca	Synalpheus sanlucasi	crustaceans		yes	
Arthropoda	Malacostraca	Teleophrys cristulipes	crustaceans			
Arthropoda	Thecostraca	Tetraclita squamosa	crustaceans		yes	
Ascomycota	Dothideomycetes	Cladosporium herbarum	fungi		yes	
Bacillariophyta	Bacillariophyceae	Cylindrotheca closterium	algae		yes	
Bacillariophyta	Bacillariophyceae	Pseudo-nitzschia circumspora	algae		yes	
Bacillariophyta	Bacillariophyceae	Pseudo-nitzschia sabit	algae		yes	
Bryozoa	Gymnolaemata	Celleporaria brunnea	moss animals			
Chaetognatha	Sagittoidea	Flaccisagitta enflata	arrow worms		yes	
Chlorophyta	Mamiellophyceae	Micromonas pusilla	algae		yes	
Chlorophyta		Chloroparvula pacifica	algae		yes	
Chlorophyta		Chloropicon laureae	algae		yes	
Chlorophyta		Chloropicon mariensis	algae		yes	
Chlorophyta		Chloropicon roscoffensis	algae		yes	
Chlorophyta		Chloropicon sieburthii	algae		yes	
Chordata	Aves	Anas platyrhynchos	birds	LC	yes	mallard, canard colvert

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phylum	class	species	group	category	new	vernacular
Chordata	Aves	<i>Sula dactylatra</i>	birds	LC		blue-faced booby, Fou masqué
Chordata	Aves	<i>Sula leucogaster</i>	birds	LC		brown booby, fou brun
Chordata	Aves	<i>Sula sula</i>	birds	LC		red-footed booby, fou à pieds rouges
Chordata	Elasmobranchii	<i>Alopias pelagicus</i>	fish	EN		thresher shark, renard pélagique
Chordata	Elasmobranchii	<i>Carcharhinus falciformis</i>	fish	VU		silky shark
Chordata	Elasmobranchii	<i>Carcharhinus leucas</i>	fish	VU	yes	bull shark, requin-bouledogue
Chordata	Elasmobranchii	<i>Carcharhinus obscurus</i>	fish	EN	yes	dusky shark
Chordata	Elasmobranchii	<i>Galeocerdo cuvier</i>	fish	NT	yes	tiger shark
Chordata	Elasmobranchii	<i>Mobula birostris</i>	fish	EN	yes	
Chordata	Elasmobranchii	<i>Mobula thurstoni</i>	fish	EN	yes	smoothtail mobula
Chordata	Elasmobranchii	<i>Pteroplatytrygon violacea</i>	fish	LC		pelagic stingray
Chordata	Elasmobranchii	<i>Sphyrna lewini</i>	fish	CR		scalloped hammerhead
Chordata	Elasmobranchii	<i>Taeniurus meyeri</i>	fish	VU		
Chordata	Elasmobranchii	<i>Triaenodon obesus</i>	fish	VU		whitetip reef shark
Chordata	Mammalia	<i>Pseudorca crassidens</i>	mammals	NT	yes	false killer whale, faux-orque
Chordata	Mammalia	<i>Stenella coeruleoalba</i>	mammals	LC		striped dolphin, dauphin bleu et blanc
Chordata	Mammalia	<i>Tursiops truncatus</i>	mammals	LC		bottlenose dolphin, grand dauphin
Chordata	Teleostei	<i>Abantennarius coccineus</i>	fish	LC		
Chordata	Teleostei	<i>Acanthocybium solandri</i>	fish	LC		wahoo
Chordata	Teleostei	<i>Acanthurus nigricans</i>	fish	LC		backsurgeonfish
Chordata	Teleostei	<i>Acanthurus triostegus</i>	fish	LC		convict surgeonfish
Chordata	Teleostei	<i>Acanthurus xanthopterus</i>	fish	LC		yellowfin surgeonfish
Chordata	Teleostei	<i>Aluterus monoceros</i>	fish	LC		unicorn leatherjacket
Chordata	Teleostei	<i>Aluterus scriptus</i>	fish	LC		scrawled filefish
Chordata	Teleostei	<i>Anisotremus scapularis</i>	fish	LC		
Chordata	Teleostei	<i>Anisotremus surinamensis</i>	fish	DD	yes	black margate
Chordata	Teleostei	<i>Argyropelecus lychnus</i>	fish	LC		silvery hatchetfish
Chordata	Teleostei	<i>Arothron meleagris</i>	fish	LC		Guineafowl puffer
Chordata	Teleostei	<i>Aulostomus chinensis</i>	fish	LC		Chinese trumpetfish
Chordata	Teleostei	<i>Auxis rochei</i>	fish	LC		Bonito, bonite
Chordata	Teleostei	<i>Auxis thazard</i>	fish	LC		frigate tuna, auxide
Chordata	Teleostei	<i>Azurina atrilobata</i>	fish			
Chordata	Teleostei	<i>Balistes polylepis</i>	fish	LC		finescale triggerfish
Chordata	Teleostei	<i>Bodianus diplotaenia</i>	fish	LC		Mexican hogfish
Chordata	Teleostei	<i>Brama dussumieri</i>	fish	LC		lowfin pomfret
Chordata	Teleostei	<i>Canthidermis maculata</i>	fish	LC		rough triggerfish
Chordata	Teleostei	<i>Canthigaster jactator</i>	fish	LC	yes	
Chordata	Teleostei	<i>Canthigaster janthinoptera</i>	fish	LC	yes	spotted puffer
Chordata	Teleostei	<i>Caranx melampygus</i>	fish	LC		bluefin trevally
Chordata	Teleostei	<i>Caranx sexfasciatus</i>	fish	LC		bigeye trevally
Chordata	Teleostei	<i>Centrophryne spinulosa</i>	fish	LC	yes	
Chordata	Teleostei	<i>Cephalopholis cruentata</i>	fish	LC	yes	graysby
Chordata	Teleostei	<i>Cephalopholis panamensis</i>	fish	LC		Panama graysby
Chordata	Teleostei	<i>Chriolepis dialepta</i>	fish	VU		
Chordata	Teleostei	<i>Cirrhitichthys oxycephalus</i>	fish	LC		pixy hawkfish
Chordata	Teleostei	<i>Cirrhitus rivulatus</i>	fish	LC		giant hawkfish
Chordata	Teleostei	<i>Cookeolus japonicus</i>	fish	LC		bulleye
Chordata	Teleostei	<i>Coryphaena equiselis</i>	fish	LC		pompano dolphin
Chordata	Teleostei	<i>Ctenochaetus marginatus</i>	fish	LC		
Chordata	Teleostei	<i>Cubiceps whiteleggii</i>	fish		yes	

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phylum	class	species	group	category	new	vernacular
Chordata	Teleostei	Cyclothone atraria	fish	LC	yes	Deep-water bristlemouth
Chordata	Teleostei	Cyclothone signata	fish	LC	yes	showy bristlemouth, cyclothone prétentieuse
Chordata	Teleostei	Decapterus macarellus	fish	LC		mackerel scad
Chordata	Teleostei	Dermatolepis dermatolepis	fish	LC		leather bass
Chordata	Teleostei	Diaphus fulgens	fish	LC	yes	
Chordata	Teleostei	Dicrolene introniger	fish	LC	yes	
Chordata	Teleostei	Diogenichthys laternatus	fish	LC		Diogenes lanternfish
Chordata	Teleostei	Diplophos taenia	fish	LC		Pacific portholefish
Chordata	Teleostei	Echidna nebulosa	fish	LC		snowflake moray
Chordata	Teleostei	Elagatis bipinnulata	fish	LC		rainbow runner
Chordata	Teleostei	Emblemaria nivipes	fish	DD		
Chordata	Teleostei	Enchelycore nigricans	fish	LC	yes	viper moray
Chordata	Teleostei	Enchelynassa canina	fish	LC	yes	
Chordata	Teleostei	Entomacrodus chiostictus	fish	LC		notchfin blenny
Chordata	Teleostei	Entomacrodus sealei	fish	LC	yes	
Chordata	Teleostei	Eucinostomus gula	fish	LC	yes	Jenny mojarra
Chordata	Teleostei	Euthynnus affinis	fish	LC	yes	kawakawa, thonine orientale
Chordata	Teleostei	Euthynnus lineatus	fish	LC		black skipjack, thonine noire
Chordata	Teleostei	Exocoetus monocirrhus	fish			barbel flyingfish
Chordata	Teleostei	Ferdauia orthogrammus	fish			
Chordata	Teleostei	Fistularia commersonii	fish	LC		cornetfish
Chordata	Teleostei	Fistularia corneta	fish	LC		deepwater cornetfish
Chordata	Teleostei	Gillellus greyae	fish	LC	yes	arrow stargazer
Chordata	Teleostei	Gonichthys tenuiculus	fish	LC		
Chordata	Teleostei	Gymnothorax flavimarginatus	fish	LC		yellowmargin moray
Chordata	Teleostei	Gymnothorax monostigma	fish	LC	yes	
Chordata	Teleostei	Halichoeres discolor	fish	VU		
Chordata	Teleostei	Halichoeres melanotis	fish	LC		golden wrasse
Chordata	Teleostei	Halichoeres salmofasciatus	fish	VU		
Chordata	Teleostei	Harengula humeralis	fish	LC	yes	pilchard
Chordata	Teleostei	Harengula jaguana	fish	LC	yes	scaled sardine
Chordata	Teleostei	Hemiramphus balao	fish	LC	yes	balao
Chordata	Teleostei	Heteropriacanthus cruentatus	fish	LC		glasseye snapper
Chordata	Teleostei	Holacanthus passer	fish	LC		king angelfish
Chordata	Teleostei	Hypsoblennius brevipinnis	fish	LC		barnaclebill blenny
Chordata	Teleostei	Iniistius pavo	fish	LC		peacock razorfish
Chordata	Teleostei	Istiophorus platypterus	fish	VU		Indo-Pacific sailfish, voilier indo-pacifique
Chordata	Teleostei	Johnrandallia nigrirostris	fish	LC		barberfish
Chordata	Teleostei	Kyphosus elegans	fish	LC		Cortez sea chub
Chordata	Teleostei	Kyphosus vaigiensis	fish	LC		brassy chub
Chordata	Teleostei	Lepidocybium flavobrunneum	fish	LC		escolar, escolier noir
Chordata	Teleostei	Lutjanus aratus	fish	LC		mullet snapper
Chordata	Teleostei	Lutjanus argentiventris	fish	LC		amarillo snapper
Chordata	Teleostei	Lutjanus campechanus	fish	VU	yes	northern red snapper
Chordata	Teleostei	Lutjanus jocu	fish	DD	yes	dog snapper
Chordata	Teleostei	Lutjanus kasmira	fish	LC	yes	common bluestripe snapper
Chordata	Teleostei	Lutjanus peru	fish	LC	yes	Pacific red snapper
Chordata	Teleostei	Lythrypnus dalli	fish	LC		bluebanded goby
Chordata	Teleostei	Malacanthus brevirostris	fish			quakerfish
Chordata	Teleostei	Melichthys niger	fish	LC		black durgon

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phylum	class	species	group	category	new	vernacular
Chordata	Teleostei	Melichthys vidua	fish	LC		pinktail triggerfish
Chordata	Teleostei	Microlophichthys microlophus	fish	LC	yes	short-rod anglerfish
Chordata	Teleostei	Microspathodon dorsalis	fish	LC		giant damselfish
Chordata	Teleostei	Mugil cephalus	fish	LC		grey mullet, muge
Chordata	Teleostei	Mulloidichthys martinicus	fish	LC	yes	yellow goatfish
Chordata	Teleostei	Mulloidichthys vanicolensis	fish	LC	yes	yellowfin goatfish
Chordata	Teleostei	Myctophum aurolaternatum	fish	LC		
Chordata	Teleostei	Myctophum nitidulum	fish	LC		lanternfish
Chordata	Teleostei	Myripristis berndti	fish	LC		blotcheye soldierfish
Chordata	Teleostei	Myripristis leiognathus	fish	LC		Panamic soldierfish
Chordata	Teleostei	Nemichthys scolopaceus	fish	LC		slender snipe eel, avocette ruban
Chordata	Teleostei	Novaculichthys taeniourus	fish	LC		rockmover wrasse
Chordata	Teleostei	Ophioblennius atlanticus	fish	LC		
Chordata	Teleostei	Ophioblennius steindachneri	fish	LC		Panamic fanged blenny
Chordata	Teleostei	Oxyporhamphus micropterus	fish			smallwing flyingfish
Chordata	Teleostei	Paranthias colonus	fish			Pacific creolefish
Chordata	Teleostei	Prionurus laticlavus	fish	LC		razor surgeonfish
Chordata	Teleostei	Pristigenys serrula	fish	LC		popeye catalufa
Chordata	Teleostei	Pronotogrammus multifasciatus	fish	LC		threadfin bass
Chordata	Teleostei	Psenes cyanophrys	fish	LC		freckled driftfish
Chordata	Teleostei	Pseudoscopelus lavenbergi	fish	LC	yes	
Chordata	Teleostei	Rypticus saponaceus	fish	LC	yes	greater soapfish
Chordata	Teleostei	Scarus ghobban	fish	LC		bluechin parrotfish
Chordata	Teleostei	Scarus rubroviolaceus	fish	LC		ember parrotfish
Chordata	Teleostei	Selar crumenophthalmus	fish	LC		bigeye scad
Chordata	Teleostei	Seriola rivoliana	fish	LC		Almaco jack, sérieole limon
Chordata	Teleostei	Serranus aequidens	fish	LC		deepwater serrano
Chordata	Teleostei	Stathmonotus culebrai	fish	LC		
Chordata	Teleostei	Stegastes arcifrons	fish	LC		
Chordata	Teleostei	Stegastes flavilatus	fish	LC		beaubrummel
Chordata	Teleostei	Stegastes rectifraenum	fish	LC	yes	Cortez damselfish
Chordata	Teleostei	Sufflamen verres	fish	LC		orangeside triggerfish
Chordata	Teleostei	Symbolophorus reversus	fish	LC		
Chordata	Teleostei	Tetrapturus angustirostris	fish	DD		shortbill spearfish, makaire à rostre court
Chordata	Teleostei	Thalassoma lucasanum	fish	LC		Cortez rainbow wrasse
Chordata	Teleostei	Thalassoma robertsoni	fish	VU	yes	
Chordata	Teleostei	Thunnus alalunga	fish	LC	yes	albacore, thon blanc
Chordata	Teleostei	Thunnus thynnus	fish	LC	yes	tuna, thon rouge de l'Atlantique
Chordata	Teleostei	Thunnus tonggol	fish	DD	yes	longtail tuna, thon mignon
Chordata	Teleostei	Trachinotus rhodopus	fish	LC		gafftopsail pompano
Chordata	Teleostei	Tylosurus acus	fish	LC		agujon needlefish
Chordata	Teleostei	Tylosurus crocodilus	fish	LC		houndfish
Chordata	Teleostei	Uraspis helvola	fish	LC		whitemouth jack
Chordata	Teleostei	Uraspis secunda	fish	LC	yes	cottonmouth jack
Chordata	Teleostei	Uropterygius macrocephalus	fish	LC		largehead moray
Chordata	Teleostei	Uropterygius macularius	fish	LC	yes	marbled moray
Chordata	Teleostei	Vinciguerria lucetia	fish	LC		
Chordata	Teleostei	Vinciguerria nimbaria	fish	LC	yes	oceanic lightfish
Chordata	Teleostei	Xanthichthys mento	fish	LC		redtail triggerfish
Chordata	Teleostei	Xyrichtys novacula	fish	LC	yes	pearly razorfish

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phylum	class	species	group	category	new	vernacular
Chordata	Teleostei	Zanclus cornutus	fish	LC		Moorish idol
Cnidaria	Anthozoa	Andvakia discipulorum	cnidarians		yes	
Cnidaria	Anthozoa	Diadumene leucolena	cnidarians		yes	white anemone
Cnidaria	Anthozoa	Leptogorgia alba	cnidarians			
Cnidaria	Anthozoa	Psammocora nierstraszi	cnidarians	LC	yes	
Cnidaria	Anthozoa	Stylatula elongata	cnidarians		yes	slender sea pen, pennatule allongée
Cnidaria	Hydrozoa	Abylopsis eschscholtzii	cnidarians		yes	
Cnidaria	Hydrozoa	Agalma okenii	cnidarians		yes	
Cnidaria	Hydrozoa	Aglaophenia prominens	cnidarians		yes	
Cnidaria	Hydrozoa	Aglaura hemistoma	cnidarians		yes	American pipit
Cnidaria	Hydrozoa	Asyncoryne ryniensis	cnidarians		yes	
Cnidaria	Hydrozoa	Athorybia rosacea	cnidarians		yes	
Cnidaria	Hydrozoa	Campanularia hincksii	cnidarians		yes	
Cnidaria	Hydrozoa	Ceratocymba sagittata	cnidarians		yes	
Cnidaria	Hydrozoa	Chelophyes appendiculata	cnidarians		yes	
Cnidaria	Hydrozoa	Chelophyes contorta	cnidarians		yes	
Cnidaria	Hydrozoa	Clytia brevithecata	cnidarians			
Cnidaria	Hydrozoa	Clytia elsaeswaldae	cnidarians		yes	
Cnidaria	Hydrozoa	Clytia gracilis	cnidarians			
Cnidaria	Hydrozoa	Clytia linearis	cnidarians			
Cnidaria	Hydrozoa	Clytia noliformis	cnidarians		yes	
Cnidaria	Hydrozoa	Diphyes bojani	cnidarians		yes	
Cnidaria	Hydrozoa	Diphyes dispar	cnidarians		yes	
Cnidaria	Hydrozoa	Forskalia tholoides	cnidarians		yes	
Cnidaria	Hydrozoa	Geryonia proboscidalis	cnidarians		yes	trunked jellyfish
Cnidaria	Hydrozoa	Halopteris alternata	cnidarians			
Cnidaria	Hydrozoa	Laodicea undulata	cnidarians		yes	
Cnidaria	Hydrozoa	Larsonia pterophylla	cnidarians		yes	
Cnidaria	Hydrozoa	Lensia campanella	cnidarians		yes	
Cnidaria	Hydrozoa	Lensia conoidea	cnidarians		yes	
Cnidaria	Hydrozoa	Lensia cossack	cnidarians		yes	
Cnidaria	Hydrozoa	Liriope tetrphylla	cnidarians		yes	
Cnidaria	Hydrozoa	Macrorhynchia philippina	cnidarians		yes	stinging hydroid
Cnidaria	Hydrozoa	Nanomia bijuga	cnidarians		yes	
Cnidaria	Hydrozoa	Obelia dichotoma	cnidarians			sea thread hydroid
Cnidaria	Hydrozoa	Physalia physalis	cnidarians		yes	Portuguese man-of-war, galère portugaise
Cnidaria	Hydrozoa	Plumularia setacea	cnidarians		yes	little seabristle
Cnidaria	Hydrozoa	Rhizophysa filiformis	cnidarians		yes	
Cnidaria	Hydrozoa	Rosacea flaccida	cnidarians		yes	
Cnidaria	Hydrozoa	Sphaeronectes koellikeri	cnidarians		yes	
Cnidaria	Scyphozoa	Pelagia panopyra	cnidarians		yes	
Cryptophyta	Cryptophyceae	Hemiarma marina			yes	
Ctenophora	Tentaculata	Cestum veneris	cnidarians		yes	Venus girdle, ceinture de Vénus
Ctenophora	Tentaculata	Leucothea pulchra	cnidarians		yes	
Ctenophora	Tentaculata	Ocyropsis crystallina	cnidarians		yes	ocyroé cristalline
Ctenophora	Tentaculata	Ocyropsis maculata	cnidarians		yes	ocyroé tachée
Ctenophora	Tentaculata	Velamen parallelum	cnidarians		yes	
Echinodermata	Asteroidea	Luidia quinaria	echinoderms		yes	Spiny sand seastar
Echinodermata	Asteroidea	Mithrodia clavigera	echinoderms			
Echinodermata	Asteroidea	Pentaceraster cumingi	echinoderms			

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phylum	class	species	group	category	new	vernacular
Echinodermata	Echinoidea	Diadema mexicanum	echinoderms			
Echinodermata	Echinoidea	Echinometra oblonga	echinoderms		yes	
Echinodermata	Echinoidea	Echinothrix calamaris	echinoderms			banded sea urchin
Echinodermata	Echinoidea	Echinothrix diadema	echinoderms			blue-black urchin
Echinodermata	Echinoidea	Toxopneustes pileolus	echinoderms		yes	
Echinodermata	Echinoidea	Toxopneustes roseus	echinoderms			
Echinodermata	Echinoidea	Tripneustes gratilla	echinoderms			collector urchin
Echinodermata	Ophiuroidea	Ophiactis simplex	echinoderms			
Echinodermata	Ophiuroidea	Ophiocoma erinaceus	echinoderms			
Echinodermata	Ophiuroidea	Ophiothela mirabilis	echinoderms			
Haptophyta	Coccolithophyceae	Emiliania huxleyi	algae		yes	
Haptophyta	Coccolithophyceae	Phaeocystis globosa	algae		yes	
Mollusca	Bivalvia	Leiosolenus hanleyanus	molluscs		yes	
Mollusca	Cephalopoda	Argonauta argo	molluscs	LC	yes	paper nautilus, argonaute voilier
Mollusca	Cephalopoda	Dosidicus gigas	molluscs	DD	yes	jumbo flying squid, encornet géant
Mollusca	Cephalopoda	Octopus hubbsorum	molluscs	LC		
Mollusca	Cephalopoda	Pterygioteuthis hoylei	molluscs	DD	yes	
Mollusca	Cephalopoda	Sthenoteuthis oualaniensis	molluscs	LC		purpleback flying squid
Mollusca	Gastropoda	Cardiapoda placenta	molluscs		yes	
Mollusca	Gastropoda	Cavolinia uncinata	molluscs			hooked cavoline
Mollusca	Gastropoda	Creseis acicula	molluscs			
Mollusca	Gastropoda	Creseis conica	molluscs		yes	
Mollusca	Gastropoda	Creseis virgula	molluscs		yes	
Mollusca	Gastropoda	Pleurobranchus digueti	molluscs		yes	
Mollusca	Gastropoda	Tomoberthella martensi	molluscs		yes	
Myzozoa	Dinophyceae	Protoceratium reticulatum	unicellular		yes	
Ochrophyta	Dictyochophyceae	Pseudochattonella farcimen	algae		yes	
Ochrophyta	Pelagophyceae	Pelagomonas calceolata	algae		yes	
Ochrophyta	Raphidophyceae	Haramonas dimorpha	algae		yes	
Porifera	Demospongiae	Callyspongia (Callyspongia) fallax	sponges		yes	
Porifera	Demospongiae	Callyspongia (Cladochalina) plicifera	sponges		yes	
Porifera	Demospongiae	Chelonaplysilla erecta	sponges		yes	
Porifera	Demospongiae	Clathria (Clathria) unica	sponges		yes	
Porifera	Demospongiae	Clathria (Wilsonella) rugosa	sponges		yes	
Porifera	Demospongiae	Cliona mariae	sponges		yes	Maria Santana's Cliona
Porifera	Demospongiae	Cliona yorkin	sponges		yes	Yorkin Cliona
Porifera	Demospongiae	Crambe crambe	sponges		yes	orange-red encrusting sponge, éponge encroûtante orange-rouge
Porifera	Demospongiae	Desmapsamma anchorata	sponges		yes	
Porifera	Demospongiae	Dictyonella funicularis	sponges		yes	
Porifera	Demospongiae	Halichondria (Halichondria) coerulea	sponges		yes	
Porifera	Demospongiae	Haliclona pigmentifera	sponges		yes	
Porifera	Demospongiae	Igernella notabilis	sponges		yes	
Porifera	Demospongiae	Iophon parvachela	sponges		yes	
Porifera	Demospongiae	Mycale (Carmia) cecilia	sponges		yes	
Porifera	Demospongiae	Phorbas bihamiger	sponges		yes	
Porifera	Demospongiae	Pione vastifica	sponges		yes	boring sponge, clone rouge
Porifera	Demospongiae	Stelletta mediterranea	sponges		yes	
Porifera	Demospongiae	Svenzea cristinae	sponges		yes	
Porifera	Demospongiae	Thoosa purpurea	sponges		yes	
Porifera	Homoscleromorpha	Plakortis deweerdtaephila	sponges		yes	

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phylum	class	species	group	category	new	vernacular
Porifera	Homoscleromorpha	Plakortis halichondrioides	sponges		yes	
Rhodophyta	Florideophyceae	Ceratodictyon scoparium	algae		yes	
Rhodophyta	Florideophyceae	Dasya corymbifera	algae		yes	
Rhodophyta	Florideophyceae	Gelidiella ligulata	algae		yes	
Rhodophyta	Florideophyceae	Gelidiorariphycus stipitatus	algae		yes	
Rhodophyta	Florideophyceae	Gelidium sclerophyllum	algae		yes	
Rhodophyta	Florideophyceae	Harveyolithon munitum	algae		yes	
Rotifera	Eurotatoria	Adineta vaga			yes	