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Review

Quantitative overview of marine debris ingested by marine megafauna

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ABSTRACT

This review quantifies plastic interaction in marine biota. Firstly, entanglement and ingestion records for all marine birds, mammals, turtles, fish, and invertebrate species, are summarized from 747 studies. Marine debris affected 914 species through entanglement and/or ingestion. Ingestion was recorded for 701 species, entanglement was documented for 354 species. Secondly, the frequency of occurrence of ingestion per species (Sp-%FO) was extracted for marine birds, mammals and turtles. Thirdly, for seabird species, average numbers of plastics ingested per individual were determined. Highest Sp-%FO and average number of plastics were found in tubenosed seabirds with 41% of all birds analysed having plastics, on average 9.9 particles per bird. The Sp-%FO and average number of ingested particles is lower for most other species. However, for certain species, ingestion rates of litter are reason for serious concern. Standardized methods are crucial for future studies, to generate datasets that allow higher level ecosystem analyses.

1. Introduction

Marine debris and especially plastic litter is a major concern for the general public as well as for scientists and policymakers worldwide. Social-economic costs caused by litter on coastlines and at sea are substantial (Mouat et al., 2010; Newman et al., 2015). But it is the ecological consequences that have created considerable and still growing awareness. Regularly new marine species are encountered to either ingest plastics or to become entangled in it. A first overview of affected species was provided by Laist (1997): the author noted records for either ingestion or entanglement for 267 marine species. In 2015 this list has been expanded to a total of 557 species (Kühn et al., 2015). An even higher number of 693 species was reported by Gall and Thompson (2015) including organisms that attach on plastics or get smothered by debris. These increases illustrate the research interest in this topic during the last decennia, but not necessarily the increase of affected individuals or species. Most publications have focused on plastic ingestion in seabirds, but recently the number of studies, especially those investigating fish is growing rapidly (Provencher et al., 2017; Markic et al., 2019). Since 2015, several review articles have shown the ever-growing body of literature (e.g. Battisti et al., 2019; Staffieri et al., 2019; Parton et al., 2019), but these were not very successful in extending the simple listing of species to a more in-depth quantitative analysis. Methods applied in studies vary greatly, making comparisons between studies extremely difficult. Nevertheless, an upgrade from a simple species list to a more detailed quantitative overview is crucial for the interpretation of the scale of the impacts of mainly plastic debris on marine wildlife.

This review firstly updates the Kühn et al. (2015) list on records of entanglement in, and ingestion of marine debris. Concerning entanglement records, the distinction between entanglement in active fishing gear and lost or discarded fishing equipment, so-called ghost nets (e.g. Ryan, 2018) remains a major problem. For other items such as strap bands, balloon ribbons, plastic bags etc. the classification of marine debris is less ambiguous. Especially for whales, entanglement rates are difficult to obtain, as they may free themselves or be released alive by fishermen when entangled in active gear, still carrying some fishing gear on their body (Baulch and Perry, 2014; Fossi et al., 2018). In seals, entanglement has often been observed in younger animals, potential caused by curiosity and lack of experience according to McIntosh et al. (2015). All seven marine turtle species have been documented with entanglement, in turtles and the amputation of limbs caused by entanglement has been recorded (Kühn et al., 2015). Harm (e.g. injuries or death) caused by entanglement is commonly reported for marine megafauna (Gall and Thompson, 2015). Data on entanglement in birds has recently been reviewed by Ryan (2018). Another type of potential risk, closely related to entanglement is the incorporation of plastics in seabird nests. An overview has been recently published by Jagiello et al. (2019) and a website has been launched in 2019 offering the general public the opportunity to record cases of seabird entanglement or plastic in nests (www.birdsanddebris.com). To study the incidence of entanglement, a systematic census in a specific area would

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be required in order to evaluate the incidence of entanglement in regard to the total sample size but is usually difficult to obtain. Therefore, the current study focuses on ingestion data but nevertheless provides a list of entangled marine species to allow comparison with earlier work (Laist, 1997; Kühn et al., 2015).

The basic information provided by many studies is data on the frequency of occurrence (%FO) of ingested plastic within a study population. In order to improve on the existing simple species lists, this new review has gathered information on all available data for the %FO within species of marine birds, mammals and turtles. This allows the creation of species-specific averages of %FO for plastic ingestion, and derived averages for higher taxa like genera, families or orders. Due to a lack of standardized methods, only a limited number of studies provides data that allows estimates of the average number of plastic particles ingested per individual within a species or in higher level taxonomic units. With some examples of methodological constraints, the need for more standardization is highlighted.

2. Methods

To be considered for this review, articles and reports had to fulfil certain requirements:

- Only cases of ingestion or entanglement were considered.
- Records have to provide the exact species name.
- Data on external fouling e.g. in fish gills (e.g. Collard et al., 2017; Abreo et al., 2019), on crustacean carapaces (Welden et al., 2018) etc. were excluded.
- Impacts on marine sedentary organisms (from entanglement or smothering; e.g. Kühn et al., 2015; de Carvalho-Souza et al., 2018) have not been included.
- Only studies on animals living in the wild have been included. Experiments where organisms are exposed to plastics were excluded.
- Extinct species and species occurring only in freshwater were excluded.
- Both dedicated plastic studies and studies where plastic was a sideline, e.g. in traditional diet studies, have been included. While being confident that all publications that dedicatedly reported plastics are included in this review, records of plastics in non-dedicated studies are not always easy to find.
- Different types of references (e.g. peer-reviewed articles, gray literature such as reports) were considered and all references are included in the Online Supplement.
- All marine debris, including plastics, metal, glass, rubber, natural ropes etc. reported in wildlife were used. According to the definition of marine debris described by Werner et al. (2016), this includes "*any persistent, manufactured or processed solid material discarded, disposed of, or abandoned in the marine and coastal environment.*" However, plastics are by far the most abundant items known to have impacts on marine wildlife and data presented are basically the figures for impact from plastic marine debris.
- All sizes of plastics were included (micro- (< 5 mm), meso- (5–20 mm) and macro- (> 20 mm) plastics; GESAMP, 2019).
- Concerning entanglement, we only used data where debris, and not active gear (bycatch) was involved. When evident that hooks were from active gear, records were not included.
- Calculations for ingested plastic include reports of ingested microfibres, because in many papers no clear distinction is made between small dust-like fibres (which may partly stem from secondary aerial contamination (Dris et al., 2016; Hermsen et al., 2017; Kühn et al., 2020)) and more solid plastic particles. Microfibres are defined as filaments with a diameter < 50 µm. Thicker filaments are considered as threads, originating from ropes and nets (Tanaka and Takada, 2016).
- Studies published until May 2019 were considered.

These restrictions in data were applied to create a clear focus on ingestion and entanglement records. A broader definition of impacts is used by Gall and Thompson (2015) who included smothering and other interaction of plastic and marine wildlife and a continuous update is provided in the online database 'Litterbase' (Bergmann et al., 2017). Starting point for the literature review was the data provided by Kühn et al. (2015). New literature was continuously collected using search engines such as Google Scholar and web of Science or alerts by ResearchGate and common journals for plastic research (search terms: 'species name' and plastic, litter, debris, ingest, entangle, diet, etc.). Each plastic ingestion or entanglement study was searched for references therein. Systematic standard search was conducted in English, but occasional records in German, Portuguese, Spanish, French and Dutch were also included.

2.1. Taxonomic %FO ingestion (Tax-%FO)

Firstly, this review provides data on the frequency of occurrence of plastic ingestion and entanglement within higher taxonomic units (Tax-%FO; e.g. for the number of species within a family). As in Kühn et al. (2015), the Online Supplement (Online Supplement Table 1) contains a detailed table with the underlying information for each species in the taxon. Updates include studies published since the review in 2015 and earlier accounts that had not been detected at that time. In addition two features have been added: dedicated plastic ingestion studies where zero plastics were found in a species, have been included and marked, as recommended by Provencher et al. (2017). Secondly, entanglement accounts were categorized according to their likelihood of being caused by discarded and lost fishing gear.

Current species classification and names for seabirds were derived from HBW and BirdLife International (2018). The group of marine ducks (Anseriformes) has been expanded in comparison with Kühn et al. (2015), as recommended by Ryan (2018). We've added four species of steamerducks (*Tachyeres* sp.), three marine mergansers and four other species that spend their time at least partly at sea: long-tailed duck (*Clangula hyemalis*), black-necked swan (*Cygnus melancoryphus*), kelp goose (*Chloephaga hybrida*) and crested duck (*Lophonetta specularioides*), leading to a total of 26 species of Anseriformes rather than the 13 species considered in Kühn et al. (2015). As the procellariiform and charadriiform orders include many different species, subfamilies were considered. The families of the procellariidae (petrels) and diomedeidae (albatrosses) have been split even further as this group belongs to the most affected family and required more detailed analyses. For marine mammals, names provided by the Society for Marine Mammalogy (2018) were used. All marine bird and mammal species that have been included, are listed in the Online Supplement Table 1. The species numbers for fish and invertebrates were taken from WoRMS (2019). Species numbers differ slightly from previous reviews mainly because of continuous changes in accepted taxonomy.

2.2. %FO ingestion per species (Sp-%FO)

Although many species have been recorded with ingested plastics, not all of them are affected to the same extent. One single record for an individual of a species is enough to be included in the Tax-%FO lists. However, it is the frequency of occurrence within a species that is relevant in terms of potential harm to populations or species. Within species, the frequency of occurrence of ingested plastic per species (Sp-%FO) could be assessed for marine birds, mammals and turtles. Therefore, all studies that reported the sample size and either the number or the percentage of affected animals are summarized. The studies used are marked with a superscript asterisk in the Online Supplement Reference section. It should be noted that figures may become biased towards the more frequently and better studied species. Fish and invertebrates have been excluded from this detailed overview, as data on %FO is often incomplete. For fish, available data was

Table 1
Overview plastic ingestion or entanglement or both in the main animal taxa. Shown are the total number of species within the taxon, the number of species known to be affected, and the derived percentage of affected species within the taxon (Tax-%FO). Species specific data underlying the taxon figures are given in Online Supplement Table 1.

		Ingestion		Entanglement		Ingestion & entanglement	
Taxa	n species in taxon	n affected species	Tax-%FO	n affected species	Tax-%FO	n affected species	Tax-%FO
Seabirds							
Anseriformes (marine ducks)	*26*	2	7.7%	6	23.1%	6	23.1%
Podicipediformes (grebes)	*20*	0	0.0%	6	30.0%	6	30.0%
Phaetontiformes (tropicbirds)	*3*	2	66.7%	1	33.3%	3	100.0%
Gaviformes (loons)	*5*	4	80.0%	5	100.0%	5	100.0%
Sphenisciformes (penguins)	*18*	5	27.8%	6	33.3%	9	50.0%
Procellariiformes (tubenoses)	*144*	91	63.2%	18	12.5%	91	63.2%
Pelecaniformes (pelicans)	*8*	3	37.5%	4	50.0%	5	62.5%
Suliformes (gannets, cormorants)	*49*	15	30.6%	19	38.8%	24	49.0%
Charadriiformes (gulls, terns, skuas, auks)	*136*	58	42.6%	47	34.6%	77	56.6%
All seabirds	***409***	**180**	**44.0%**	**112**	**27.4%**	**226**	**55.3%**
Marine mammals							
Ursidae (polar bears)	*1*	0	0.0%	1	100.0%	1	100.0%
Mustelidae (marine otters)	*2*	0	0.0%	2	100.0%	2	100.0%
Pinnipedia (all seals)	*31*	15	48.4%	22	71.0%	22	71.0%
Otariidae (eared seals)	*14*	10	71.4%	12	85.7%	12	85.7%
Odobenidae (walruses)	*1*	0	0.0%	0	0.0%	0	0.0%
Phocidae (true seals)	*16*	5	31.3%	10	62.5%	10	62.5%
Cetartiodactyla (all whales)	*86*	52	60.5%	22	25.6%	59	68.6%
Mysticeti (baleen whales)	*14*	8	57.1%	10	71.4%	12	85.7%
Odontoceti (toothed whales)	*72*	44	61.1%	12	16.7%	47	65.3%
Sirenia (manatees, dugongs)	*3*	2	66.7%	2	66.7%	2	66.7%
All marine mammals	***123***	**69**	**56.1%**	**49**	**39.8%**	**86**	**69.9%**
Other taxa							
All turtles	***7***	**7**	**100.0%**	**7**	**100.0%**	**7**	**100.0%**
All sea snakes	***62***	**0**	**0.0%**	**2**	**3.2%**	**2**	**3.2%**
All fish	***31,243***	**363**		**101**		**430**	
All invertebrates	***159,000***	**82**		**83**		**163**	
All species		**701**		**354**		**914**	

recently reviewed by Markic et al. (2019).

Other than the general Tax-%FO for affected species within a group of species (as done above), the frequency of occurrence within a single species (Sp-%FO) was calculated. This was done by dividing the total number of individuals with ingested plastic, by the total number of individuals studied (from studies that report both numbers). Thus, the basis remains the frequency among individuals. In this paper, results are largely provided as combined data for higher level taxa. Full records for each species are provided in the Online Supplement Table 2. As for many species details of plastic ingestion have not been specified, the Sp-%FO could only be calculated for a limited number of species. Therefore, the percentage of species studied per taxon is provided. For a graphical impression, one species from each taxon was chosen on the basis of having the highest number of dedicated records. When two species had the same number of study records, the one with the higher sample size of individuals has been used.

2.3. Quantities of plastics ingested

Beside the Sp-%FO, it is the quantity of ingested plastic that is relevant when assessing potential harm to organisms. The interpretation of this data is complex, as there are two common types of reporting average number of plastics in biota:

- the *affected average* divides the number of items detected by the number of affected organisms.
- the *population average* is calculated by dividing the number of plastics by all the individuals in the complete sample, thus including the individuals with no plastics.

As already emphasized in Provencher et al. (2017) and Provencher et al. (2019) the population average should be used in order to provide a realistic and comparable overview of the pervasiveness of the plastic problem. For quantities of ingested plastic, this review only used studies where the population average was reported or could be recalculated from the underlying data provided in the papers. Thus, studies were excluded when it was unclear which type of average had been calculated by the authors. All references used for this quantitative part of this study are marked in the Online Supplement References with superscript 2. The quantitative data for individual species were combined into tables for higher taxa by dividing the total number of particles reported by the total number of individuals studied, again including zero records and species with the highest number of study records were depicted.

3. Results

A total of 747 studies which reported details on species that either got entangled in or ingested plastic are used for this review. All references are listed in the Online Supplement. The first study included was published in 1938 by Gudger (1938) describing an Atlantic cod (*Gadus morhua*), entangled in a metal can. There is an older account by the same author from 1931, where a shark has been found entangled in a rubber car tyre (Gudger and Hoffman, 1931), however, as the shark species was not specified, that account could not be included in the literature list. The first account of ingestion of litter by marine organisms comes again from Gudger (1949). In 1931, a tiger shark (*Galeocerdo cuvier*) was found to have ingested several items of human origin, such as horse shoes, metal cans and rope material. Despite earlier records of ingested marine litter, the first plastic item ingested was found in Leach's storm petrels (*Oceanodroma leucorhoa)* in 1962 (Rothstein, 1973). Since then there has been a continuously growing body of literature (Provencher et al., 2017).

3.1. Taxonomic frequency of occurrence (Tax-%FO)

The total number of species encountered either entangled in or with ingested litter has increased from 267 in 1997 (Laist, 1997) and 557 in 2015 (Kühn et al., 2015) to currently at least 914 species (Table 1). The number of all species and the number of species affected are presented together with the total percentage of affected species (Table 1). The total percentage may differ from the separate ones as some species may suffer from both, entanglement and ingestion. A detailed list of all species with ingestion or entanglement records for marine birds, mammals, turtles, sea snakes, fish and invertebrates is included in Online Supplement Table 1. Although seabirds belong to the species group most intensively studied (Provencher et al., 2017), affected species numbers still increased from 203 in 2015 to 226 in this study. The number of marine mammal species has increased slightly from 81 species in 2015 to 86 species in 2019. In turtles, seven out of seven species were already found to be entangled and to ingest plastics in 2015. The largest increase in studies and species records occurred in fish. In Kühn et al. (2015), 166 fish species had documented cases of plastic entanglement or ingestion. In the current review, this number increased to 430 species of marine fishes. For a full comparison between Kühn et al. (2015) and this study see Online Supplement Table 3.

3.2. Frequency of occurrence per species (Sp-%FO)

A total of 588 out of 747 studies reports ingestion of plastics by marine wildlife. Eligible for calculations on Sp-%FO, are 311 studies: 152 for marine birds, 75 for mammals and 84 for turtles. These studies report the sample size and the number or percentage of affected individuals.

Out of 409 known seabird species, 226 species were studied for plastic ingestion of which 180 species have been found with plastics. A total of 43,525 individual seabird samples has been studied of which more than a quarter (12,065 individuals, 27.7%) contain plastics. Procellariiformes are among the best studied taxon with 103 out of 144 species and 22,735 individuals analysed. This group exhibits the highest Sp-%FO with 41.5% of all individuals containing plastic (Table 2).

While 41.5% of the marine mammal species has currently been studied for plastic ingestion, only 860 out of 19,486 individuals (4%) contained plastics (Table 3). For both, baleen and toothed whales, around half of all species have been studied. Baleen whales showed a higher Sp-%FO (16.67%) than toothed whales (9.4%). However only 96 baleen but 5002 toothed whales have been autopsied. Plastic has been found in the digestive tracts of seals but not in polar bears or otters, the Sp-%FO for carnivores remains low at 0.95%.

There are only seven species of marine turtles and all of them, with exception of the flatback turtle (*Natator depressus),* have been repeatedly encountered with ingested plastics. Therefore, results are presented in a table for each species separately (Table 4). In contrast to the small number of species, plastic in turtles gained a lot of attention in scientific literature, with 140 study records. One third (32%) of 7879 turtles analysed contained plastic in their stomachs.

Fig. 1 provides the Sp-%FO for selected species having the highest number of dedicated study records within the higher level taxon. Thus, please note that also species-specific data are often derived from many different studies. The supplementary Table 2 provides data for all species studied. Low sample numbers can lead to unusual high Sp-%FO's of e.g. 100% (e.g. black-faced sheathbill *Chionis minor*, narwhal *Monodon monoceros* and flatback turtle). High Sp-%FO's with sufficient sample numbers are mainly reached in seabirds. Laysan albatross *Phoebastria immutabilis,* northern fulmar *Fulmarus glacialis*, sooty shearwater *Ardenna grisea* and red phalarope *Phalaropus fulicarius* are species with > 50% of the analysed individuals containing plastics. High Sp-%FO's in the other species groups were found in sperm whales (*Physeter macrocephalus;* 26%) and green turtles (*Chelonia mydas;* 47%).

Table 2
Frequency of occurrence per species (Sp-%FO) of plastic ingestion for seabirds per taxon. The total number of species in the taxon is given with the percentage of species within the taxon for which ingestion studies are available. For each taxon, the number of individuals studied, and the number of individuals with plastic is tabulated, with the derived Sp-%FO shown in the last column.

Taxon	n species	% species studied	Number of individuals studied	Number of individuals with plastic	Sp-FO%
Anseriformes	***26***	**38.5%**	**823**	**2**	**0.2%**
Podicipediformes	***20***	**15.0%**	**8**	**0**	**0.0%**
Phaetontiformes	***3***	**100.0%**	**221**	**31**	**14.0%**
Gaviformes	***5***	**80.0%**	**32**	**3**	**9.4%**
Sphenisciformes	***18***	**38.9%**	**1478**	**214**	**14.5%**
Procellariiformes					
Storm petrels	*27*	48.1%	1614	415	25.7%
Great albatrosses	*6*	83.3%	157	29	18.5%
N Pacific albatrosses	*4*	100.0%	1434	1205	84.0%
Sooty albatrosses	*2*	100.0%	83	2	2.4%
Mollymawks	*10*	100.0%	2301	114	5.0%
Fulmarine petrels	*7*	100.0%	4300	2725	63.4%
Whalebirds	*8*	75.0%	819	584	71.3%
Gadfly petrels	*35*	68.6%	1420	233	16.4%
Procellaria petrels	*5*	100.0%	875	92	10.5%
Shearwaters	*30*	60.0%	7258	4000	55.1%
Bulweria petrels	*6*	50.0%	289	5	1.7%
Diving petrels	*4*	75.0%	313	21	6.7%
All Procellariiformes	***144***	**71.5%**	**22,735**	**9426**	**41.5%**
Pelecaniformes	***8***	**37.5%**	**31**	**12**	**38.7%**
Suliformes					
Frigatebirds	*5*	60.0%	96	23	24.0%
Gannets	*10*	60.0%	984	262	26.6%
Cormorants	*34*	26.5%	580	51	8.8%
All Suliformes	***49***	**36.7%**	**1660**	**336**	**20.2%**
Charadriiformes					
Sheathbills	*2*	100.0%	5	3	60.0%
Phalaropes	*3*	66.7%	113	65	57.5%
Noddies	*5*	80.0%	258	15	5.8%
White terns	*2*	50.0%	54	1	1.9%
Skimmers	*3*	0.0%	0	0	0.0%
Gulls	*51*	49.0%	4840	788	16.3%
Terns	*39*	51.3%	1313	21	1.6%
Skuas	*7*	85.7%	2192	180	8.2%
Auks	*24*	79.2%	16,537	2041	12.3%
All Charadriiformes	***136***	**55.9%**	**16,537**	**2041**	**12.3%**
All seabirds	***409***	**55.3%**	**43,525**	**12,065**	**27.7%**

3.3. Average number of plastic items in seabirds

Less than a third of all study records of marine mammals and turtles report population averages for the number of rubbish or plastic items (27.9% of 218 and 31.2% of 189 study records, respectively). Consequently, we focus on seabirds, where almost half of the studies (48.9% of 841 study records, reported in 80 studies) provide population averages on numbers of plastics ingested.

Table 5 provides data on the average number of plastic items per individual within seabird taxa. In 7572 procellariform birds, on average 9.88 pieces of plastics were encountered, almost ten times as many plastic pieces as in Charadriiformes. More than the half (53%) of all charadriiform species have records of average numbers and 9284 individuals have been analysed. Calculated for all these individuals, on average they have ingested 1.03 plastic pieces. Phalaropes and auks contain on average more than one piece of plastic (8 and 1.6 respectively), while terns have only 0.006 pieces of plastic on average, despite the relatively large sample size of 325 birds. In all other bird orders sample sizes were much smaller and these birds contained on average less than one particle per bird. The maximum average number reported in a species group concerns the smallest member of the procellariform seabird, the storm petrels. Youngren et al. (2018) report an average of

Table 3
Frequency of occurrence per species (Sp-%FO) of plastic ingestion for marine mammals per taxon. The total number of species in the taxon is given with the percentage of species within the taxon for which ingestion studies are available. For each taxon, the number of individuals studied, and the number of individuals with plastic is tabulated, with the derived Sp-%FO shown in the last column.

Taxon	n species	% species studied	Number of individuals studied	Number of individuals with plastic	Sp-FO%
Carnivores					
Ursidae	*1*	0.00%	0	0	0.00%
Mustelidae	*3*	0.00%	0	0	0.00%
Otariidae	*14*	28.57%	8593	58	0.67%
Odobenidae	*1*	0.00%	0	0	0.00%
Phocidae	*16*	25.00%	1191	34	2.85%
All carnivores	***34***	**23.53%**	**9784**	**93**	**0.95%**
Baleen whales					
Balaenidae	*4*	0.00%	0	0	0.00%
Neobalaenidae	*1*	0.00%	0	0	0.00%
Eschritiidae	*1*	0.00%	0	0	0.00%
Balaenopteridae	*8*	75.00%	96	16	16.67%
All baleen whales	***14***	**42.86%**	**96**	**16**	**16.67%**
Toothed whales					
Physeteridae	*1*	100.00%	145	37	25.52%
Kogiidae	*2*	100.00%	39	10	25.64%
Ziphiidae	*22*	54.55%	266	66	24.81%
Pontoporiidae	*1*	100.00%	197	44	22.34%
Monodontidae	*2*	50.00%	1	1	100.00%
Delphinidae	*37*	45.95%	2495	205	8.22%
Phocoenidae	*7*	28.57%	1859	107	5.76%
All toothed whales	***72***	**50.00%**	**5002**	**470**	**9.40%**
All cetaceans	***86***	**48.84%**	**5098**	**486**	**9.53%**
Sirenia					
Trichechidae	*2*	50.00%	4604	281	6.10%
Dugongidae	*1*	0.00%	0	0	0.00%
All sirenia	***3***	**33.33%**	**4604**	**281**	**6.10%**
All marine mammals	***123***	**41.46%**	**19,486**	**860**	**4.41%**

203 plastic pieces in Tristram's storm petrels (*Oceanodroma tristrami)* on Hawaii with a maximum of 615 plastic pieces in a single bird. The second highest record was also found on Hawaii, in Laysan albatross fledglings. Lavers and Bond (2016) found an average number of 132.5 pieces and a maximum of 450 pieces in one bird. Other members of the procellariform order such as bulweria petrels, diving petrels and mollymawks contained < 0.017 plastic particles on average.

Again, as for Sp-%FO, a selection of species with the highest study record per taxon group was made to illustrate data on the average number of ingested plastic items. Laysan albatross, northern fulmar, white-chinned petrel (*Procellaria aequinoctialis)*, short-tailed shearwater (*Ardenna tenuirostris)*, northern gannet (*Morus bassanus)* and red phalarope exceed the average of more than one piece of ingested plastic per individual. To visualize this data, two graphs were made for species with either an average of < 1 or > 1 pieces respectively (Fig. 2).

4. Methodological constraints

Variation of methods represents the main issue that hampers analysis of data on a large scale. Some cases are highlighted, emphasizing the different outcomes of studies, depending on their study setup.

4.1. Seabirds – dissection and regurgitations

For many seabird studies samples are collected by dissecting dead individuals. However, to study the natural diet and plastic uptake in live birds, e.g. in breeding colonies, emetics or stomach lavages are regularly applied. Another method to obtain samples is the collection of regurgitates or boluses, some seabird species produce regularly. Provencher et al. (2017) found that 70% (n = 82) of the studies used dead birds from beaches, roads or colonies or being killed in hunting or bycatch. Stomach lavage or emetics were used in 9 studies and natural regurgitates were analysed in 23 studies. Beside potential harm to the individual when using invasive research methods, the full stomach content can often not be obtained in all seabird species. In some procellariform seabirds, the two stomachs are divided by a small constriction. As most plastic is retained in the latter stomach (the muscular gizzard), only a small fraction of plastics will be collected when

Table 4
Frequency of occurrence per species (Sp-%FO) of plastic ingestion for turtles. The species is given with the percentage of species within the taxon for which ingestion studies are available. For each taxon, the number of individual studied, and the number of individuals with plastic is tabulated, with the derived Sp-%FO shown in the last column.

Taxon	n species	% species studied	n individuals studied	n individuals with plastic	Sp-FO%
Loggerhead turtle	*1*	100%	3919	843	22%
Kemp's ridley turtle	*1*	100%	304	106	35%
Olive ridley turtle	*1*	100%	179	81	45%
Green turtle	*1*	100%	2720	1275	47%
Hawksbill turtle	*1*	100%	86	31	36%
Flatback turtle	*1*	100%	2	2	100%
Leatherback turtle	*1*	100%	669	198	30%
All turtles	***7***	**100%**	**7879**	**2536**	**32%**

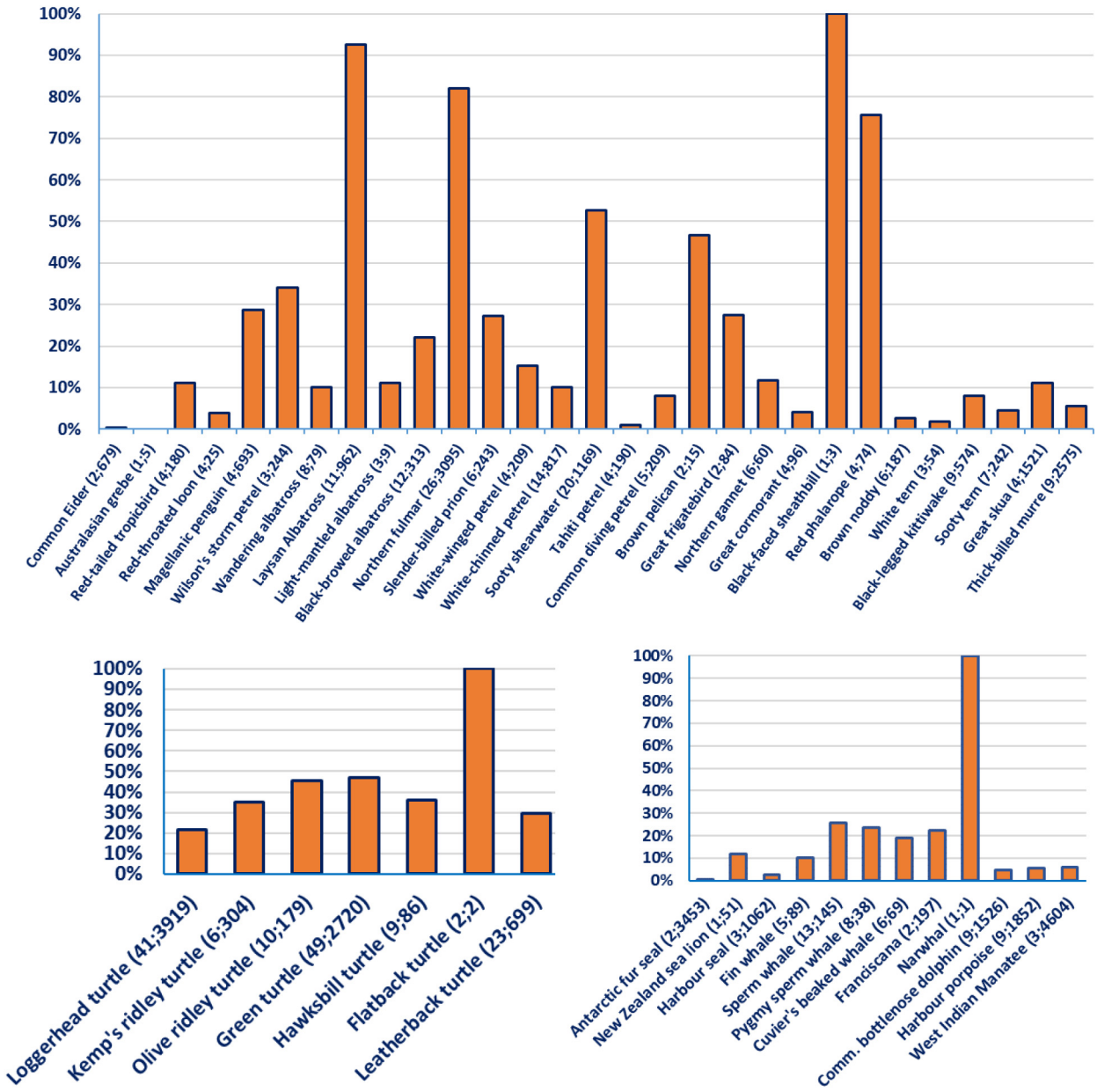

Fig. 1. Frequency of occurrence per species (Sp-%FO) of ingested plastics for a selection of best documented species of seabirds (top), turtles (bottom left) and marine mammals (bottom right). Species shown here were chosen from their taxonomic group as the species with the highest number of study records. With the species names, the number of studies on that species and the number of individuals used for the Sp-%FO calculations are shown in parenthesis.

regurgitations are obtained, making it difficult to compare results (Provencher et al., 2019). To emphasize the effect of method and gut morphology on Sp-%FO, gulls, skuas and cormorants, all known to regurgitate regularly, were compared with petrels (Procellariidae) and albatrosses (Diomedeidae), both accumulating plastics. Table 6 shows, that the outcome in gulls, skuas and cormorants are similar, irrespective the method, as probably in both cases the complete stomach content has been available. However, in petrels and albatrosses, more birds were encountered with plastics, when dissecting the birds and analysing both stomachs, indicating that regurgitates in these species do not reveal the full plastic load.

4.2. Seabirds – age variation

Sometimes it is not only the method used that can cause difference in numbers but it might for example be related to the ecology of species: young seabirds tend to have more plastics in their stomachs than adults, partly because they get fed by two plastic-ingesting parent but possibly also due to inexperience in searching for food (Kühn et al., 2015). For instance, in most studies of Laysan albatrosses, stomachs of young birds were analysed. When adding up all records of young birds from different studies (where Sp-%FO is available), 635 birds were analysed and 96% contained plastics (Auman et al., 1997; Lavers and Bond, 2016; Pettit et al., 1981; Rapp et al., 2017; Sileo et al., 1990). In contrast, among 222 adult Laysan albatrosses only 84% had ingested plastics (Gould et al., 1997; Gray et al., 2012; Rapp et al., 2017). The study bias towards younger birds may explain the high Sp-%FO in Laysan albatrosses. In beached northern fulmars found in the Netherlands, young birds consistently have a higher mass of ingested plastic in the stomach than adult birds (Van Franeker et al., 2011).

4.3. Seabirds – population and affected averages

For 10 dedicated seabird ingestion studies and 50 study records

Table 5
Average number of plastic pieces ingested per individual for the major seabird taxa. The total number of species in the taxon is given with the percentage of species within the taxon for which ingestion studies are available. For each taxon, the number of individual studied, and the population average of plastic items per bird is tabulated. The range of the average number of plastics per bird is shown for all studies considered for this calculation.

	Species	Species studied	Individuals studied	Plastics/bird	Reported range average in studies	
Taxon	*n*	%	n	n avg	Min	Max
Anseriformes	***26***	**38%**	**864**	**0.012**	**0**	**0.175**
Podicipediformes	***20***	**0%**	**8**	**0**	**0**	**0**
Phaetontiformes	***3***	**100%**	**15**	**0.067**	**0**	**0.3**
Gaviformes	***5***	**80%**	**14**	**0.071**	**0**	**0.333**
Sphenisciformes	***18***	**22%**	**143**	**0.014**	**0**	**0.222**
Procellariiformes						
Storm petrels	*27*	41%	939	13.122	0	203.2
Great albatrosses	*6*	67%	88	0.42	0	1
N. Pac. albatrosses	*4*	75%	154	36.935	0	132.46
Sooty albatrosses	*2*	0%	3	0	0	0
Mollymawks	*10*	60%	765	0.012	0	1.5
Fulmarine petrels	*7*	86%	2437	17.795	0	65.4
Whalebirds	*8*	50%	84	1.048	0	5.5
Gadfly petrels	*35*	43%	529	0.476	0	4.109
Procellaria petrels	*5*	40%	126	8.127	0	8.947
Shearwaters	*30*	53%	2207	5.454	0	43
Bulweria petrels	*6*	33%	182	0.005	0	0.008
Diving petrels	*4*	25%	58	0.017	0	0.02
All Procellariiformes	***144***	**49%**	**7572**	**9.882**	**0**	**203.2**
Pelecaniformes	***8***	**13%**	**15**	**0.53**	**0.53**	**0.53**
Suliformes						
Frigatebirds	*5*	40%	12	0	0	0
Gannets	*10*	50%	92	1.457	0	5.81
Cormorants	*34*	24%	207	0.415	0	2
All Suliformes	***49***	**31%**	**311**	**0.704**	**0**	**5.81**
Charadriiformes						
Sheathbills	*2*	50%	2	0	0	0
Phalaropes	*3*	67%	22	8	1	12.3
Noddies	*5*	80%	22	0	0	0
White terns	*2*	50%	54	0.093	0	0.625
Skimmers	*3*	0%	0	na	na	na
Gulls	*51*	43%	2827	0.736	0	9.8
Terns	*39*	46%	328	0.006	0	0.031
Skuas	*7*	71%	1465	0.145	0	30
Auks	*24*	79%	4564	1.559	0	47
All Charadriiformes	***136***	**53%**	**9284**	**1.033**	**0**	**47**
All seabirds	***409***	**44%**	**25,798**	**3.282**	**0**	**203**

therein, the affected average of the number of ingested plastic particles was reported. However, the true population average could be derived from underlying data (Ainley et al., 1990b; Bond et al., 2010; Donnelly-Greenan et al., 2018; Floren and Shugart, 2017; Lavers and Bond, 2016; Mallory, 2008; Mallory et al., 2006; Rodríguez et al., 2012; Spear et al., 1995; Verlis et al., 2013). The species ($n = 43$) belong mainly to the Procellariiformes and Charadriiformes. From these species, 2447 individuals were analysed, 385 birds contained plastics, 7244 items in total. The affected average, excluding birds without plastics is 18.82 plastic pieces. When including all birds sampled, the population average is much lower, 2.96 plastic pieces (Fig. 3).

A significant difference ($p < 0.0001$) was indicated (Wilcoxon signed rank test for non-parametric paired data https://epitools.ausvet.io/paired), with affected averages being higher than population averages, emphasizing the importance to present results including the complete study sample to avoid overestimation of numbers and second to report which type of average has been used to allow comparisons between studies. Reporting different or unclear metrics in plastic ingestion studies impede the structural analysis of results.

4.4. Marine mammals – sampling method

How much influence a specific sampling method can have on the results has been shown in one study of plastic ingestion in harbour porpoises by Van Franeker et al. (2018). Between 2003 and 2013, 654 porpoises were studied. Using a simple overflow method (to retain hard natural prey items), 6% of the porpoises contained plastics. However, after adapting the method towards a plastic-dedicated protocol using an additional sieve, that caught all overflowing material, the actual %FO increased to 15%.

4.5. Turtles – plastic distribution in the gastrointestinal tract

Most studies on plastics in turtles include the complete gastrointestinal tract (GIT), others analyse the stomach content only. The complete GIT of turtles was considered in 42 studies, only the stomach in 8 studies. The remaining studies do either give no details or consider faeces, parts of the GIT or stomach flushing. Sp-%FO was calculated for all individuals of each group. These two groups were tested for a significant difference, using 2-sample z test to compare proportions http://epitools.ausvet.com.au/content.php?page=z-test-2 as recommended by Provencher et al. (2017).

For a total of 3639 turtles the method was specified. In 218 turtles only the stomach was analysed while 3421 turtles were analysed for plastics in the complete GIT. Out of the stomach-only turtles, 19.27% were found to contain plastics and when the whole GIT was analysed, 51.45% contained plastics (Fig. 4), indicating that a substantial amount of plastic may be missed out when only analysing the stomach. Therefore, the parts of GIT analysed should always be specified as for example was done by Camedda et al. (2014).

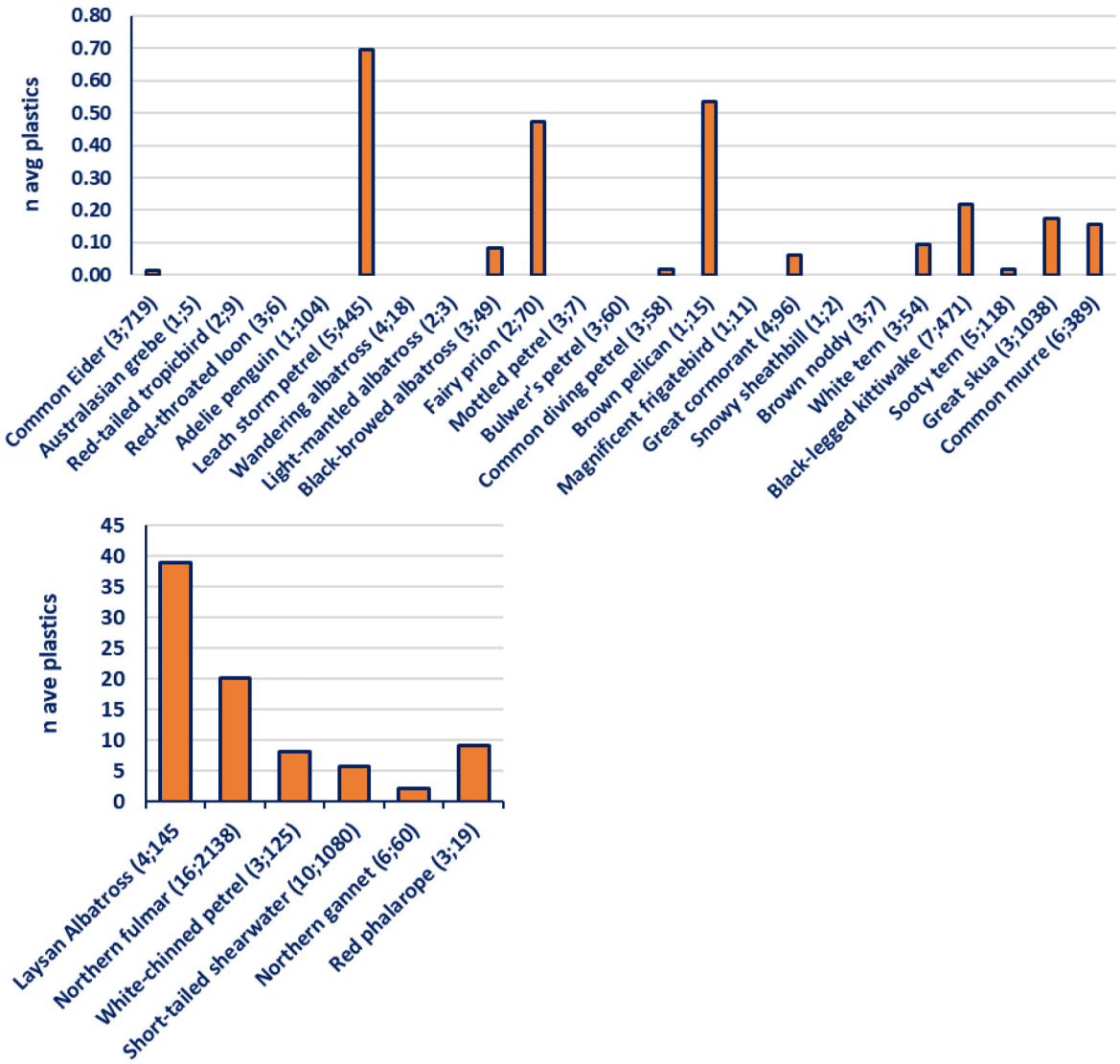

Fig. 2. Population average number of ingested plastic particles in seabirds. Species shown here were chosen from their taxonomic group as the species with the highest number of study records with the species names. The number of studies on that species and the number of individuals used are shown in parenthesis. The graph on the Top shows seabird species with on average < 1 piece of plastic per bird. On the Bottom, seabird species with an average of > 1 plastic items are depicted.

Table 6
Comparison of two different groups of species, with different gut morphology and foraging habits. Both groups have been studied by either dissecting the birds or using regurgitates (pellets, boluses, emetics). Sample size of birds analysed are shown together with the number of individuals with plastic and their according percentage.

Taxon	Dissection			Regurgitates		
	Sample size	Individuals with plastic	%	*Sample size*	Individuals with plastic	%
Gulls	*1386*	210	15.15	*3404*	572	16.8
Skuas	*110*	9	8.18	*2082*	171	8.21
Cormorants	*84*	10	11.9	*496*	41	8.27
Procellariidae	*14,661*	6916	47.17	*1653*	455	27.53
Albatrosses	*2878*	1066	37.1	*238*	14	5.88

5. Discussion

This review presents the most recent updated information on documented cases of plastic ingestion and entanglement in marine species. In recent years many reviews have been published focusing on either entanglement or ingestion and different taxon groups such as seabirds (Ryan, 2018; Battisti et al., 2019; Jagiello et al., 2019), marine mammals (Fossi et al., 2018; Stelfox and Hudgins, 2015), turtles (Duncan et al., 2017; Staffieri et al., 2019), fish (Azevedo-Santos et al., 2019; Markic et al., 2019; Parton et al., 2019) and zooplankton (Botterell et al., 2019). The numbers of affected species in these studies vary, as different criteria for species selection were applied. Battisti et al. (2019) and Azevedo-Santos et al. (2019) for example, included terrestrial bird species, but Battisti et al. (2019) also included many

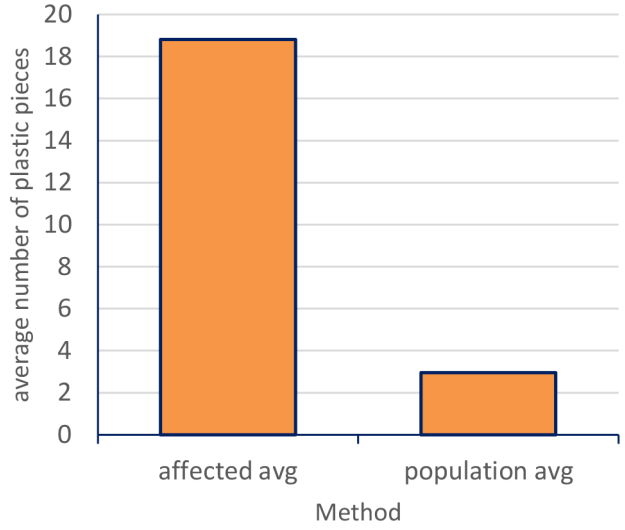

Fig. 3. Comparison of two methods. Affected average number of pieces excludes all seabirds without plastic (n = 385). The population average includes all birds sampled (n = 2447). In total, 7244 plastic items were detected in ten studies, where the affected average has been reported but the population average could be calculated.

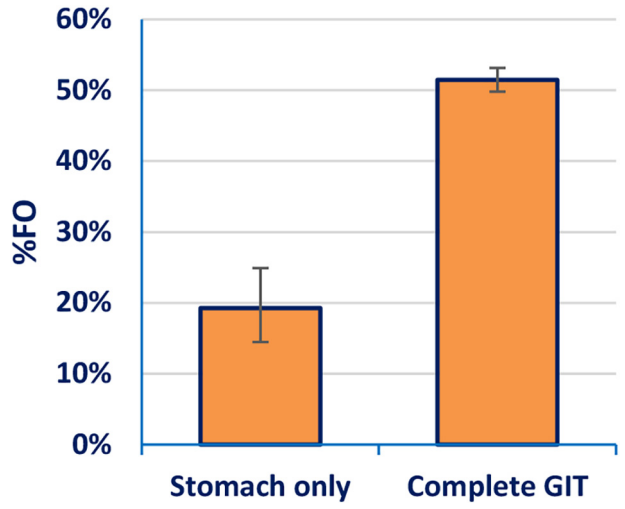

Fig. 4. Frequency of occurrence (%FO) of plastic ingestion of turtles (all species combined). Two methods analysing either the stomach only or the complete gastrointestinal tract (GIT) were compared. Error bars indicate the 95% confidence limits.

seabird species clearly caught in active fishing gear, confounding two very relevant but distinctive threats to seabirds.

The current study combines data on all marine taxa and presents a comprehensive list of all marine species recorded with plastic entanglement or ingestion. This list should serve as a useful tool for e.g. scientists to quickly gain insights in what is known about plastic ingestion or entanglement in a specific species, updating the list by Kühn et al. (2015). Beside this tool, this study provides insight in the number of affected individuals within species of marine megafauna and an overview of quantities of plastics found in seabirds. Unfortunately, it was not possible to provide an overview of data on average plastic mass, not even in the well-studied seabird group. Beside many zero-accounts, only 38 studies report population averages of plastic mass in seabirds, insufficient to compile a reliable overview for different species groups. Long-term studies in northern fulmars in the Netherlands show that the average mass of plastic particles decreased since the 1980s, indicating a trend towards more, but smaller plastics (Van Franeker et al., 2011; Van Franeker and Law, 2015). Plastic mass or volume would be a better indicator of impact on animals ingesting plastic than the number of plastic particles. Therefore, for long-term data collection, plastic mass should be considered the most reliable unit and should be provided as population average when studying plastics in marine organisms (Provencher et al., 2019).

Our numbers show, that plastics occur in many species, living in different marine habitats around the world, feeding and digesting in different ways. Interaction with plastic has been reported in tiny barnacles (Goldstein and Goodwin, 2013) and in blue whales (Baxter, 2009). It has been reported in different species from remote places such as polar regions (Nielsen et al., 2013; Poon et al., 2016; Ainley et al., 1990a; Van Franeker and Bell, 1988) and the deep sea (Carreras-Colom et al., 2018; Courtene-Jones et al., 2019; Courtene-Jones et al., 2017). With almost 1000 species affected, there is no doubt that plastic pollution is pervasive and available to any kind of marine organism. Plastic pollution has been considered as one of the most urgent environmental issues by UNEP (2011), but the extent of negative effects on marine wildlife is hard to assess and sometimes might be exaggerated (Völker et al., 2019). In well-studied turtles, where all species have been found to ingest plastics, only one third (32%) of the individuals contained plastic, although plastic abundances may be much higher (% FO > 90%) in some areas (González Carman et al., 2014; Clukey et al., 2017; Tourinho et al., 2010). Seabirds and specifically tubenosed seabirds also belong to a well-studied species group. The individual %FO in procellariforms is high with almost half of the birds (41.5%) containing plastics. However, when looking into the species groups within the tubenose order there is still a large variability in the occurrence of plastics. For instance, the mollymawks and the gadfly petrels, (10 and 35 species respectively), with sample sizes > 100, had low Sp-%FOs of 5% (mollymawks) and 16.4% (gadfly petrels). Other orders, such as Suliformes (gannets and cormorants) and Charadriiformes (gulls, terns, auks, etc.) have even lower Sp-%FOs of plastics in their stomachs (respectively 20.2% and 12.3%). Although known for regular visits at landfills and snack bars (e.g. Lenzi et al., 2016), only 16.3% of all studied gulls contained plastics at the moment of analysis. This may be explained by their feeding habits of regurgitating indigestible prey items (including plastics) on a regular basis (Barrett et al., 2007). Marine mammals and especially seal species seem to suffer more severely from entanglement (71% of all seal species) than from ingestion (48.4% of all seal species) of plastics. The Sp-%FO of ingestion of plastics in marine mammals is generally low (4.4%). Although some impressive cases of sperm whales ingesting many large plastic items exist (Jacobsen et al., 2010; De Stephanis et al., 2013; Unger et al., 2016), only baleen whales show a higher Sp-%FO (16.7%), all other species groups within the marine mammals remain well under 10%. These low numbers, however, are not irrelevant and do not provide evidence for a lack of harm for the individual or for populations and species. Some species exhibit an ongoing high intake of plastics throughout their distribution range, exceeding the Sp-%FO of 80%, such as Laysan albatrosses (sample size n = 962), Tristram's storm petrels (n = 150), northern fulmars (n = 3095) and parakeet auklets (*Aethia psittacula*; n = 325). This constant uptake should be of concern as reduced fitness and plastic-associated chemicals may negatively influence the health of the population when most individuals within a population are affected. On individual level, even small amounts of plastics can be fatal (Bjorndal et al., 1994; Domènech et al., 2019; Mate, 1985; Bogomolni et al., 2010; Brandão et al., 2011). Roman et al. (2019) and Wilcox et al. (2018) predict a strongly increased chance of mortality for tubenosed birds in the southern hemisphere and turtles when ingesting plastics.

An ongoing discussion is, how to deal with fibre contamination in samples. Fibres originate from e.g. clothing and due to their small weight easily become airborne. They are omnipresent in the environment (e.g. Dris et al., 2016; Bergmann et al., 2019) and available for marine organisms. Unfortunately, it is impossible to distinguish

between fibres ingested by organisms and fibres as secondary contamination. Exposure time to air plays an important role (Kühn et al., 2018; Kühn et al., 2020) and should therefore be avoided, e.g. by the use of laminar flow cabinets (Hermsen et al., 2017; Wesch et al., 2017). In recent literature it is mainly fish where fibres are presented in high numbers, often strongly dominating the plastic particle abundance in samples (Mizraji et al., 2017; Nadal et al., 2016; McGoran et al., 2017), and often without a clear description of mitigation measures to prevent airborne fibre contamination. These numbers should therefore be treated with care, as overestimation is likely. Separate recording and reporting of fibres from other particles is recommended for any future publication.

Variation in plastic abundance in the environment is reflected by the amount of plastics found in marine organisms. These patterns are linked to input areas of plastic and currents distributing plastics (Jambeck et al., 2015; Van Sebille et al., 2012). The high concentration of plastics in Tristram's storm petrels and Laysan albatrosses are caused by high concentrations of plastics in the central north Pacific gyre (Moore et al., 2001; Eriksen et al., 2014). Linking the pollution in areas directly to plastic ingestion in species is complicated in most cases, as information is often scattered and incomplete for many regions. Species with a large distribution range are more likely investigated in several studies, as can be seen in e.g. turtles. For entanglement, Ryan (2018) calculated that most species records occurred in temperate regions and explained this by a lower number of seabird species towards the equatorial regions. Some regions appear underrepresented in plastic studies. Although plastic-accumulating gyres occur both in the North and South Pacific (van Sebille et al., 2015), 111 ingestion studies report data from the North Pacific and only 79 ingestion studies origin from the South Pacific (including unspecified Australian coasts). The same pattern occurs in the Atlantic Ocean, in the North Atlantic 193 studies report plastic ingestion and 89 ingestion studies are published from the South Atlantic (including unspecified South African coasts). Studies from the Arctic ($n = 17$) and Antarctic ($n = 7$) regions are scarce, most likely due to the inaccessibility of these regions. In temperate or tropic regions high temperatures could accelerate the decomposition process in beached animals, impeding collection efforts.

As long as data are scattered and not standardized, fine-scaling of regional differences remains futile. The only species with sufficient data allowing spatial comparisons of plastic uptake, is the northern fulmar. Fulmars are used as a monitoring species to assess plastic pollution in the North Sea (Van Franeker et al., 2011; OSPAR, 2017) and the same methods regarding sampling, analysis and data reporting have been applied elsewhere in the North Atlantic (Van Franeker, 1985; Van Franeker et al., 2011; Acampora et al., 2016; Kühn and Van Franeker, 2012), in the North Pacific (Avery-Gomm et al., 2012; Terepocki et al., 2017; Donnelly-Greenan et al., 2014) and in the Arctic Ocean (Trevail et al., 2015; Mallory, 2008; Provencher et al., 2009; Poon et al., 2016), allowing wide-scaled comparisons between regions. When studying fulmars throughout their distribution range, spatial patterns in the abundance of plastics appear, according to the grade of pollution in certain areas. Plastic in fulmars gradually decreases towards northern latitudes (Trevail et al., 2015). Long-term monitoring, as established in the North Sea, could be expanded to other regions were fulmars occur (Avery-Gomm et al., 2012; Avery-Gomm et al., 2018; Acampora et al., 2016). Based on the positive experience with northern fulmars, the European MSFD decided to also monitor plastic ingestion by loggerhead turtles in the Atlantic and the Mediterranean Sea (Darmon et al., 2017; Domènech et al., 2019; Matiddi et al., 2017). The results of this review may be helpful in identifying potential other species that are suitable as biological indicators for marine plastic pollution. To be assigned as suitable for monitoring, species should ingest plastics regularly, should be available in sufficient numbers (e.g. dead on beaches or fisheries bycatch) and should forage exclusively at sea (Van Franeker and Meijboom, 2002; Provencher et al., 2017; Matiddi et al., 2017; Claro et al., 2019; Bray et al., 2019).

6. Conclusion

Despite the fact that plastics are found in all regions of the ocean and are ingested by a great variety of marine organisms, the frequency and abundance of ingested plastic appears lower than sometimes suggested. Often the increasing proportion of seabird species that have at least one documented case of plastic ingestion (our Tax-%FO), is erroneously worded as the proportion of seabird individuals having plastic in the stomach (Sp-%FO). From historic data, Wilcox et al. (2015) modelled that by 2015, 90% of individuals of the worldwide seabird species would have plastic in the stomach. The model indicated that by 2050, records for ingestion would exist for 99% of seabird species. Like Wilcox et al. (2015), we do believe that with increased studies ultimately any species is likely to show individual examples of direct or indirect ingestion of plastic (see for example the increases in Tax-%FO in the few years between 2015 and 2019 in Online Supplement Table 3). But our data do not support the idea that already now nearly every individual seabird has plastics in the stomach. Many of the data considered in this review have a relatively recent origin, but nevertheless, overall, < 30% of individual seabirds, 4.4% of mammals and 32% of turtles have plastic in their stomachs. Some species, like several tubenoses, seem very prone to ingest plastic debris and a large proportion of their individuals may have a substantial amount of plastic in their stomach. Fortunately, these species do not represent the average current situation. This, however, gives no guarantee for the future, and should also not hide the fact, that already now some populations or species of marine wildlife may suffer from plastics in their stomachs or in their surroundings.

In this, it must be emphasized that the data on plastic ingestion discussed in this review refer to visibly detectable plastic particles in digestive tracks of marine wildlife. Although some of these plastics are certainly in the range of microplastics, this review cannot tell anything about the potential abundance of, and inflicted harm from the smallest types of plastics that may be present in the marine environment and its food chains. Large plastics, as discussed in this review, continuously degrade to smaller sized plastics and are the precursor of risks from smaller plastics. The smallest particles are potentially able to pass through tissue walls or cell membranes. Although experimental evidence indicates a serious risk of harm to organisms from such small particles, the actual impact on marine wildlife and food chains remains uncertain (e.g. GESAMP, 2016; SAPEA, 2019). If consistent robust methods are applied, studying patterns and trends in the frequency and abundance of visible plastic sizes ingested by marine wildlife is probably the best indicator for the risks taken with our marine environments.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.marpolbul.2019.110858.

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Online Supplement to:

Quantitative overview of marine debris ingested by marine megafauna

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Contents

Online Supplement Table 1. All known records of marine species reported as entangled or found with ingested marine litter with according references.

In parenthesis annotation whether reference concerns entanglement (E), ingestion (I) or zero accounts for ingestion (0). No zero accounts of entanglement have been noted. For species coloured in grey, no references were found. These species are added in marine birds and mammals only to show current research gaps and to give a full list of species searched for.

Entanglement Scores
As the distinction of entanglement in active fishing gear or in ghost gear/other marine litter is difficult, a code has been added to all entanglement references:

- Code 1: clearly active gear, these studies have not been included in this review.
- Code 2: unclear gear, e.g. lose parts of netting on seals or whales, where both options could be realistic.
- Code 3: more likely ghost gear, when authors convincingly report ghost gear to be the reason of entanglement. This code has also been used for e.g. marine birds, that might not be strong enough to break active fishing gear
- Code 4: clear signs of entanglement by marine litter, e.g. packing straps, six-pack-rings, rubber bands, balloon lines etc. It also includes accounts of floating ghost gear or lost crab pods with entangled marine organisms
- Code 5, occasionally used when both, likely active gear and real marine litter are found to entangle marine organisms, e.g. at haul-out sites of seals, where different types of entanglement occur simultaneously.

The decision to put each species account in one of these categories was based on the information given in the respective reports and may sometimes be wrong or subjective, however it is meant to help scientists to get an overview of the extent of the problem that occurs when reporting entanglement in marine wildlife.

English name	*Scientific name*	Ent	Ing	0	References
Anseriformes					
Long-tailed duck	*Clangula hyemalis*	0	0	1	Day et al. 1985 (0); Holland et al. 2016 (0)
Spectacled eider	*Somateria fischeri*				
King eider	*Somateria spectabilis*	0	0	1	Provencher et al. 2014 (0)
Common eider	*Somateria mollissima*	1	1	1	Camphuysen 2008 (E2); English et al. 2015 (I); Federal Republic of Germany 1985 (E2); Harris et al. 2006 (E2); Holland et al. 2016 (I); Provencher et al. 2014 (0)
Steller's eider	*Polysticta stelleri*	1	0		Ryan 2018 (E2)
Surf scoter	*Melanitta perspicillata*	1	0	1	Avery-Gomm et al. 2013 (0); Day et al. 1985 (0); Good et al. 2010 (E); Moore et al. 2009 (E); Provencher et al. 2014 (0)
Velvet Scoter	*Melanitta fusca*				
White-winged scoter	*Melanitta deglandi*	1	1	1	Day et al. 1985 (0); Good et al. 2010 (E); Harris et al. 2006 (E); Holland et al. 2016 (I)
Common scoter	*Melanitta nigra*	0	0	1	Basto et al. 2019 (0)
Black Scoter	*Melanitta americana*				
Harlequin duck	*Histrionicus histrionicus*	0	0	1	Avery-Gomm et al. 2013 (0); Day et al. 1985 (0)
Greater scaup	*Aythya marila*	1	0	1	Avery-Gomm et al. 2013 (0); Day et al. 1985 (0); Good et al. 2010 (E4)
Lesser scaup	*Aythya affinis*	1	0	1	Holland et al. 2016 (0); Moore et al. 2009 (E2)
Flying Steamerduck	*Tachyeres patachonicus*				
White-headed Steamerduck	*Tachyeres leucocephalus*				

English name	*Scientific name*	Ent	Ing	0	References
Magellanic Steamerduck	*Tachyeres pteneres*				
Falkland Steamerduck	*Tachyeres brachypterus*				
Bufflehead	*Bucephala albeola*				
Barrow's Goldeneye	*Bucephala islandica*				
Common Goldeneye	*Bucephala clangula*				
Hooded Merganser	*Lophodytes cucullatus*				
Red-breasted Merganser	*Mergus serrator*				
Goosander	*Mergus merganser*				
Black-necked Swan	*Cygnus melancoryphus*				
Kelp Goose	*Chloephaga hybrida*				
Crested Duck	*Lophonetta specularioides*				
Podicipediformes					
Little grebe	*Tachybaptus ruficollis*				
Australasian grebe	*Tachybaptus novaehollandiae*	1	0	1	Ceccarelli 2009 (E2); Roman et al. 2016 (0)
Madagascar Grebe	*Tachybaptus pelzelnii*				
Least Grebe	*Tachybaptus dominicus*				
Pied-billed grebe	*Podilymbus podiceps*	1	0		Moore et al. 2009 (E2)
White-tufted Grebe	*Rollandia rolland*				
Titicaca Grebe	*Rollandia microptera*				
Hoary-headed Grebe	*Poliocephalus poliocephalus*				
New Zealand Grebe	*Poliocephalus rufopectus*				
Great grebe	*Podiceps major*	1	0		Ryan 2018 (E2)
Red-necked grebe	*Podiceps grisegena*	1	0	1	Avery-Gomm et al. 2013 (0); Good et al. 2010 (E)
Great Crested grebe	*Podiceps cristatus*	1	0		Camphuysen 2008 (E2); Federal Republic of Germany 1985 (E2); Hong et al. 2013 (E2); Stienen & Van de walle 2010 (E2)
Horned Grebe	*Podiceps auritus*				
Black-necked Grebe	*Podiceps nigricollis*				
Northern Silvery Grebe	*Podiceps juninensis*				
Southern Silvery Grebe	*Podiceps occipitalis*				
Junin Grebe	*Podiceps taczanowskii*				
Hooded Grebe	*Podiceps gallardoi*				
Western grebe	*Aechmophorus occidentalis*	1	0	1	Avery-Gomm et al. 2013 (0); Jameson 1986 (E2)
Clark's Grebe	*Aechmophorus clarkii*				
Phaethontiformes					
Red-billed tropicbird	*Phaethon aethereus*	1	0	1	Moser & Lee 1992 (0); Ryan 2018 (E4)
Red-tailed tropicbird	*Phaethon rubricauda*	0	1	1	Rapp et al. 2017 (I); Roman et al. 2016 (0); Sileo et al. 1990 (I); Spear et al. 1995 (0); Thiel et al. 2018 (I)
White-tailed tropicbird	*Phaethon lepturus*	0	1		Cartraud et al. 2019 (I); Hyrenbach et al. 2013 (I)
Gaviformes					
Red-throated loon	*Gavia stellata*	1	1	1	Avery-Gomm et al. 2013 (0); Basto et al. 2019 (0); Camphuysen 2008 (E2); Holland et al. 2016 (0); Good et al. 2010 (E4); Stienen & Van de walle 2010 (E2); Weir et al. 1997 (I)

English name	*Scientific name*	Ent	Ing	0	References
Arctic loon	*Gavia arctica*	1	1		Hong et al. 2013 (I)
Pacific loon	*Gavia pacifica*	1	1	1	Avery-Gomm et al. 2013 (0); Good et al. 2010 (E4); Holland et al. 2016 (I); Moore et al. 2009 (E2)
Common loon	*Gavia immer*	1	0	1	Avery-Gomm et al. 2013 (0); Holland et al. 2016 (0); Gilardi et al. 2010 (E4); Good et al. 2010 (E4); Moore et al. 2009 (E2)
Yellow-billed loon	*Gavia adamsii*	1	1		Holland et al. 2016 (I)
Sphenisciformes					
King Penguin	*Aptenodytes patagonicus*				
Emperor Penguin	*Aptenodytes forsteri*	0	0	1	Ainley et al. 1990a (0); Day et al. 1985 (0)
Gentoo Penguin	*Pygoscelis papua*	1	1	1	Ainley et al. 1990a (0); Ceccarelli 2009 (I/E2); Ryan 1987c (E2); Ryan 2018 (E2)
Adelie Penguin	*Pygoscelis adeliae*	1	0	1	Ainley et al. 1990a (0); Ceccarelli 2009; Slip 1990 (E)
Chinstrap Penguin	*Pygoscelis antarcticus*	1	0		United States of America 1991 (E2); US Antarctic Marine Living Resources Program 2015 (E3)
Royal Penguin	*Eudyptes schlegeli*				
Macaroni Penguin	*Eudyptes chrysolophus*	1	0		Nel & Nel 1999 (E4)
Northern Rockhopper Penguin	*Eudyptes moseleyi*				
Southern Rockhopper Penguin	*Eudyptes chrysocome*	0	1		Ryan 1986 (I)
Erect-crested Penguin	*Eudyptes sclateri*				
Fiordland Penguin	*Eudyptes pachyrhynchus*				
Snares Penguin	*Eudyptes robustus*				
Yellow-eyed Penguin	*Megadyptes antipodes*				
Little Penguin	*Eudyptula minor*	1	1	1	Ceccarelli 2009 (I); Day et al. 1985 (0); Harrigan 1992 (I/E4); Slater 1995 (I/E2)
African Penguin	*Spheniscus demersus*	1	0		Ryan 1990b (E2); Ryan 2018 (E4)
Magellanic Penguin	*Spheniscus magellanicus*	0	1		Brandão et al. 2011 (I); Petry & Da Silva Fonseca 2002 (I); Pinto et al. 2006 (I); Tavares et al. 2017 (I); Tourinho et al. 2010 (I)
Humboldt Penguin	*Spheniscus humboldti*	0	1		Thiel et al. 2018 (I)
Galapagos Penguin	*Spheniscus mendiculus*				
Procellariiformes					
Wilson's Storm-petrel	*Oceanites oceanicus*	0	1		Ainley et al. 1990a (I); Moser & Lee 1992 (I); Van Franeker & Bell 1988 (I)
White-vented Storm-petrel	*Oceanites gracilis*				
Pincoya Storm-petrel	*Oceanites pincoyae*				
Grey-backed Storm-petrel	*Garrodia nereis*	0	1	1	Day et al. 1985 (0); Furness 1985a (I)
White-faced Storm-petrel	*Pelagodroma marina*	0	1		Day et al. 1985 (I); Furness 1985a (I); Spear et al. 1995 (I)
White-bellied Storm-petrel	*Fregetta grallaria*	0	1		Furness 1985a (I); Roman et al. 2019 (I); Spear et al. 1995 (I)
Black-bellied Storm-petrel	*Fregetta tropica*	0	0	1	Ainley et al. 1990a (0); Roman et al. 2019 (0)
New Zealand Storm-petrel	*Fregetta maoriana*				
Polynesian Storm-petrel	*Nesofregetta fuliginosa*	0	1	1	Spear et al. 1995 (0); Thiel et al. 2018 (I)

English name	*Scientific name*	Ent	Ing	0	References
European Storm-petrel	*Hydrobates pelagicus*	0	1	1	Furness 1985b (0); Van Franeker 1983 (I)
Cape Verde Storm-petrel	*Hydrobates jabejabe*				
Band-rumped Storm-petrel	*Hydrobates castro*	0	0	1	Moser & Lee 1992 (0); Spear et al. 1995 (0)
Monteiro's Storm-petrel	*Hydrobates monteiroi*				
Matsudaira's Storm-petrel	*Hydrobates matsudairae*				
Black Storm-petrel	*Hydrobates melania*				
Ashy Storm-petrel	*Hydrobates homochroa*				
Least Storm-petrel	*Hydrobates microsoma*				
Wedge-rumped Storm-petrel	*Hydrobates tethys*	0	1		Ainley et al. 1990b (I); Spear et al. 1995 (I)
Townsend's Storm-petrel	*Hydrobates socorroensis*				
Ainley's Storm-petrel	*Hydrobates cheimomnestes*				
Leach's Storm-petrel	*Hydrobates leucorhous*	1	1		Blight & Burger 1997 (I); Day 1980 (I); Furness 1985b (I); Laist 1997 (E2); Manville 1990 (E3); Moser & Lee 1992 (I); Robards et al. 1995 (I); Rothstein 1973 (I); Spear et al. 1995 (I)
Swinhoe's Storm-petrel	*Hydrobates monorhis*				
Guadalupe Storm-petrel	*Hydrobates macrodactylus*				
Tristram's Storm-petrel	*Hydrobates tristrami*	0	1		Harrison et al. 1983 (I); Rapp et al. 2017 (I); Sileo et al. 1990 (I); Youngren et al. 2018 (I)
Markham's Storm-petrel	*Hydrobates markhami*	0	1		Ainley et al. 1990b (I); García-Godos et al. 2002 (I)
Fork-tailed Storm-petrel	*Hydrobates furcatus*	0	1		Blight & Burger 1997 (I); Day 1980 (I); Robards et al. 1995 (I)
Ringed Storm-petrel	*Hydrobates hornbyi*				
Northern Royal Albatross	*Diomedea sanfordi*	0	1		Jiménez et al. 2015 (I)
Southern Royal Albatross	*Diomedea epomophora*	0	1	1	Day et al. 1985 (I); Jiménez et al. 2015 (I); Petry & Da Silva Fonseca 2002 (I); Roman et al. 2019 (0)
Wandering Albatross	*Diomedea exulans*	1	1	1	Ceccarelli 2009 (I); Cherel et al. 2017 (I); Colabuono et al. 2010 (0); Cooper 1995 (I); Cooper et al. 1992b (I); Day et al. 1985 (I); Furness 1983 (I); Gilbert et al. 2016 (0); Huin 1996 (I); Jiménez et al. 2015 (0); Nel & Nel 1999 (I); Phillips et al. 2010 (I); Roman et al. 2016 (0); Roman et al. 2019 (0); Ryan et al. 2016b (0); Taylor 2004 (E3)
Antipodean Albatross	*Diomedea antipodensis*	0	0	1	Roman et al. 2019 (0)
Amsterdam Albatross	*Diomedea amsterdamensis*				
Tristan Albatross	*Diomedea dabbenena*	0	1	1	Colabuono et al. 2010 (0); Jiménez et al. 2015 (I); Ryan et al. 2016a (0)
Sooty Albatross	*Phoebetria fusca*	0	1	1	Roman et al. 2019 (0); Ryan 1987b (I)
Light-mantled Albatross	*Phoebetria palpebrata*	0	1	1	Ainley et al. 1990a (0); Roman et al. 2016 (0); Roman et al. 2019 (I)

English name	*Scientific name*	Ent	Ing	0	References
Waved Albatross	*Phoebastria irrorata*	0	1		Anderson et al. 2008 (I)
Black-footed Albatross	*Phoebastria nigripes*	1	1		Blight & Burger 1997 (I); Conant 1984 (I); Cooper et al. 2004 (I); Gould et al. 1997 (I); Gray et al. 2012 (I); Harrison et al. 1983 (I); Henderson 1988 (E2); Kinan & Cousins 2000 (I); Moore et al. 2009 (E2); Rapp et al. 2017 (I); Sileo et al. 1990 (I)
Laysan Albatross	*Phoebastria immutabilis*	1	1	1	Auman et al. 1997 (I); Cooper et al. 2004 (I); Day 1980 (0); Day et al. 1985 (I); DeGange & Newby 1980 (E4); Fry et al. 1987 (I); Gould et al. 1997 (I); Gray et al. 2012 (I); Harrison et al. 1983 (I); Kenyon & Kridler 1969 (I); Kinan & Cousins 2000 (I); Lavers & Bond 2016a (I); Nilsen et al. 2014 (I); Pettit et al. 1981 (I); Rapp et al. 2017 (I); Sileo et al. 1990 (I); Young et al. 2009 (I)
Short-tailed Albatross	*Phoebastria albatrus*	0	1		Donnelly-Greenan et al. 2018 (I); Environment Canada 2008 (I)
Atlantic Yellow-nosed Albatross	*Thalassarche chlororhynchos*	0	1	1	Barbieri 2009 (I); Colabuono & Vooren 2007 (I); Colabuono et al. 2009 (I); Colabuono et al. 2010 (I); Jiménez et al. 2015 (0); Mäder et al. 2010 (I); Petry & Da Silva Fonseca 2002 (I); Ryan et al. 2016b (0); Tavares et al. 2017 (I)
Indian Yellow-nosed Albatross	*Thalassarche carteri*	0	0	1	Ryan et al. 2016b (0)
Grey-headed Albatross	*Thalassarche chrysostoma*	0	1		Furness 1983 (I); Huin 1996 (I); Phillips et al. 2010 (I); Roman et al. 2019 (I); Thiel et al. 2018 (I)
Black-browed Albatross	*Thalassarche melanophris*	0	1	1	Barbieri 2009 (I); Colabuono & Vooren 2007 (I); Colabuono et al. 2009 (I); Colabuono et al. 2010 (I); Cooper 1995 (I); Jiménez et al. 2015 (I); Mäder et al. 2010 (I); Petry & Da Silva Fonseca 2002 (I); Petry et al. 2007 (I); Phillips et al. 2010 (I); Roman et al. 2019 (I); Ryan et al. 2016b (0); Tavares et al. 2017 (I); Thiel et al. 2018 (I); Tourinho et al. 2010 (I)
Campbell Albatross	*Thalassarche impavida*	0	0	1	Roman et al. 2019 (0)
Buller's Albatross	*Thalassarche bulleri*	1	1		James & Stahl 2000 (I); Robertson & Bell 2002 (I); Roman et al. 2016 (I); Roman et al. 2019 (I); Taylor 2004 (E3); West & Imber 1986 (I)
Shy Albatross	*Thalassarche cauta*	0	1	1	Hedd & Gales 2001 (I); Robertson et al. 2004 (I); Roman et al. 2016 (I); Roman et al. 2019 (0); Ryan et al. 2016b (I)
White-capped Albatross	*Thalassarche steadi*	0	0	1	Jiménez et al. 2015 (0); Roman et al. 2019 (0)
Chatham Albatross	*Thalassarche eremita*	0	0	1	Roman et al. 2019 (0)
Salvin's Albatross	*Thalassarche salvini*	0	1	1	Robertson & Bell 2002 (I); Robertson et al. 2004 (I); Roman et al. 2019 (0)
Northern Giant Petrel	*Macronectes halli*	1	1		Ceccarelli 2009 (E3); Hunter & Brooke 1992 (I); Leal Vallis et al. 2015 (I); Nel & Nel 1999 (E3); Robertson & Bell 2002 (I); Roman et al. 2019 (I)
Southern Giant Petrel	*Macronectes giganteus*	1	1	1	Ainley et al. 1990a (0); Barbieri 2009 (I); Ceccarelli 2009 (I/E3); Copello & Quintana 2003 (I); Huin 1996 (I); Hunter & Brooke 1992 (I); Laist 1997 (E3); Nel & Nel 1999 (I/E3); Petry & Da Silva Fonseca 2002 (I); Roman et al. 2016 (I); Roman et al. 2019 (I); Tourinho et al. 2010 (I)
Northern Fulmar	*Fulmarus glacialis*	1	1		Acampora et al. 2016 (I); Avery-Gomm et al. 2012 (I); Avery-Gomm et al. 2018 (I); Baltz & Morejohn 1976 (I); Blight & Burger 1997 (I); Bond et al. 2014 (I); Camphuysen & Van Franeker 1997 (I); Camphuysen 2008 (E3); Day 1980 (I); Day et al. 1985 (I); DeGange & Newby 1980 (E4); Donnelly-Greenan et al. 2014 (I); Furness 1985b (I); Herzke et al. 2016 (I); Kühn & Van Franeker 2012 (I); Lydersen et al. 1989 (I); Mallory 2008 (I); Mallory et al. 2006 (I); Moore et al. 2009 (E5); Moser & Lee 1992 (I); Nevins et al. 2005 (I); Poon et al. 2016 (I); Provencher et al. 2009 (I); Provencher et al. 2014 (I); Robards et al. 1995 (I); Stienen & Van de walle 2010 (E2); Terepocki et al. 2017 (I); Trevail et al. 2015 (I); Van Franeker et al. 2011 (I)
Southern Fulmar	*Fulmarus glacialoides*	0	1	1	Ainley et al. 1990a (I); Barbieri 2009 (I); Colabuono et al. 2009 (I); Crockett & Reed 1976 (I); Mäder et al. 2010 (I); Petry & Da Silva Fonseca 2002 (I); Roman et al. 2019 (I); Tourinho et al. 2010 (0); Van Franeker & Bell 1988 (I)
Antarctic Petrel	*Thalassoica antarctica*	0	1	1	Ainley et al. 1990a (I); Roman et al. 2019 (I); Van Franeker & Bell 1988 (0)
Cape Petrel	*Daption capense*	1	1	1	Ainley et al. 1990a (I); Ainley et al. 1990b (I); Barbieri 2009 (I); Ceccarelli 2009 (E2); Creet et al. 1994 (I); Fijn et al. 2012 (I); Petry & Da Silva Fonseca 2002 (I); Robertson & Bell 2002 (I); Roman et al. 2019 (I); Tavares et al. 2017 (I); Tourinho et al. 2010 (0); Van Franeker & Bell 1988 (I)
Snow Petrel	*Pagodroma nivea*	0	1	1	Ainley et al. 1990a (I); Fijn et al. 2012 (0); Van Franeker & Bell 1988 (I)

English name	*Scientific name*	Ent	Ing	0	References
Blue Petrel	*Halobaena caerulea*	1	1		Ainley et al. 1990a (I); Ceccarelli 2009 (I/E2); Day et al. 1985 (I); Reed 1981 (I); Roman et al. 2019 (I); Ryan 1987a (I)
Broad-billed Prion	*Pachyptila vittata*	0	1		Ainley et al. 1990a (I); Day et al. 1985 (I); Harper & Fowler 1987 (I); Roman et al. 2019 (I); Thiel et al. 2018 (I)
Salvin's Prion	*Pachyptila salvini*	0	1		Day et al. 1985 (I); Gartshore et al. 1988 (I); Harper & Fowler 1987 (I); Roman et al. 2016 (I); Roman et al. 2019 (I)
MacGillivray's Prion	*Pachyptila macgillivrayi*				
Antarctic Prion	*Pachyptila desolata*	0	1		Auman et al. 2004 (I); Day et al. 1985 (I); Fromant et al. 2016 (I); Harper & Fowler 1987 (I); Petry & Da Silva Fonseca 2002 (I); Roman et al. 2016 (I); Roman et al. 2019 (I)
Slender-billed Prion	*Pachyptila belcheri*	0	1	1	Ainley et al. 1990b (I); Barbieri 2009 (I); Harper & Fowler 1987 (I); Roman et al. 2016 (I); Roman et al. 2019 (I); Tourinho et al. 2010 (0)
Fairy Prion	*Pachyptila turtur*	0	1	1	Day et al. 1985 (I); Harper & Fowler 1987 (I); Roman et al. 2016 (I); Roman et al. 2019 (I); Slater 1995 (0)
Fulmar Prion	*Pachyptila crassirostris*				
Kerguelen Petrel	*Aphrodroma brevirostris*	0	1		Ainley et al. 1990a (I); Furness 1985a (I); Reed 1981 (I); Roman et al. 2019 (I)
White-winged Petrel	*Pterodroma leucoptera*	0	1		Ainley et al. 1990b (I); Roman et al. 2016 (I); Roman et al. 2019 (I); Spear et al. 1995 (I)
Collared Petrel	*Pterodroma brevipes*	0	1		Spear et al. 1995 (I)
Masatierra Petrel	*Pterodroma defilippiana*				
Stejneger's Petrel	*Pterodroma longirostris*	0	1		Ainley et al. 1990b (I); Blight & Burger 1997 (I); Spear et al. 1995 (I)
Cook's Petrel	*Pterodroma cookii*	0	1		Ainley et al. 1990b (I); Day et al. 1985 (I); Imber 1996 (I); Roman et al. 2019 (I)
Pycroft's Petrel	*Pterodroma pycrofti*	0	1		Ainley et al. 1990b (I); Spear et al. 1995 (I)
Bonin Petrel	*Pterodroma hypoleuca*	0	1		Lavers & Bond 2016a (I); Rapp et al. 2017 (I); Sileo et al. 1990 (I)
Black-winged Petrel	*Pterodroma nigripennis*	1	1	1	Ainley et al. 1990b (I); Roman et al. 2019 (0); Ryan 2018 (E4); Spear et al. 1995 (I)
Chatham Petrel	*Pterodroma axillaris*				
Murphy's Petrel	*Pterodroma ultima*	0	1	1	Ainley et al. 1990b (0); Imber et al. 1995 (I); Spear et al. 1995 (I); Thiel et al. 2018 (I)
Providence Petrel	*Pterodroma solandri*	0	1	1	Bester et al. 2010 (I); Roman et al. 2016 (0); Roman et al. 2019 (0)
Kermadec Petrel	*Pterodroma neglecta*	0	1	1	Ainley et al. 1990b (0); Imber et al. 1995 (I); Spear et al. 1995 (0)
Trindade Petrel	*Pterodroma arminjoniana*	0	1	1	Ainley et al. 1990b (0); Leal et al. 2017 (I)
Herald Petrel	*Pterodroma heraldica*	0	0	1	Spear et al. 1995 (0); Tavares et al. 2017 (0)
Henderson Petrel	*Pterodroma atrata*				
Phoenix Petrel	*Pterodroma alba*	0	0	1	Ainley et al. 1990b (0); Spear et al. 1995 (0)
Barau's Petrel	*Pterodroma baraui*	0	1		Cartraud et al. 2019 (I); Danckwerts et al. 2016 (I)
Mottled Petrel	*Pterodroma inexpectata*	0	1	1	Ainley et al. 1990b (0); Ainley et al. 1990a (0); Roman et al. 2019 (I); Spear et al. 1995 (0)
Hawaiian Petrel	*Pterodroma sandwichensis*				
Galapagos Petrel	*Pterodroma phaeopygia*	0	1		Robards et al. 1997 (I)
White-necked Petrel	*Pterodroma cervicalis*	0	1	1	Ainley et al. 1990b (I); Roman et al. 2016 (0); Roman et al. 2019 (0); Spear et al. 1995 (I)
Juan Fernandez Petrel	*Pterodroma externa*	0	1		Ainley et al. 1990b (I); Spear et al. 1995 (I)
Soft-plumaged Petrel	*Pterodroma mollis*	0	1		Furness 1985a (I); Petry & Da Silva Fonseca 2002 (I); Tavares et al. 2017 (I)
Bermuda Petrel	*Pterodroma cahow*				
Black-capped Petrel	*Pterodroma hasitata*	0	1		Moser & Lee 1992 (I)
Jamaican Petrel	*Pterodroma caribbaea*				
Cape Verde Petrel	*Pterodroma feae*				
Desertas Petrel	*Pterodroma deserta*				
Zino's Petrel	*Pterodroma madeira*				
Magenta Petrel	*Pterodroma magentae*				
Atlantic Petrel	*Pterodroma incerta*	0	1		Furness 1985a (I); Klages & Cooper 1997 (I); Mäder et al. 2010 (I); Perez et al. 2019 (I)
White-headed Petrel	*Pterodroma lessonii*	0	1		Roman et al. 2019 (I)

English name	*Scientific name*	Ent	Ing	0	References
Great-winged Petrel	*Pterodroma macroptera*	0	1	1	Day et al. 1985 (I); Roman et al. 2019 (0)
Grey-faced Petrel	*Pterodroma gouldi*	0	0	1	Roman et al. 2019 (0)
Grey Petrel	*Procellaria cinerea*	0	1	1	Robertson et al. 2004 (I); Roman et al. 2019 (0)
White-chinned Petrel	*Procellaria aequinoctialis*	0	1	1	Ainley et al. 1990a (0); Barbieri 2009 (I); Colabuono & Vooren 2007 (I); Colabuono et al. 2009 (I); Colabuono et al. 2010 (I); Cooper et al. 1992a (I); Furness 1983 (I); Mäder et al. 2010 (I); Nel & Nel 1999 (I); Petry & Benemann 2017 (I); Petry & Da Silva Fonseca 2002 (I); Robertson et al. 2004 (I); Robertson & Bell 2002 (I); Roman et al. 2019 (I); Ryan 2008 (I); Thiel et al. 2018 (I); Tourinho et al. 2010 (I)
Spectacled Petrel	*Procellaria conspicillata*	0	1		Colabuono & Vooren 2007 (I); Colabuono et al. 2009 (I); Colabuono et al. 2010 (I)
Westland Petrel	*Procellaria westlandica*	0	1		Roman et al. 2016 (I); Roman et al. 2019 (I)
Black Petrel	*Procellaria parkinsoni*	0	1	1	Day et al. 1985 (I); Robertson et al. 2004 (I); Roman et al. 2019 (0)
Wedge-tailed Shearwater	*Ardenna pacifica*	0	1		Cartraud et al. 2019 (I); Fry et al. 1987 (I); Gilbert et al. 2016 (I); Hutton et al. 2008 (I); Kain et al. 2016 (I); Lavers et al. 2018 (I); Rapp et al. 2017 (I); Roman et al. 2016 (I); Roman et al. 2019 (I); Sileo et al. 1990 (I); Spear et al. 1995 (I); Verlis et al. 2013 (I)
Buller's Shearwater	*Ardenna bulleri*	0	1		Ainley et al. 1990b (I); Spear et al. 1995 (I); (I)
Short-tailed Shearwater	*Ardenna tenuirostris*	1	1		Acampora et al. 2014 (I); Ainley et al. 1990b (I); Baltz & Morejohn 1976 (I); Carey 2011 (I); Ceccarelli 2009 (E2); Cousin et al. 2015 (I); Day 1980 (I); Day et al. 1985 (I); DeGange & Newby 1980 (E4); Gilbert et al. 2016 (I); Hong et al. 2013 (I); Moore et al. 2009 (E2); Ogi 1990 (I); Robards et al. 1995 (I); Robertson et al. 2004 (I); Rodríguez et al. 2018 (I); Roman et al. 2016 (I); Roman et al. 2019 (I); Skira 1986 (I); Slater 1995 (I); Vliestra & Parga 2002 (I); Yamashita et al. 2011 (I)
Sooty Shearwater	*Ardenna grisea*	1	1	1	Ainley et al. 1990b (I); Avery-Gomm et al. 2013 (I); Baltz & Morejohn 1976 (I); Barbieri 2009 (I); Blight & Burger 1997 (I); Bond et al. 2014 (I); Bourne 1976 (E2); Day 1980 (I); Day et al. 1985 (I); DeGange & Newby 1980 (E4); Furness 1983 (I); Mäder et al. 2010 (I); Manville 1990 (E4); Moore et al. 2009 (E2); Moser & Lee 1992 (I); Ogi 1990 (I); Petry & Da Silva Fonseca 2002 (I); Petry et al. 2008 (I); Robertson & Bell 2002 (I); Robertson et al. 2004 (I); Roman et al. 2019 (I); Spear et al. 1995 (I); Tavares et al. 2017 (0); Taylor 1999 (E5); Taylor 2004 (E3); Terepocki et al. 2017 (I); Tourinho et al. 2010 (I)
Great Shearwater	*Ardenna gravis*	1	1		Barbieri 2009 (I); Bond et al. 2014 (I); Bourne 1976 (I); Colabuono et al. 2009 (I); Colabuono et al. 2010 (I); Day et al. 1985 (I); Furness 1983 (I); Furness 1985a (I); Haman et al. 2013 (I); Mäder et al. 2010 (I); Moser & Lee 1992 (I); Petry & Da Silva Fonseca 2002 (I); Petry et al. 2008 (I); Pierce et al. 2004 (I); Ryan 1987a (I); Ryan 1991 (E4); Ryan 2008 (I); Ryan 2018 (E); Tavares et al. 2017 (I)
Flesh-footed Shearwater	*Ardenna carneipes*	1	1		Ceccarelli 2009 (I); Hutton et al. 2008 (I); Lavers et al. 2014 (I); Lavers & Bond 2016b (I); Robertson & Bell 2002 (I); Robertson et al. 2004 (I); Roman et al. 2019 (I); Taylor 2004 (E3)
Pink-footed Shearwater	*Ardenna creatopus*	1	1		Baltz & Morejohn 1976 (I); Environment Canada 2008 (I); Ryan 2018 (E); Thiel et al. 2018 (I)
Streaked Shearwater	*Calonectris leucomelas*				
Scopoli's Shearwater	*Calonectris diomedea*	0	1		Mäder et al. 2010 (I)
Cory's Shearwater	*Calonectris borealis*	0	1	1	Bond et al. 2014 (0); Codina-García et al. 2013 (I); Colabuono et al. 2009 (I); Moser & Lee 1992 (I); Petry & Da Silva Fonseca 2002 (I); Petry et al. 2009 (I); Rodríguez et al. 2012 (I); Tavares et al. 2017 (I)
Cape Verde Shearwater	*Calonectris edwardsii*	0	1		Petry & Da Silva Fonseca 2002 (I)
Christmas Shearwater	*Puffinus nativitatis*	0	1		Sileo et al. 1990 (I); Spear et al. 1995 (I)
Galapagos Shearwater	*Puffinus subalaris*				
Fluttering Shearwater	*Puffinus gavia*	1	1		Roman et al. 2016 (I); Roman et al. 2019 (I); Taylor 1999 (E2); Taylor 2004 (E3)
Hutton's Shearwater	*Puffinus huttoni*	0	1	1	Gilbert et al. 2016 (I); Roman et al. 2019 (0)

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Black-vented Shearwater	*Puffinus opisthomelas*				
Bryan's Shearwater	*Puffinus bryani*				
Rapa Shearwater	*Puffinus myrtae*				
Newell's Shearwater	*Puffinus newelli*	0	1		Kain et al. 2016 (I); Sileo et al. 1990 (I)
Townsend's Shearwater	*Puffinus auricularis*				
Tropical Shearwater	*Puffinus bailloni*				
Persian Shearwater	*Puffinus persicus*				
Bannerman's Shearwater	*Puffinus bannermani*				
Manx Shearwater	*Puffinus puffinus*	1	1		Acampora et al. 2016 (I); Barbieri 2009 (I); Colabuono et al. 2009 (I); Colabuono et al. 2010 (I); Furness 1985b (I); Mäder et al. 2010 (I); Moser & Lee 1992 (I); Petry & Da Silva Fonseca 2002 (I); Petry et al. 2008 (I); Ryan 2018 (E2); Tavares et al. 2017 (I); Tourinho et al. 2010 (I)
Yelkouan Shearwater	*Puffinus yelkouan*	0	1		Codina-García et al. 2013 (I)
Balearic Shearwater	*Puffinus mauretanicus*	0	1		Codina-García et al. 2013 (I)
Subantarctic Shearwater	*Puffinus elegans*				
Little Shearwater	*Puffinus assimilis*	0	1		Furness 1985a (I); Roman et al. 2016 (I); Roman et al. 2019 (I)
Audubon's Shearwater	*Puffinus lherminieri*	0	1		Cartraud et al. 2019 (I); Moser & Lee 1992 (I)
Heinroth's Shearwater	*Puffinus heinrothi*				
Fiji Petrel	*Pseudobulweria macgillivrayi*				
Mascarene Petrel	*Pseudobulweria aterrima*	0	1		Cartraud et al. 2019 (I)
Beck's Petrel	*Pseudobulweria becki*				
Tahiti Petrel	*Pseudobulweria rostrata*	0	1	1	Ainley et al. 1990b (I); Roman et al. 2016 (0); Roman et al. 2019 (0); Spear et al. 1995 (I)
Bulwer's Petrel	*Bulweria bulwerii*	0	1	1	Ainley et al. 1990b (0); Harrison et al. 1983 (I); Rapp et al. 2017 (0); Sileo et al. 1990 (I); Spear et al. 1995 (0)
Jouanin's Petrel	*Bulweria fallax*				
Peruvian Diving-petrel	*Pelecanoides garnotii*	0	1		Thiel et al. 2011 (I)
Magellanic Diving-petrel	*Pelecanoides magellani*				
South Georgia Diving-petrel	*Pelecanoides georgicus*	0	0	1	Roman et al. 2019 (0)
Common Diving-petrel	*Pelecanoides urinatrix*	0	1	1	Ainley et al. 1990a (0); Day et al. 1985 (0); Norman & Brown 1987 (I); Roman et al. 2016 (0); Roman et al. 2019 (I); Ryan 1986 (I)
Pelecaniformes					
Dalmatian Pelican	*Pelecanus crispus*				
Spot-billed Pelican	*Pelecanus philippensis*				
Pink-backed Pelican	*Pelecanus rufescens*				
Australian Pelican	*Pelecanus conspicillatus*	1	1		Ceccarelli 2009 (E2); Roman et al. 2016 (I)
Great White Pelican	*Pelecanus onocrotalus*	0	1		Crawford et al. 1995 (I)

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Brown Pelican	*Pelecanus occidentalis*	1	1		Centaur Associates 1986 (E2); Dau et al. 2009 (I); Gottdenker et al. 2008 (I); Laist 1997 (E2); Moore et al. 2009 (E2); US Fish and Wildlife Service 1980 (E2); Vargo et al. 2006 (E)
Peruvian Pelican	*Pelecanus thagus*	1	0		Ryan 2018 (E2); Thiel et al. 2011 (E2)
American White Pelican	*Pelecanus erythrorhynchos*	1	0		Laist 1997 (E2); Moore et al. 2009 (E2)
Suliformes					
Lesser Frigatebird	*Fregata ariel*	0	0	1	Roman et al. 2016 (0)
Great Frigatebird	*Fregata minor*	0	1		Rapp et al. 2017 (I); Sileo et al. 1990 (I)
Christmas Frigatebird	*Fregata andrewsi*				
Magnificent Frigatebird	*Fregata magnificens*	1	0	1	Ryan 2018 (E4); Tavares et al. 2017 (0)
Ascension Frigatebird	*Fregata aquila*				
Abbott's Booby	*Papasula abbotti*				
Northern Gannet	*Morus bassanus*	1	1	1	Acampora et al. 2016 (I); Basto et al. 2019 (I); Bourne 1976 (I); Camphuysen 2008 (E2); Codina-García et al. 2013 (I); Lucas 1992 (E5); Montevecchi 1991 (E4); Moser & Lee 1992 (0); Nicastro et al. 2018 (0); Pierce et al. 2004 (I); Rodríguez et al. 2013 (E4); Schrey & Vauk 1987 (E4); Stienen & Van de walle 2010 (E2); Votier et al. 2011 (E4)
Cape Gannet	*Morus capensis*	1	1		Cartraud et al. 2019 (I); Laist 1997 (E4)
Australasian Gannet	*Morus serrator*	1	1	1	Ceccarelli 2009 (I); Gilbert et al. 2016 (I); Norman et al. 1995 (E5); Roman et al. 2016 (0); Slater 1992 (E5); Taylor 2004 (E3)
Red-footed Booby	*Sula sula*	0	1	1	Rapp et al. 2017 (I); Roman et al. 2016 (0); Sileo et al. 1990 (I)
Brown Booby	*Sula leucogaster*	1	1	1	Dobbs 2005 (E2); Lavers et al. 2013 (E4); Rapp et al. 2017 (I); Spear et al. 1995 (0); Tavares et al. 2017 (I)
Blue-footed Booby	*Sula nebouxii*	0	1		Laist 1997 (I)
Peruvian Booby	*Sula variegata*	1	0		Thiel et al. 2011 (E2); Thiel et al. 2018 (E3)
Masked Booby	*Sula dactylatra*	1	1	1	Conant 1984 (E2); Dobbs 2005 (E2); Mariano & Targino 2012 (I); Rapp et al. 2017 (I); Sileo et al. 1990 (I); Spear et al. 1995 (0); Tavares et al. 2017 (I)
Nazca Booby	*Sula granti*				
Crowned Cormorant	*Microcarbo coronatus*				
Long-tailed Cormorant	*Microcarbo africanus*				
Pygmy Cormorant	*Microcarbo pygmaeus*				
Little Cormorant	*Microcarbo niger*				
Little Pied Cormorant	*Microcarbo melanoleucos*	0	1	1	Ceccarelli 2009 (I); Roman et al. 2016 (0)
Red-legged Cormorant	*Poikilocarbo gaimardi*				
Rock Shag	*Leucocarbo magellanicus*				
Guanay Cormorant	*Leucocarbo bougainvilliorum*	1	1		Thiel et al. 2018 (I/E3)
Imperial Shag	*Leucocarbo atriceps*	0	0	1	Ainley et al. 1990a (0)
Kerguelen Shag	*Leucocarbo verrucosus*				
Rough-faced Shag	*Leucocarbo carunculatus*				
Stewart Shag	*Leucocarbo chalconotus*				
Chatham Shag	*Leucocarbo onslowi*				
Campbell Shag	*Leucocarbo campbelli*				

English name	*Scientific name*	Ent	Ing	0	References
Bounty Shag	*Leucocarbo ranfurlyi*				
Auckland Shag	*Leucocarbo colensoi*				
Double-crested Cormorant	*Nannopterum auritus*	1	0	1	Avery-Gomm et al. 2013 (0); Day 1980 (0); Good et al. 2010 (E4); Moore et al. 2009 (E2); Moser & Lee 1992 (0)
Neotropical Cormorant	*Nannopterum brasilianus*	1	0		Thiel et al. 2011 (E2)
Flightless Cormorant	*Nannopterum harrisi*				
Brandt's Cormorant	*Urile penicillatus*	1	0		Good et al. 2010 (E4); Moore et al. 2009 (E2)
Pelagic Cormorant	*Urile pelagicus*	1	1	1	Avery-Gomm et al. 2013 (0); Day 1980 (0); Good et al. 2010 (E4); Moore et al. 2009 (E2); Robards et al. 1995 (I)
Red-faced Cormorant	*Urile urile*	0	0	1	Day 1980 (0); Robards et al. 1995 (0)
European Shag	*Gulosus aristotelis*	1	1		Acampora et al. 2016 (I); Álvarez et al. 2018 (I); Onions & Rees 1992 (E2); Stienen & Van de walle 2010 (E2)
Great Cormorant	*Phalacrocorax carbo*	1	1	1	Acampora et al. 2017 (I); Basto et al. 2019 (I); Camphuysen 2008 (E2); Ceccarelli 2009 (I/E2); Laist 1997 (E2); Nicastro et al. 2018 (0); Roman et al. 2016 (0); Taylor 1999 (E3); Taylor 2004 (E3)
Japanese Cormorant	*Phalacrocorax capillatus*	1	0		Hong et al. 2013 (E2)
Cape Cormorant	*Phalacrocorax capensis*	1	0		Laist 1997 (E2)
Socotra Cormorant	*Phalacrocorax nigrogularis*				
Bank Cormorant	*Phalacrocorax neglectus*	1	0		Ryan 2018 (E2)
Indian Cormorant	*Phalacrocorax fuscicollis*				
Little Black Cormorant	*Phalacrocorax sulcirostris*	0	1		Ceccarelli 2009 (I)
Black-faced Cormorant	*Phalacrocorax fuscescens*	1	0		Ryan 2018 (E2)
Great Pied Cormorant	*Phalacrocorax varius*	1	1		Ceccarelli 2009 (I); Gilbert et al. 2016 (I); Roman et al. 2016 (I); Taylor 2004 (E3)
Spotted Shag	*Phalacrocorax punctatus*				
Pitt Shag	*Phalacrocorax featherstoni*				
Charadriiformes					
Snowy sheathbill	*Chionis albus*	0	0	1	Ainley et al. 1990a (0)
Black-faced sheathbill	*Chionis minor*	0	1		Nel & Nel 1999 (I)
Wilson's Phalarope	*Steganopus tricolor*				
Red-necked Phalarope	*Phalaropus lobatus*	0	1		Day 1980 (I); Moser & Lee 1992 (I)
Red Phalarope	*Phalaropus fulicarius*	0	1		Connors & Smith 1982 (I); Drever et al. 2018 (I); Moser & Lee 1992 (I); Nevins et al. 2005 (I)
Brown Noddy	*Anous stolidus*	0	1	1	Cartraud et al. 2019 (I); Moser & Lee 1992 (0); Rapp et al. 2017 (I); Roman et al. 2016 (0); Sileo et al. 1990 (I); Tavares et al. 2017 (0)
Lesser Noddy	*Anous tenuirostris*	0	1	1	Cartraud et al. 2019 (I); Spear et al. 1995 (0)
Black Noddy	*Anous minutus*	0	1		Rapp et al. 2017 (I); Sileo et al. 1990 (I)
Blue Noddy	*Anous ceruleus*	0	0	1	Spear et al. 1995 (0)
Grey Noddy	*Anous albivittus*	0	1		Thiel et al. 2018 (I)
Common White Tern	*Gygis alba*	0	1	1	Rapp et al. 2017 (0); Sileo et al. 1990 (0); Spear et al. 1995 (I)
Little White Tern	*Gygis microrhyncha*				
Black Skimmer	*Rynchops niger*	1	0		Gochfield 1973 (E4); Thiel et al. 2018 (E3)
African Skimmer	*Rynchops flavirostris*				
Indian Skimmer	*Rynchops albicollis*				

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Saunders's Gull	*Saundersilarus saundersi*				
Little Gull	*Hydrocoloeus minutus*				
Ross's Gull	*Rhodostethia rosea*				
Swallow-tailed Gull	*Creagrus furcatus*				
Sabine's Gull	*Xema sabini*	0	1	1	Acampora et al. 2016 (0); Day 1980 (0); Moser & Lee 1992 (I)
Ivory Gull	*Pagophila eburnea*	0	0	1	Day 1980 (0)
Red-legged Kittiwake	*Rissa brevirostris*	0	1		Day 1980 (I); Robards et al. 1995 (I)
Black-legged Kittiwake	*Rissa tridactyla*	1	1		Acampora et al. 2014 (I); Baltz & Morejohn 1976 (I); Basto et al. 2019 (I); Bourne 1976 (E3); Camphuysen 2008 (E3); Codina-García et al. 2013 (I); Day 1980 (I); Day et al. 1985 (I); Lydersen et al. 1989 (I); Moser & Lee 1992 (I); Onions & Rees 1992 (E3); Poon et al. 2016 (I); Robards et al. 1995 (I); Stienen & Van de walle 2010 (E3)
Bonaparte's Gull	*Larus philadelphia*	0	1	1	Braune & Gaskin 1982 (I); Day 1980 (0); Moser & Lee 1992 (I)
Slender-billed Gull	*Larus genei*				
Brown-headed Gull	*Larus brunnicephalus*				
Black-headed Gull	*Larus ridibundus*	1	1		Acampora et al. 2016 (I); Basto et al. 2019 (I); Camphuysen 2008 (E2); Ferns & Mudge 2000 (I); Hong et al. 2013 (I); Onions & Rees 1992 (E2); Schwemmer et al. 2012 (I)
Andean Gull	*Larus serranus*				
Brown-hooded Gull	*Larus maculipennis*	0	0	1	Tourinho et al. 2010 (0)
Hartlaub's Gull	*Larus hartlaubii*	1	1		Laist 1997 (E2); Steele 1992 (I)
Grey-headed Gull	*Larus cirrocephalus*				
Silver Gull	*Larus novaehollandiae*	1	1	1	Ceccarelli 2009 (I); Gilbert et al. 2016 (0); Roman et al. 2016 (I); Taylor 1999 (E3); Taylor 2004 (E3)
Black-billed Gull	*Larus bulleri*	1	0		Taylor 2004 (E3)
Grey Gull	*Larus modestus*				
Dolphin Gull	*Larus scoresbii*	1	0		Thiel et al. 2018 (E3)
Franklin's Gull	*Larus pipixcan*				
Laughing Gull	*Larus atricilla*	1	1		Below 1979 (I); Moser & Lee 1992 (I); Vargo et al. 2006 (E3)
Lava Gull	*Larus fuliginosus*				
Pallas's Gull	*Larus ichthyaetus*				
Relict Gull	*Larus relictus*				
Mediterranean Gull	*Larus melanocephalus*	0	1	1	Basto et al. 2019 (0); Codina-García et al. 2013 (I)
Sooty Gull	*Larus hemprichii*				
White-eyed Gull	*Larus leucophthalmus*				
Audouin's Gull	*Larus audouinii*	0	1	1	Basto et al. 2019 (0); Codina-García et al. 2013 (I)
Heermann's Gull	*Larus heermanni*	1	1		Baltz & Morejohn 1976 (I); Moore et al. 2009 (E2)
Pacific Gull	*Larus pacificus*	1	1		Ceccarelli 2009 (E2); Coulson & Coulson 1993 (I); Lindsay & Meathrel 2008 (I)
Black-tailed Gull	*Larus crassirostris*	0	1		Hong et al. 2013 (I)
Belcher's Gull	*Larus belcheri*	1	0		Thiel et al. 2018 (E3)
Olrog's Gull	*Larus atlanticus*	1	1		Berón & Favero 2009 (I/E3)
Ring-billed Gull	*Larus delawarensis*	1	0	1	Moore et al. 2009 (E2); Moser & Lee 1992 (0)
Mew Gull	*Larus canus*	1	1	1	Baltz & Morejohn 1976 (I); Camphuysen 2008 (E2); Day 1980 (0); Garthe et al. 1999 (I); Kubetzki & Garthe 2003 (I); Robards et al. 1995 (I); Vauk-Hentzelt 1982 (I)
Yellow-footed Gull	*Larus livens*				
Western Gull	*Larus occidentalis*	1	1		Day et al. 1985 (I); Jameson 1986 (E2); Moore et al. 2009 (E2)
California Gull	*Larus californicus*	1	0		Moore et al. 2009 (E2)

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Kelp Gull	*Larus dominicanus*	1	1	1	Ainley et al. 1990a (0); Ceccarelli 2009 (E2); Coulson & Coulson 1993 (I); Hinojosa & Thiel 2009 (E4); Lenzi et al. 2016 (I); Ludynia et al. 2005 (I); Petracci et al. 2004 (I); Ryan 1990a (I); Steele 1992 (I); Tavares et al. 2017 (0); Taylor 1999 (E3); Taylor 2004 (E3); Thiel et al. 2011 (E4); Tourinho et al. 2010 (0)
Lesser Black-backed Gull	*Larus fuscus*	1	1		Acampora et al. 2016 (I); Basto et al. 2019 (I); Camphuysen et al. 2010 (I); Camphuysen et al. 2008 (I); Camphuysen 2008 (E2); Garthe et al. 1999 (I); Nicastro et al. 2018 (I); Onions & Rees 1992 (E2); Stienen & Van de walle 2010 (E2)
European Herring Gull	*Larus argentatus*	1	1	1	Acampora et al. 2016 (I); Basto et al. 2019 (0); Bond 2016 (I); Camphuysen 2008 (E2); Camphuysen et al. 2010 (I); Camphuysen et al. 2008 (I); Hong et al. 2013 (E4); Onions & Rees 1992 (E2); Stienen & Van de walle 2010 (E2); Thiel et al. 2018 (E4) Vauk-Hentzelt 1982 (I)
Armenian Gull	*Larus armenicus*				
Yellow-legged Gull	*Larus michahellis*	0	1	1	Basto et al. 2019 (I); Codina-García et al. 2013 (I); Day 1980 (0); Furtado et al. 2016 (I); Neves et al. 2006 (I); Nicastro et al. 2018 (I)
Caspian Gull	*Larus cachinnans*				
Arctic Herring Gull	*Larus smithsonianus*	1	1	1	Day et al. 1985 (I); Harris et al. 2006 (E2); Moser & Lee 1992 (0); Seif et al. 2018 (I); Threlfall 1968 (I)
Iceland Gull	*Larus glaucoides*	0	1	1	Acampora et al. 2016 (0); Seif et al. 2018 (I)
Slaty-backed Gull	*Larus schistisagus*	1	0		Ceccarelli 2009 (E2); Hong et al. 2013 (E2)
Glaucous-winged Gull	*Larus glaucescens*	1	1	1	Avery-Gomm et al. 2013 (I); Baltz & Morejohn 1976 (I); Day 1980 (0); Day et al. 1985 (I); Lindborg et al. 2012 (I); Moore et al. 2009 (E2); Robards et al. 1995 (0)
Glaucous Gull	*Larus hyperboreus*	0	1		Day 1980 (I)
Great Black-backed Gull	*Larus marinus*	1	1	1	Acampora et al. 2016 (I); Camphuysen 2008 (E2); Day et al. 1985 (I); Gilliland et al. 2004 (I); Moser & Lee 1992 (0); Laist 1997 (E5); Lucas 1992 (E5); Seif et al. 2018 (I); Stienen & Van de walle 2010 (E2);
Aleutian Tern	*Onychoprion aleuticus*	0	0	1	Day 1980 (0)
Sooty Tern	*Onychoprion fuscatus*	1	1	1	Cartraud et al. 2019 (I); Ceccarelli 2009 (I); Henderson 1988 (E2); Moser & Lee 1992 (0); Rapp et al. 2017 (0); Roman et al. 2016 (0); Sileo et al. 1990 (I); Spear et al. 1995 (I); Tavares et al. 2017 (0)
Bridled Tern	*Onychoprion anaethetus*	0	1		Moser & Lee 1992 (I)
Grey-backed Tern	*Onychoprion lunatus*	0	0	1	Rapp et al. 2017 (0); Sileo et al. 1990 (0); Spear et al. 1995 (0)
Little Tern	*Sternula albifrons*	1	1	1	Ceccarelli 2009 (I); Roman et al. 2016 (0); Ryan 2018 (E2)
Saunders's Tern	*Sternula saundersi*				
Least Tern	*Sternula antillarum*	0	0	1	Moser & Lee 1992 (0)
Yellow-billed Tern	*Sternula superciliaris*				
Peruvian Tern	*Sternula lorata*	1	0		Thiel et al. 2011 (E2)
Fairy Tern	*Sternula nereis*	0	0	1	Roman et al. 2016 (0)
Damara Tern	*Sternula balaenarum*				
Large-billed Tern	*Phaetusa simplex*				
Common Gull-billed Tern	*Gelochelidon nilotica*	0	0	1	Moser & Lee 1992 (0)
Australian Gull-billed Tern	*Gelochelidon macrotarsa*				
Caspian Tern	*Hydroprogne caspia*	1	0	1	Ceccarelli 2009 (E2); Moore et al. 2009 (E2); Moser & Lee 1992 (0)
Inca Tern	*Larosterna inca*	1	0		Thiel et al. 2018 (E3)
Black-fronted Tern	*Chlidonias albostriatus*				
Whiskered Tern	*Chlidonias hybrida*	1	0		Ryan 2018 (E4)
White-winged Tern	*Chlidonias leucopterus*				
Black Tern	*Chlidonias niger*	0	1	1	Moser & Lee 1992 (I); Spear et al. 1995 (0)
River Tern	*Sterna aurantia*				
Roseate Tern	*Sterna dougallii*	0	0	1	Tavares et al. 2017 (0)

English name	*Scientific name*	Ent	Ing	0	References
White-fronted Tern	*Sterna striata*				
Black-naped Tern	*Sterna sumatrana*				
South American Tern	*Sterna hirundinacea*	0	0	1	Tavares et al. 2017 (0)
Common Tern	*Sterna hirundo*	1	1		Braune & Gaskin 1982 (I); Bugoni & Vooren 2004 (I); Gochfield 1973 (E2); Moser & Lee 1992 (I); Onions & Rees 1992 (E2); Tavares et al. 2017 (I)
White-cheeked Tern	*Sterna repressa*				
Arctic Tern	*Sterna paradisaea*	1	0	1	Ainley et al. 1990a (0); Bergmann et al. 2017 (E2); Day 1980 (0); Moser & Lee 1992 (0)
Antarctic Tern	*Sterna vittata*	0	0	1	Ainley et al. 1990a (0)
Kerguelen Tern	*Sterna virgata*				
Forster's Tern	*Sterna forsteri*	1	0	1	Moser & Lee 1992 (0); Ryan 2018 (E2)
Snowy-crowned Tern	*Sterna trudeaui*	0	0	1	Tourinho et al. 2010 (0)
Black-bellied Tern	*Sterna acuticauda*				
Lesser Crested Tern	*Thalasseus bengalensis*				
Chinese Crested Tern	*Thalasseus bernsteini*				
Elegant Tern	*Thalasseus elegans*	1	0		Ryan 2018 (E2)
Sandwich Tern	*Thalasseus sandvicensis*	1	0	1	Moser & Lee 1992 (0); Onions & Rees 1992 (E2); Tavares et al. 2017 (0)
Royal Tern	*Thalasseus maximus*	1	0	1	Gochfield 1973 (E4); Moser & Lee 1992 (0); Tavares et al. 2017 (0)
Greater Crested Tern	*Thalasseus bergii*	1	0	1	Ceccarelli 2009 (E2); Gilbert et al. 2016 (0); Roman et al. 2016 (0); Ryan 1990b (E2)
Long-tailed Jaeger	*Stercorarius longicaudus*	0	1		Moser & Lee 1992 (I); Spear et al. 1995 (I)
Arctic Jaeger	*Stercorarius parasiticus*	0	1	1	Acampora et al. 2016 (I); Day 1980 (0); Moser & Lee 1992 (I)
Pomarine Jaeger	*Stercorarius pomarinus*	0	1	1	Day 1980 (0); Moser & Lee 1992 (I); Spear et al. 1995 (0)
Great Skua	*Catharacta skua*	1	1	1	Codina-García et al. 2013 (I); Hammer et al. 2016 (I); Moser & Lee 1992 (0); Ryan 2018 (E2); Ryan & Fraser 1988 (I)
South Polar Skua	*Catharacta maccormicki*	0	1		Ainley et al. 1990a (0); Slip 1990 (I)
Brown Skua	*Catharacta antarctica*	1	1	1	Auman et al. 2004 (I); Ceccarelli 2009 (I/E2); Furness 1985a (I); Grilli & Montalti 2012 (I); Nel & Nel 1999 (E2); Roman et al. 2016 (0)
Chilean Skua	*Catharacta chilensis*				
Rhinoceros Auklet	*Cerorhinca monocerata*	0	1	1	Avery-Gomm et al. 2013 (0); Baltz & Morejohn 1976 (I); Blight & Burger 1997 (0); Day 1980 (0); Robards et al. 1995 (0)
Tufted Puffin	*Fratercula cirrhata*	1	1	1	Avery-Gomm et al. 2013 (0); Blight & Burger 1997 (I); Day 1980 (I); DeGange & Newby 1980 (E4); Jones & Ferrero 1985 (E4); Robards et al. 1995 (I)
Atlantic Puffin	*Fratercula arctica*	1	1		Acampora et al. 2016 (I); Harris & Wanless 1994 (I); Onions & Rees 1992 (E2); Parslow & Jefferies 1972 (I); Provencher et al. 2014 (I)
Horned Puffin	*Fratercula corniculata*	1	1		Blight & Burger 1997 (I); Day 1980 (I); Jones & Ferrero 1985 (E4); Robards et al. 1995 (I)
Cassin's Auklet	*Ptychoramphus aleuticus*	0	1	1	Avery-Gomm et al. 2013 (0); Day 1980 (I); Floren & Shugart 2017 (I); Hipfner et al. 2017 (I); O'Hara et al. 2019 (I); Robards et al. 1995 (I)
Parakeet Auklet	*Aethia psittacula*	0	1		Bond et al. 2010 (I); Day 1980 (I); Pettit et al. 1981 (I); Robards et al. 1995 (I)
Least Auklet	*Aethia pusilla*	0	1	1	Day 1980 (I); Robards et al. 1995 (0)
Whiskered Auklet	*Aethia pygmaea*	0	1	1	Day 1980 (0); Robards et al. 1995 (0); Bond et al. 2010 (I)
Crested Auklet	*Aethia cristatella*	0	1	1	Day 1980 (0); Robards et al. 1995 (I)
Long-billed Murrelet	*Brachyramphus perdix*				
Marbled Murrelet	*Brachyramphus marmoratus*	0	0	1	Avery-Gomm et al. 2013 (0); Day 1980 (0); Robards et al. 1995 (0)
Kittlitz's Murrelet	*Brachyramphus brevirostris*	0	0	1	Day 1980 (0); Robards et al. 1995 (0)
Black Guillemot	*Cepphus grylle*	1	0	1	Acampora et al. 2016 (0); Onions & Rees 1992 (E2); Poon et al. 2016 (0)
Pigeon Guillemot	*Cepphus columba*	1	1		Avery-Gomm et al. 2013 (I); Day 1980 (I); Good et al. 2010 (E4)

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Spectacled Guillemot	*Cepphus carbo*				
Ancient Murrelet	*Synthliboramphus antiquus*	1	0	1	Avery-Gomm et al. 2013 (0); Day 1980 (0); Hong et al. 2013 (E2); Jones & Ferrero 1985 (E4); Robards et al. 1995 (0)
Japanese Murrelet	*Synthliboramphus wumizusume*				
Scripps's Murrelet	*Synthliboramphus scrippsi*				
Guadalupe Murrelet	*Synthliboramphus hypoleucus*	0	0	1	Blight & Burger 1997 (0)
Craveri's Murrelet	*Synthliboramphus craveri*				
Razorbill	*Alca torda*	1	1	1	Acampora et al. 2016 (0); Nicastro et al. 2018 (0); Onions & Rees 1992 (E2); Provencher et al. 2014 (0); Stienen & Van de walle 2010 (E2); Weir et al. 1997 (I)
Little Auk	*Alle alle*	0	1	1	Amélineau et al. 2016 (I); Avery-Gomm et al. 2016 (I); Day et al. 1985 (I); Fife et al. 2015 (I); Lydersen et al. 1989 (I); Pedersen & Falk 2001 (I); Perry et al. 2013 (I); Provencher et al. 2014 (0); Van Franeker 1983 (I)
Thick-billed Murre	*Uria lomvia*	1	1	1	Bond et al. 2013 (I); Day 1980 (I); Day et al. 1985 (I); Falk & Durinck 1993 (I); Heneman 1988 (I); Lucas 1992 (E5); Lydersen et al. 1989 (I); Poon et al. 2016 (0); Provencher et al. 2010 (I); Provencher et al. 2014 (0); Robards et al. 1995 (0)
Common Murre	*Uria aalge*	1	1	1	Acampora et al. 2016 (I); Avery-Gomm et al. 2013 (I); Blight & Burger 1997 (0); Bond et al. 2013 (I); Bourne 1976 (E2); Camphuysen 2008 (E2); Day 1980 (0); Federal Republic of Germany 1985 (E2); Good et al. 2010 (E4); Leopold et al. 2019 (I); Moore et al. 2009 (E4); Provencher et al. 2014 (0); Robards et al. 1995 (I); Stienen & Van de walle 2010 (E2); Weir et al. 1997 (I)
	Marine Mammals				
Polar bear and Otters (Carnivora)					
Ursidae					
Polar bear	*Ursus maritimus*	1	0		Bergmann et al. 2017 (E2); Bjørke 2014 (E4)
Mustelidae					
Sea otter	*Enhydra lutris*	1	0		DeGange & Newby 1980 (E4); Moore et al. 2009 (E2)
Marine otter	*Lontra felina*	1	0		Thiel et al. 2018
Seals (Pinnipeds)					
Otariidae					
South American fur seal	*Arctocephalus australis*	1	1		Denuncio et al. 2017 (I); Fowler 1988 (E4); Franco-Trecu et al. 2017 (E5); Perez-Venegas et al. 2018 (I); Ramirez 1986 (E2)
New Zealand fur seal	*Arctocephalus forsteri*	1	1		Boren et al. 2006 (E5); Cawthorn 1985 (E5); Ceccarelli 2009 (I/E2); Fowler 1988 (E5); Jones 1995 (E2); Page et al. 2004 (E5); Pemberton 1993 (E2)
Galapagos fur seal	*Arctocephalus galapagoensis*				
Antarctic fur seal	*Arctocephalus gazella*	1	1	1	Arnould & Croxall 1995 (E5); Bonner & McCann 1982 (E5); Bravo Rebolledo & van Franeker 2015 (I/E2); Convey et al. 2002 (E2); Croxall et al. 1990 (E5); Eriksson & Burton 2003 (I); Hofmeyr et al. 2002 (E5); Hofmeyr et al. 2006 (E5); Hucke-Gaete et al. 1997 (E5); Payne 1979 (E2); Ryan et al. 2016b (0); Waluda & Staniland 2013 (E5)
Juan Fernandez fur seal	*Arctocephalus philippi*	1	1		Barcenas-De la Cruz et al. 2018 (E2; Cardenas & Cattan 1984 (E4)); Carretta et al. 2014 (I/E5); Goldstein et al. 1999 (E5); Laist 1997 (E2); Moore et al. 2009 (E2)Thiel et al. 2011 (E2); Thiel et al. 2018 (E2)
Cape fur seal	*Arctocephalus pusillus*	1	1		Ceccarelli 2009 (I/E2); Jones 1995 (E2); Katsanevakis 2008 (E5); Lawson et al. 2015 (E5); McIntosh et al. 2015 (E5); Pemberton et al. 1992 (E2); Shaughnessy 1980 (E5); Slater 1992 (E5)
Subantarctic fur seal	*Arctocephalus tropicalis*	1	1	1	Ceccarelli 2009 (E2); Eriksson & Burton 2003 (I); Hofmeyr et al. 2002 (E5); Jones 1995 (E2); Ryan et al. 2016b (0)
Northern fur seal	*Callorhinus ursinus*	1	1		Baba et al. 1990 (E2); Barcenas-De la Cruz et al. 2018 (E2); Bengston et al. 1988 (E5); Carretta et al. 2014 (E5); DeLong et al. 1988 (E5); Donohue et al. 2019 (I); Fowler et al. 1990 (E5); Fowler et al. 1992 (E5); Hanni & Pyle 2000 (E4); Helker et al. 2015 (E5); Jackson 2012 (E2); Jackson 2013 (E2); Jackson 2014 (E2); Jackson & Sternfeld 2009 (E2); Kuzin 1990 (E2); Moore et al. 2009 (E2); Scordino 1985 (E5); Stewart & Yochem 1987 (E2)
Steller sea lion	*Eumetopias jubatus*	1	1		Barcenas-De la Cruz et al. 2018 (E2); Calkins 1985 (E5); Hanni & Pyle 2000 (E5); Helker et al. 2015 (E5); Jackson 2011 (E2); Jackson 2012 (E2); Jackson 2013 (E2); Jackson 2014 (E2); Jackson & Sternfeld 2009 (E2); Loughlin 1986 (E3); Manville 1990 (E5); Mate 1985 (I); Moore et al. 2009 (E2); Raum-Suryan et al. 2009 (E5); Sternfeld 2004 (E2)

English name	*Scientific name*	Ent	Ing	0	References
Australian sea lion	*Neophoca cinerea*	1	0		Ceccarelli 2009 (E2); Jones 1995 (E2); Page et al. 2004 (E5)
South American sea lion	*Otaria flavescens*	1	0		Franco-Trecu et al. 2017 (E5); Ramirez 1984 (E2); Ramirez 1986 (E2); Thiel et al. 2018 (E2)
New Zealand sea lion	*Phocarctos hookeri*	1	1		Cawthorn 1985 (E2); McMahon et al. 1999 (I)
California/Galapagos /Japanese sea lion	*Zalophus californianus*	1	1		Aurioles-Gamboa et al. 2003 (E2); Barcenas-De la Cruz et al. 2018 (E2); Carretta et al. 2014 (I/E5); Goldstein et al. 1999 (E5); Good et al. 2010 (E4); Hanni & Pyle 2000 (E5); Harcourt et al. 1994 (E5); Heneman 1985 (E2); Laist 1997 (E2); Moore et al. 2009 (E5); Stewart & Yochem 1987 (E5); Zavala-González & Mellink 1997 (E2)
Galapagos sea lion	*Zalophus wollebaeki*				
Walrus	*Odobenus rosmarus*				
Phocidae					
Hooded seal	*Cystophora cristata*				
Bearded seal	*Erignathus barbatus*	1	0		Bergmann et al. 2017 (E2)
Grey seal	*Halichoerus grypus*	1	1		Allen et al. 2012 (E5); Bogomolni et al. 2010 (E2); Fowler 1988 (E2); Lucas 1992 (E5); Nelms et al. 2019 (I); Osinga & t Hart 2006 (I); Unger et al. 2017 (I/E2)
Ribbon seal	*Histriophoca fasciata*				
Leopard seal	*Hydrurga leptonyx*	1	0		Ceccarelli 2009 (E2); Jenkin 1990 (E2); Jones 1995 (E2); Slater 1991 (E2)
Weddell seal	*Leptonychotes weddellii*				
Crabeater seal	*Lobodon carcinophaga*				
Southern elephant seal	*Mirounga leonina*	1	0		Campagna et al. 2007 (E5); Ceccarelli 2009 (E2); Hofmeyr et al. 2002 (E5); Ramirez 1986 (E2)
Northern elephant seal	*Mirounga angustirostris*	1	1		Barcenas-De la Cruz et al. 2018 (E2); Carretta et al. 2014 (I/E5); Goldstein et al. 1999 (E5); Hanni & Pyle 2000 (E5); Heneman 1985 (E2); Mate 1985 (I); Moore et al. 2009 (E4); Moore et al. 2013b (E4); Stewart & Yochem 1987 (E5)
Mediterranean monk seal	*Monachus monachus*	1	1		Gots et al. 1992 (E2); Salman et al. 2001 (I)
Hawaiian monk seal	*Monachus schauinslandi*	1	0		Carretta et al. 2009 (E5); Donohue & Foley 2007 (E2); Fowler 1988 (E5); Henderson 1984 (E4); Henderson 1990 (E5); Henderson 2001 (E5)
Ross seal	*Ommatophoca rossii*				
Harp seal	*Pagophila groenlandica*	1	1		Bogomolni et al. 2010 (I); Fowler 1988 (E5); Waring et al. 2004 (I)
Harbour seal	*Phoca vitulina*	1	1		Barcenas-De la Cruz et al. 2018 (E2); Bergmann et al. 2017 (E2); Bogomolni et al. 2010 (E2); Bravo Rebolledo et al. 2013 (I); Carretta et al. 2013 (I); Carretta et al. 2014 (E5); Fowler 1988 (E2); Goldstein et al. 1999 (E5); Good et al. 2010 (E4); Hanni & Pyle 2000 (E5); Helker et al. 2015 (E2); Jackson 2011 (E2); Jackson 2012 (E2); Lucas 1992 (E5); Moore et al. 2009 (E5); Nelms et al. 2019 (I); Osinga & t Hart 2006 (I); Sternfeld 2004 (E2); Sternfeld 2006 (E2); Stewart & Yochem 1987 (E4); Unger et al. 2017 (I/E5)
Largha seal	*Phoca largha*				
Ringed seal	*Phoca hispida*	1	0		Jackson 2011 (E2); Jackson & Sternfeld 2009 (E2); Sternfeld 2004 (E2)
Baleen whales (Mysticeti)					
Balaenidae					
Bowhead whale	*Balaena mysticetus*	1	1		Finley 2001 (I); Jackson 2011 (E2); Lowry 1993 (I); Philo et al. 1992 (E2); Sternfeld 2004 (E2); Sternfeld 2005 (E2)
North Atlantic right whale	*Eubalaena glacialis*	1	0		Cassoff et al. 2011 (E2); Knowlton et al. 2012 (E2); Kraus 1990 (E2); Moore et al. 2013a (E2); Waring et al. 2004 (E2)
North Pacific right whale	*Eubalaena japonica*				
Southern right whale	*Eubalaena australis*	1	0		Cawthorn 1985 (E2); Ceccarelli 2009 (E2); Jones 1995 (E2); Kemper et al. 2008 (E2)
Neobalaenidae					

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Pygmy right whale	*Caperea marginata*	1	1		Baulch & Perry 2014 (I); Ceccarelli 2009 (E2)
Eschrichtiidae					
Gray whale	*Eschrichtius robustus*	1	0		Carretta et al. 2013 (E2); Gulland et al. 2005 (E2); Hare & Mead 1987 (E2); Heyning & Lewis 1990 (E2); Jackson 2010 (E2); Jackson 2012 (E2); Jackson 2013 (E2); Le Boeuf et al. 2000 (E3); Sternfeld 2005 (E2)
Balaenopteridae					
Common minke whale	*Balaenoptera acutorostrata*	1	1		Cassoff et al. 2011 (E2); Cawthorn 1985 (I); Ceccarelli 2009 (E2); De Pierrepont et al. 2005 (I); Deaville et al. 2010 (E2); Heyning & Lewis 1990 (E2); Mauger et al. 2002 (I); Northridge et al. 2010 (E2); Puig-Lozano et al. 2018 (I); Tarpley & Marwitz 1993 (I); Waring et al. 2004 (E2)
Antarctic minke whale	*Balaenoptera bonaerensis*	1	0		Thiel et al. 2018 (E2)
Sei whale	*Balaenoptera borealis*	0	1		Groc 2015 (I)
Bryde's whale	*Balaenoptera edeni*	1	1		Abreo et al. 2019b (I); Cassoff et al. 2011 (E2); Ceccarelli 2009 (I/E); Haynes & Limpus 2000 (I)
Blue whale	*Balaenoptera musculus*	0	1		Baxter 2009 (I)
Omura's whale	*Balaenoptera omurai*				
Fin whale	*Balaenoptera physalus*	1	1	0	Arbelo et al. 2013 (I); Bravo Rebolledo et al. 2016 (0); Jackson 2013 (E2); Lusher et al. 2017 (I); Puig-Lozano et al. 2018 (I); Sadove & Morreale 1990 (I); Waring et al. 2004 (E2)
Humpback whale	*Megaptera novaeangliae*	1	1		Besseling et al. 2015 (I); Bogomolni et al. 2010 (E2); Capella Alzueta et al. 2001 (E2); Cassoff et al. 2011 (E2); Ceccarelli 2009 (E2); Greenland & Limpus 2007 (E2); Helker et al. 2015 (E2); Heyning & Lewis 1990 (E2); Jackson 2014 (E2); Jackson 2013 (E2); Jackson 2012 (E2); Jackson 2011 (E2); Jackson 2010 (E2); Jackson & Sternfeld 2009 (E2); Lusher et al. 2017 (I); Moore et al. 2009 (E2); Sternfeld 2006 (E2); Sternfeld 2005 (E2); Sternfeld 2004; Thiel et al. 2018 (E2); Waring et al. 2004 (E2)
Toothed whales (Odontoceti)					
Physeteridae					
Sperm whale	*Physeter macrocephalus*	1	1		Abreo et al. 2019b (I); Carretta et al. 2013 (I); De Stephanis et al. 2013 (I); Evans & Hindell 2004 (I); Fernández et al. 2009 (I); Hansen et al. 2016 (I); Jackson 2013 (E2); Jacobsen et al. 2010 (I); Laist 1997 (E2); Martin & Clarke 1986 (I); Mate 1985 (I); Mazzariol et al. 2011 (I); Moore et al. 2009 (E2); Poncelet et al. 2000 (I); Puig-Lozano et al. 2018 (I); Roberts 2003 (I); Sadove & Morreale 1990 (I/E3); Spence 1994 (I); Unger et al. 2016 (I); Walker & Coe 1990 (I); Waring et al. 2004 (E2)
Kogiidae					
Pygmy sperm whale	*Kogia breviceps*	0	1		Abreo et al. 2019b (I); Barros et al. 1990 (I); Fernández et al. 2009 (I); Nelms et al. 2019 (I); Poncelet et al. 2000 (I); Puig-Lozano et al. 2018 (I); Sadove & Morreale 1990 (I); Scott et al. 2001 (I); Stamper et al. 2006 (I); Tarpley 1990 (I); Walker & Coe 1990 (I)
Dwarf sperm whale	*Kogia sima*	0	1		Abreo et al. 2019b (I); Barros et al. 1990 (I); Walker & Coe 1990 (I)
Ziphiidae					
Arnoux's beaked whale	*Berardius arnuxii*				
Baird's beaked whale	*Berardius bairdii*	0	1		Walker & Coe 1990 (I)
Northern bottlenose whale	*Hyperoodon ampullatus*	0	1		Baird & Hooker 2000 (I); Deaville et al. 2010 (I); Fernández et al. 2014 (I)
Southern bottlenose whale	*Hyperoodon planifrons*				
Longman's beaked whale	*Indopacetus pacificus*	0	1		Garrigue et al. 2016 (I); Kaladharan et al. 2014 (I); Yamada et al. 2012c (I)
Sowerby's beaked whale	*Mesoplodon bidens*	0	1		Deaville et al. 2010 (I); Lusher et al. 2017 (I); Puig-Lozano et al. 2018 (I)
Andrew's beaked whale	*Mesoplodon bowdoini*				

English name	*Scientific name*	Ent	Ing	0	References
Hubbs' beaked whale	*Mesoplodon carlhubbsi*	0	1		Yamada et al. 2012b (I)
Gervais' beaked whale	*Mesoplodon europaeus*	0	1		Fernández et al. 2009 (I); Puig-Lozano et al. 2018 (I); Walker & Coe 1990 (I); Waring et al. 2004 (I)
Ginkgo-toothed beaked whale	*Mesoplodon gingkodens*	0	1		Baulch & Perry 2014 (I)
Gray's beaked whale	*Mesoplodon grayi*	0	1		Baulch & Perry 2014 (I)
Hector's beaked whale	*Mesoplodon hectori*				
Deraniyagala's beaked whale	*Mesoplodon hotaula*	0	1		Abreo et al. 2016a (I)
Strap-toothed beaked whale	*Mesoplodon layardii*				
True's beaked whale	*Mesoplodon mirus*	0	1		DeSouza et al. 2005 (I); Lusher et al. 2015 (I); Lusher et al. 2017 (I)
Perrin's beaked whale	*Mesoplodon perrini*				
Pygmy beaked whale	*Mesoplodon peruvianus*				
Stejneger's beaked whale	*Mesoplodon stejnegeri*	0	1		Tajima et al. 2007 (I); Walker & Hanson 1999 (I); Yamada et al. 2012a (I)
Spade-toothed whale	*Mesoplodon traversii*				
Blainville's beaked whale	*Mesoplodon densirostris*	0	1		Abreo et al. 2019b (I); Laist 1997 (I); Puig-Lozano et al. 2018 (I); Secchi & Zarzur 1999 (I); Walker & Coe 1990 (I)
Sheperd's beaked whale	*Tasmacetus shepherdi*				
Cuvier's beaked whale	*Ziphius cavirostris*	1	1		Arbelo et al. 2013 (I/E2); Coleman & Wehle 1984 (I); Lusher et al. 2017 (I); Poncelet et al. 2000 (I); Puig-Lozano et al. 2018 (I); Santos et al. 2001 (I); Santos et al. 2007 (I); Walker & Coe 1990 (I); Waring et al. 2004 (E2)
Pontoporiidae					
Franciscana	*Pontoporia blainvillei*	0	1		Denuncio et al. 2011 (I); Di Beneditto & Ramos 2014 (I); Laist 1997 (E2); Pinedo 1982 (I)
Monodontidae					
Beluga	*Delphinapterus leucas*	1	0		Helker et al. 2015 (E2); Jackson 2011 (E2); Jackson 2012 (E2); Jackson 2013 (E2); Jackson 2014 (E2); Sternfeld 2005 (E2)
Narwhal	*Monodon monoceros*	0	1		Haelters et al. 2018 (I)
Delphinidae					
Commerson's dolphin	*Cephalorhynchus commersonii*				
Chilean dolphin	*Cephalorhynchus eutropia*				
Heaviside's dolphin	*Cephalorhynchus heavisidii*				
Hector's dolphin	*Cephalorhynchus hectori*				
Common dolphin	*Delphinus delphis*	1	1		Carretta et al. 2014 (I); Ceccarelli 2009 (E2); Deaville et al. 2010 (I); Hernandez-Gonzalez et al. 2018 (I); Jones 1995 (E2); Lusher et al. 2017 (I); Nelms et al. 2019 (I); Puig-Lozano et al. 2018 (I); Walker & Coe 1990 (I)
Pygmy killer whale	*Feresa attenuata*				
Short-finned pilot whale	*Globicephala macrorhynchus*	0	1	1	Abreo et al. 2019b (I); Barros et al. 1997 (I); Puig-Lozano et al. 2018 (0); Walker & Coe 1990 (I)
Long-finned pilot whale	*Globicephala melas*	0	1	1	IJsseldijk et al. 2015 (0); Laist 1997 (I); Poncelet et al. 2000 (I)
Risso's dolphin	*Grampus griseus*	0	1		Abreo et al. 2019b (I); González et al. 1994 (I); Henderson 1988 (I); Laist 1997 (I); Lusher et al. 2017 (I); Nelms et al. 2019 (I); Poncelet et al. 2000 (I); Puig-Lozano et al. 2018 (I); Shoham-Frider et al. 2002 (I); Thiel et al. 2018 (I); Walker & Coe 1990 (I)

English name	*Scientific name*	Ent	Ing	0	References
Fraser's dolphin	*Lagenodelphis hosei*	0	1		Fernández et al. 2009 (I); Puig-Lozano et al. 2018 (I)
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	0	1		Nelms et al. 2019 (I)
White-beaked dolphin	*Lagenorhynchus albirostris*	0	1		Baird & Hooker 2000 (I); Nelms et al. 2019 (I)
Peale's dolphin	*Lagenorhynchus australis*				
Hourglass dolphin	*Lagenorhynchus cruciger*				
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	0	1		Caldwell et al. 1965 (I); Walker & Coe 1990 (I)
Dusky dolphin	*Lagenorhynchus obscurus*				
Northern right whale dolphin	*Lissodelphis borealis*	0	1		Walker & Coe 1990
Southern right whale dolphin	*Lissodelphis peronii*				
Irrawaddy dolphin	*Orcaella brevirostris*	0	1		Baulch & Perry 2014 (I)
Australian snubfin dolphin	*Orcaella heinsohni*	1	0		Ceccarelli 2009 (E2)
Killer whale	*Orcinus orca*	1	1	1	Baird & Hooker 2000 (I); Cawthorn 1985 (E2); Heise et al. 2003 (I); Lusher et al. 2017 (I); Puig-Lozano et al. 2018 (0)
Melon-headed whale	*Peponocephala electra*	0	1		Abreo et al. 2019b (I); Dos Santos Costa et al. 2012 (I)
False killer whale	*Pseudorca crassidens*	0	1	1	Barros et al. 1990 (I); Puig-Lozano et al. 2018 (0)
Atlantic humpback dolphin	*Sousa teuszii*				
Indo-Pacific humpback dolphin	*Sousa chinensis*	1	1		Ceccarelli 2009 (E2); Zhu et al. 2019 (I)
Indian Ocean humpback dolphin	*Sousa plumbea*				
Australian humpback dolphin	*Sousa sahulensis*				
Tucuxi	*Sotalia fluviatilis*	1	1		Azevedo et al. 2009 (E2); Geise & Gomes 1992 (I); Laist 1997 (E2)
Guiana river dolphin	*Sotalia guianensis*	0	1		Di Beneditto & Ramos 2014 (I); Geise & Gomes 1992 (I); Guimarães et al. 2013 (I)
Pantropical spotted dolphin	*Stenella attenuata*	0	1		Baird & Hooker 2000 (I)
Clymene dolphin	*Stenella clymene*				
Striped dolphin	*Stenella coeruleoalba*	0	1		Arbelo et al. 2013 (I); Fernández et al. 2009 (I); Lusher et al. 2017 (I); Nelms et al. 2019 (I); Poncelet et al. 2000 (I); Pribanic et al. 1999 (I); Puig-Lozano et al. 2018 (I); Walker & Coe 1990 (I)
Atlantic spotted dolphin	*Stenella frontalis*	0	1		Arbelo et al. 2013 (I); Puig-Lozano et al. 2018 (I)
Spinner dolphin	*Stenella longirostris*				
Rough-toothed dolphin	*Steno bredanensis*	0	1		Abreo et al. 2019b (I); De Meirelles & do Rego Barros 2011 (I); Puig-Lozano et al. 2018 (I); Walker & Coe 1990 (I)
Indo-Pacific bottlenose dolphin	*Tursiops aduncus*	1	0		Bossley 2004 (E2); Ceccarelli 2009 (E2); Chatto & Warneke 2000 (E2)
Common bottlenose dolphin	*Tursiops truncatus*	1	1		Adimey et al. 2014 (I); Barco et al. 2010 (E2); Barros et al. 1990 (I); Ceccarelli 2009 (I/E2); Deaville et al. 2010 (I); González et al. 1994 (I); Gorzelany 1998 (I); Jones 1995 (E2); Mann et al. 1995 (E4); McFee et al. 2006 (E3); Levy et al. 2009 (I); Lusher et al. 2017

English name	*Scientific name*	Ent	Ing	0	References
					(I); Milani et al. 2017 (I); Nelms et al. 2019 (I); Puig-Lozano et al. 2018 (I); Schwartz et al. 1992 (I); Walker & Coe 1990 (I); Wells et al. 1998 (E3)
Phocoenidae					
Indo-Pacific finless porpoise	*Neophocaena phocaenoides*	0	1		Baird & Hooker 2000 (I)
Narrow-ridged finless porpoise	*Neophocaena asiaeorientalis*	0	1		Xiong et al. 2018 (I)
Spectacled porpoise	*Phocoena dioptrica*				
Harbour porpoise	*Phocoena phocoena*	1	1	1	Baird & Hooker 2000 (I); Bogomolni et al. 2010 (I); Carretta et al. 2013 (E4); Deaville et al. 2010 (I); Good et al. 2010 (E4); Hare & Mead 1987 (E2); Jackson 2010 (E2); Jackson 2011 (E2); Jackson 2013 (E2); Jackson 2014 (E2); Jackson & Sternfeld 2009 (E2); Kastelein & Lavaleije 1992 (I); Lusher et al. 2017 (I); Nelms et al. 2019 (I); Puig-Lozano et al. 2018 (0); Sternfeld 2004 (E2); Tonay et al. 2007 (I); Unger et al. 2017 (I/E); Van Franeker et al. 2018 (I); Walker & Coe 1990 (I)
Vaquita	*Phocoena sinus*				
Burmeister's porpoise	*Phocoena spinipinnis*	0	1		Baulch & Perry 2014 (I)
Dall's porpoise	*Phocoenoides dalli*	1	1		DeGange & Newby 1980 (E4); Jackson 2010 (E2); Jackson & Sternfeld 2009 (E2); Jones & Ferrero 1985 (E4); Sternfeld 2004 (E2); Walker & Coe 1990 (I)
Manatees and Dugongs (Sirenia)					
West Indian/Florida manatee	*Trichechus manatus*	1	1		Adimey et al. 2014 (I); Attademo et al. 2015 (I); Beck & Barros 1991 (I/E3); Bossart et al. 2004 (I); Mignucci-Giannoni et al. 2000 (I); O'Shea et al. 1985 (E2); US Fish and Wildlife Service 2009 (E2)
West African manatee	*Trichechus senegalensis*				
Dugong	*Dugong dugon*	1	1		Ceccarelli 2009 (I/E2)
Reptiles					
Turtles					
Cheloniidea					
Loggerhead turtle	*Caretta caretta*	1	1	1	Allen 1992 (I); Balazs 1985 (I/E2); Bane 1992 (I); Barreiros & Raykov 2014(E2); Başkale et al. 2018 (I); Bjorndal et al. 1994 (I); Bolten & Bjorndal 1991 (E2); Boyle & Limpus 2008 (I); Brongersma 1972 (I); Bugoni et al. 2001 (I); Camedda et al. 2014 (I); Campani et al. 2013 (I); Cannon 1998 (I); Casale et al. 2016 (I); Ceccarelli 2009 (I/E2); Clukey et al. 2017 (I); De Carvalho et al. 2015 (I); Di Beneditto et al. 2015 (I); Domènech et al. 2019 (I); Duguy et al. 1997 (I); Duronslet et al. 1991 (I); Frick et al. 2001 (I); Frick et al. 2009 (I); Fukuoka et al. 2016 (I); Gramentz 1988 (I); Hoarau et al. 2014 (I); Hughes 1970 (I); Hughes 1974 (I); Kaska et al. 2004 (I); Laist 1997 (E2); Lazar & Gracan 2011 (I); López-Jurado et al. 2003 (E2); Matiddi et al. 2017 (I); Müller et al. 2012 (E4); Nicolau et al. 2016 (I); Orós et al. 2016 (I/E2); Parker et al. 2005 (I); Pham et al. 2017 (I); Plotkin & Amos 1990 (I/E3); Plotkin et al. 1993 (I); Rabalais & Rabalais 1980 (E2); Reis et al. 2010 (0); Rizzi et al. 2019 (I); Ryan et al. 2016a (I); Sadove & Morreale 1990 (I/E3); Salvador 1978 (I); Shoop & Ruckdeschel 1989 (I); Stanley et al. 1988 (I); Teas & Witzell 1994 (E5); Thiel et al. 2018 (E4); Tomás et al. 2002 (I); Townsend 2011 (I); Van Nierop & Den Hartog 1984 (I); Wedemeyer-Strombel et al. 2015 (I); White et al. 2018 (I); Wilcox et al. 2015 (E4); Witherington 1994 (I); Witzell & Teas 1994 (I/E2)
Kemp's ridley turtle	*Lepidochelys kempii*	1	1	1	Balazs 1985 (I/E2); Bjorndal et al. 1994 (0); Burke et al. 1994 (I); Cannon 1998 (I); Duronslet et al. 1991 (I); Plotkin & Amos 1990 (I/E3); Sadove & Morreale 1990 (0/E3); Shaver 1991 (I); Shoop & Ruckdeschel 1989 (I); Stanley et al. 1988 (I); Teas & Witzell 1994 (E5); Witherington et al. 2012 (I); Witzell & Teas 1994 (E2)
Olive ridley turtle	*Lepidochelys olivacea*	1	1	1	Afelin & Puleloa 1982 (E2); Balazs 1985 (E2); Behera et al. 2015 (I); Ceccarelli 2009 (I/E2); Chatto et al. 1995 (E4); Clukey et al. 2017 (I); De Carvalho et al. 2015 (0); Gunn et al. 2010 (E4); Jensen et al. 2013 (E4); Mascarenhas et al. 2004 (I); Poli et al. 2014 (I); Reis et al. 2010 (0); Remie & Mortimer 2007 (E2); Rizzi et al. 2019 (I); Robinson & Figgener 2015 (I); Santos et al. 2012 (E3); Stelfox & Hudgins 2015 (E4); Thiel et al. 2018 (I/E3); Wedemeyer-Strombel et al. 2015 (I); Wilcox et al. 2013 (E4); Wilcox et al. 2015 (E4); Work & Balazs 2002 (I)

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Green turtle	*Chelonia mydas*	1	1	1	Abreo et al. 2016b (I); Abreo et al. 2019b (I); Awabdi et al. 2013 (I); Balazs 1980 (E2); Balazs 1983 (I); Balazs 1985 (I/E5); Balazs 1980 (I); Başkale et al. 2018 (0); Bjorndal et al. 1994 (I); Boyle & Limpus 2008 (I); Bugoni et al. 2001 (I); Cannon 1998 (I); Caron et al. 2018 (I); Ceccarelli 2009 (I/E2); Chatto et al. 1995 (E4); Clukey et al. 2017; Colferai et al. 2017 (I); Da Silva Mendes et al. 2015 (I); De Carvalho et al. 2015 (I); Di Beneditto & Awabdi 2014 (I); Duguy et al. 1997 (I); Duronslet et al. 1991 (I); Ferreira et al. 2006 (I); Foley et al. 2007 (I); Fukuoka et al. 2016 (I); González Carman et al. 2014 (I); Guebert-Bartholo et al. 2011 (I); Gunn et al. 2010 (E4); Hays-Brown & Brown 1982 (I); Henderson 1984 (E4); Hildebrand 1980 (E2); Hirth 1971 (I); Jerdy et al. 2017 (I); Laist 1997 (E2); Macedo et al. 2011 (I); Mascarenhas et al. 2004 (I); Meylan 1978 (I); Mooney & Naughton 1981 (E2); Parra et al. 2011 (I); Plotkin & Amos 1990 (I); Poli et al. 2015 (I); Quiñones et al. 2010 (I); Quiñones et al. 2015 (I); Reis et al. 2010 (I/E2); Rosolem Lima et al. 2018 (I); Sadove & Morreale 1990 (I/E3); Santos et al. 2015 (I); Schuyler et al. 2012 (I); Seminoff et al. 2002 (I); Stahelin et al. 2012 (I); Stamper et al. 2009 (I); Stanley et al. 1988 (I); Stelfox & Hudgins 2015 (E4); Teas & Witzell 1994 (E5); Tourinho et al. 2010 (I); Vélez-Rubio et al. 2018 (I); Wedemeyer-Strombel et al. 2015 (I); White et al. 2018 (I); Wilcox et al. 2013 (E4); Wilcox et al. 2015 (E4); Williams et al. 2014 (I); Witherington et al. 2012 (I); Witzell & Teas 1994 (I/E2); Yaghmour et al. 2018 (I)
Hawksbill turtle	*Eretmochelys imbricata*	1	1	1	Almengor & Avila 1994 (I); Balazs 1978 (E5); Balazs 1985 (I); Broadrick 1982 (E2); Carr & Stancyk 1975 (I); Ceccarelli 2009 (I/E2); De Carvalho et al. 2015 (0); Den Hartog 1980 (I); Fletcher 1982 (E2); Gunn et al. 2010 (E4); Hildebrand 1980 (I); Macedo et al. 2011 (I); Meylan 1978 (I); Plotkin & Amos 1990 (I/E3); Poli et al. 2015 (I); Rizzi et al. 2019 (I); Schuyler et al. 2012 (I); Stelfox & Hudgins 2015 (E4); Teas & Witzell 1994 (E5); Thiel et al. 2018 (I); Townsend 2011 (I); White et al. 2018 (I); Wilcox et al. 2013 (E4); Wilcox et al. 2015 (E4); Witzell & Teas 1994 (I/E2); Wolf 1982 (E2)
Flatback turtle	*Natator depressis*	1	1		Ceccarelli 2009 (E2); Chatto et al. 1995 (I/E4); Gunn et al. 2010 (E4); Townsend 2011 (I); Wilcox et al. 2013 (E4); Wilcox et al. 2015 (E4);
Dermochelyidae					
Leatherback turtle	*Dermochelys coriacea*	1	1	1	Abreo et al. 2019b (I); Balazs 1985 (I/E2); Barreiros & Barcelos 2001 (I); Brongersma 1972 (I); Bugoni et al. 2001 (I); Cawthorn 1985 (I); Ceccarelli 2009 (I/E2); Clukey et al. 2017 (0); Davenport et al. 1993 (I); De Carvalho et al. 2015 (0); Den Hartog & Van Nierop 1984 (I); Duguy 1983 (E2); Duguy et al. 1980 (I); Duguy & Duron 1981 (I); Duron & Duron 1980 (E2); Eckert & Luginbuhl 1988 (I); Fritts 1982 (I); Hughes 1974 (I); Innis et al. 2010 (I); Katsanevakis 2008 (I); Lee & Palmer 1981 (E2); Lucas 1992 (I); Moore et al. 2009 (E2); Mrosovsky et al. 2009 (I); Plot & Georges 2010 (I); Plotkin & Amos 1990 (E3); Poppi et al. 2012 (I); Reis et al. 2010 (I); Rizzi et al. 2019 (I); Rosolem Lima et al. 2018 (I); Russo et al. 2014 (I/E4); Sadove 1980 (I); Sadove & Morreale 1990 (I/E3); Schoelkopf 1981 (I); Stelfox & Hudgins 2015 (E4); Teas & Witzell 1994 (E5); Uchida 1990 (I); Wedemeyer-Strombel et al. 2015 (0); Witzell & Teas 1994 (I/E2)
Sea snakes					
Squamata					
Olive headed sea snake	*Disteria major*	1	0		Ceccarelli 2009 (E2)
Elegant sea snake	*Hydrophis elegans*	1	0		Udyawer et al. 2013 (E4)
Fish					
Elasmobranchii					
Hexanchiformes					
Sixgill shark	*Hexanchus griseus*	1	0		Good et al. 2010 (E4)
Orectolobiformes					
Nurse shark	*Ginglymostoma cirratum*	1			López-Jurado et al. 2003 (E2)
Leopard shark	*Stegostoma fasciatum*	0	1		Ceccarelli 2009 (I/E2)
Whale shark	*Rhincodon typus*	0	1		Abreo et al. 2019a (I); Haetrakul et al. 2009 (I); Sampaio et al. 2018 (I)
Lamniformes					
Bigeye thresher shark	*Alopias superciliosus*	0	1		Benjamin et al. 2014 (I)
Ragged-tooth shark/ Grey nurse shark	*Carcharias taurus*	1	1		Ceccarelli 2009 (I/E2); Cliff et al. 2002 (I/E4); Laist 1997 (I/E2)

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Great white shark	*Carcharodon carcharias*	1	1		Cliff et al. 2002 (E4); Laist 1997 (I/E4)
Basking shark	*Cetorhinus maximus*	1	0		IWDG 2007 (E2)
Shortfin mako shark	*Isurus oxyrinchus*	1	1		Cliff et al. 2002 (I/4); Laist 1997 (I); Mucientes & Queiroz 2019 (I); Wegner & Cartamil 2012 (E4)
Salmon shark	*Lamna ditropis*	1	0		DeGange & Newby 1980 (E4); Jones & Ferrero 1985 (E4); Laist 1997 (E2)
Porbeagle shark	*Lamna nasus*	1	1		Joyce et al. 2002 (I); Lucas 1992 (E4)
Carcharhiniformes					
Grey reef shark	*Carcharhinus amblyrhynchos*	1	0		Ceccarelli 2009 (E2)
Pigeye shark	*Carcharhinus amboinensis*	1	0	1	Cliff et al. 2002 (0/E4)
Copper shark	*Carcharhinus brachyurus*	1	1		Cliff et al. 2002 (I/E4); Laist 1997 (E4)
Spinner shark	*Carcharhinus brevipinna*	1	0	1	Cliff et al. 2002 (0/E4); Laist 1997 (E4)
Galapagos shark	*Carcharhinus galapagensis*	1	0		Thiel et al. 2018 (E4)
Bull shark	*Carcharhinus leucas*	0	1		Cliff et al. 2002 (I/E4)
Blacktip shark	*Carcharhinus limbatus*	1	1		Cliff et al. 2002 (I/E4); Laist 1997 (E4)
Black-tip reef shark	*Carcharhinus melanopterus*	1	0		Ceccarelli 2009 (E2)
Dusky shark	*Carcharhinus obscurus*	1	1		Cliff et al. 2002 (I/E4); Laist 1997 (I/E4); Misaki 1999 (E4); Stevens 1984 (E4)
Sandbar shark	*Carcharhinus plumbeus*	1	1		Cliff et al. 2002 (I/E4); Laist 1997 (E4)
Tiger shark	*Galeocerdo cuvier*	1	1		Cliff et al. 2002 (I/E4); Gudger 1949 (I); Laist 1997 (I/E4); Lowe et al. 1996 (I); Randall 1992 (I); Simpfendorfer et al. 2001 (I); Stevens & McLoughlin 1991 (I)
Tope shark	*Galeorhinus galeus*	1	0		López-Jurado et al. 2003 (E2)
Blackmouth catshark	*Galeus melastomus*	0	1		Alomar & Deudero 2017 (I); Anastasopoulou et al. 2013 (I); Cartes et al. 2016 (I)
Dusky smooth-hound	*Mustelus canis*	0	0	1	Pegado et al. 2018 (0)
Smalleye smooth-hound	*Mustelus higmani*	0	0	1	Pegado et al. 2018 (0)
Blue shark	*Prionace glauca*	1	1		Bernardini et al. 2018 (I); Colmenero et al. 2017 (E4); Markaida & Sosa-Nishizaki 2010 (I); Mucientes & Queiroz 2019 (I/E5); Thiel et al. 2018 (I)
Brazilian sharpnose shark	*Rhizoprionodon lalandii*	1	1		Miranda & de Carvalho-Souza 2016 (I); Sazima et al. 2002 (E4)
Atlantic sharpnose shark	*Rhizoprionodon terraenovae*	0	1		Delorenzo et al. 2014 (I)
Lesser spotted dogfish	*Scyliorhinus canicula*	0	1	1	Alomar & Deudero 2017 (0); Anastasopoulou et al. 2013 (0); Bellas et al. 2016 (I); López-López et al. 2018 (I); McGoran et al. 2018 (I); Neves et al. 2015 (I); Smith 2018 (I)
Scalloped hammerhead	*Sphyrna lewini*	1	1		Cliff et al. 2002 (I/E4)
Great hammerhead shark	*Sphyrna mokarran*	1	0	1	Cliff et al. 2002 (0/E4)
Bonnethead	*Sphyrna tiburo*	0	1		Pegado et al. 2018 (I)
Smooth hammerhead	*Sphyrna zygaena*	1	1		Cliff et al. 2002 (I/E4); Laist 1997 (I)
Squaliformes					
Picked dogfish	*Squalis acanthias*	1	0		Carr 1986 (E4); Carr et al. 1985 (E4); Gilardi et al. 2010 (E4)
Pacific spiny dogfish	*Squalus suckleyi*	1	0		Jones & Ferrero 1985 (E4)
Gulper shark	*Centrophorus granulosus*	0	0	1	Anastasopoulou et al. 2013 (0)
Portuguese dogfish	*Centroscymnus coelolepis*	0	1		Cartes et al. 2016 (I)
Birdbeak dogfish	*Deania calcea*	0	0	1	López-López et al. 2018 (0)
Velvet belly	*Etmopterus spinax*	0	1	1	Alomar & Deudero 2017 (I); Anastasopoulou et al. 2013 (I); Cartes et al. 2016 (I); López-López et al. 2018 (0)
Knifetooth dogfish	*Scymnodon ringens*	0	0	1	López-López et al. 2018 (0)

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Greenland shark	*Somniosus microcephalus*	0	1		Leclerc et al. 2012 (I); Nielsen et al. 2013 (I)
Spiny dogfish shark	*Squalus acanthias*	0	1	1	Anastasopoulou et al. 2013 (0); Avio et al. 2015 (I)
Longnose spurdog	*Squalus blainville*	0	1		Anastasopoulou et al. 2013 (I)
Pristiformes					
Small-tooth sawfish	*Pristis pectinata*	1	0		Seitz & Poulakis 2006 (E5)
Torpediniformes					
Brazilian electric ray	*Narcine brasiliensis*	0	1		Pegado et al. 2018 (I)
Rajiformes					
Sand ray	*Leucoraja circularis*	0	0	1	López-López et al. 2018 (0)
Cuckoo ray	*Leucoraja naevus*	0	1		López-López et al. 2018 (I)
Mediterranean starry ray	*Raja asterias*	0	1		Neves et al. 2015 (I)
Thornback ray	*Raja clavata*	1	1	1	Akyol & Aydin 2018 (E3); Anastasopoulou et al. 2013 (0); López-López et al. 2018 (0); McGoran et al. 2018 (I)
Spotted ray	*Raja montagui*	0	0	1	López-López et al. 2018 (0)
Longnosed skate	*Raja oxyrinchus*	0	0	1	Anastasopoulou et al. 2013 (0)
Myliobatiformes					
Southern stingray	*Dasyatis americana*	0	0	1	Miranda & de Carvalho-Souza 2016 (0)
Estuary sting ray	*Dasyatis fluviorum*	1	0		Ceccarelli 2009 (E2)
Manta ray	*Manta birostris*	1	0		Ceccarelli 2009 (E2)
Pelagic stingray	*Pteroplatytrygon violacea*	0	1		Anastasopoulou et al. 2013 (I)
Cownose ray	*Rhinoptera bonasus*	0	0	1	Pegado et al. 2018 (0)
Holocephali					
Chimaeriformes					
Rabbit fish	*Chimaera monstrosa*	0	0	1	Alomar & Deudero 2017 (0)
Spotted ratfish	*Hydrolagus colliei*	1	0		Gilardi et al. 2010 (E4); Good et al. 2010 (E4)
Actinopterygii					
Amiiformes					
Bowfin	*Amia calva*	1	0		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4)
Anguilliformes					
European eel	*Anguilla anguilla*	0	1		McGoran et al. 2018 (I); Steer et al. 2017 (I)
American eel	*Anguilla rostrata*	1	0		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4)
European conger	*Conger conger*	0	1	1	Anastasopoulou et al. 2013 (0); López-López et al. 2018 (I)
Southern conger	*Conger verreauxi*	0	0	1	Cannon et al. 2016 (0)
Guayana pike-conger	*Cynoponticus savanna*	0	0	1	Pegado et al. 2018 (0)
Ocellated moray	*Gymnothorax ocellatus*	0	0	1	Pegado et al. 2018 (0)
Blackfin sorcerer	*Mettastoma melanumrum*	0	0	1	Anastasopoulou et al. 2013 (0)
Daggertooth pike conger	*Muraenesox cinereus*	0	1		Jabeen et al. 2017 (I)
Slender snipe eel	*Nemichthys scolopaceus*	0	1		Lusher et al. 2016 (I)
Blackfin sorcerer	*Nettastoma melanurum*	0	1		Cartes et al. 2016 (I)
Dusky snake eel	*Ophichthus cylindroideus*	0	0	1	Pegado et al. 2018 (0)
Spotted snake eel	*Ophichthus ophis*	0	0	1	Pegado et al. 2018 (0)
Stout sawpalate	*Serrivomer beanii*	0	1		Wieczorek et al. 2018 (I)
Clupeiformes					

English name	*Scientific name*	Ent	Ing	0	References
Twait shad	*Alosa fallax*	0	1		Neves et al. 2015 (I)
Sharp-nose sardin	*Amblygaster clupeoides*	0	1		Sivadas et al. 2016 (I)
Slender anchovy	*Anchoa januaria*	0	1		Vendel et al. 2017 (I)
Marini's anchovy	*Anchoa marinii*	0	0	1	Vendel et al. 2017 (0)
Zabaleta anchovy	*Anchovia clupeoides*	0	0	1	Vendel et al. 2017 (0)
Atlantic menhaden	*Brevoortia tyrannus*	1	0		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4)
Pacific anchoveta	*Cetengraulis mysticetus*	0	1		Ory et al. 2018 (I)
Atlantic herring	*Clupea harengus*	1	1	1	Budimir et al. 2018 (I); Breen 1990 (E4); Carpenter et al. 1972 (I); Collard et al. 2015 (I); Collard et al. 2017 (I); Day 1988 (I); Foekema et al. 2013 (I); Lenz et al. 2016 (I); Rummel et al. 2016 (0)
Pacific herring	*Clupea pallasii*	0	1		Hipfner et al. 2018 (I)
Japanese grenadier anchovy	*Coilia ectenes*	0	1		Jabeen et al. 2017 (I)
Osbeck's grenadier anchovy	*Coilia mystus*	0	1		Su et al. 2019 (I)
Japanese grenadier anchovy	*Coilia nasus*	0	1		Su et al. 2019 (I)
Australian anchovy	*Engraulis australis*	0	0	1	Cannon et al. 2016 (0)
European anchovy	*Engraulis encrasicolus*	0	1		Collard et al. 2015 (I); Collard et al. 2017 (I); Compa et al. 2018 (I); Lefebvre et al. 2019 (I)
Japanese anchovy	*Engraulis japonicus*	0	1		Tanaka & Takada 2016 (I)
Pacific anchovy	*Engraulis mordax*	0	1		Rochman et al. 2015 (I)
Anchoveta	*Engraulis ringens*	0	1		Ory et al. 2018 (I)
Sandy sprat	*Hyperlophus vittatus*	0	0	1	Cannon et al. 2016 (0)
Atlantic sabretooth anchovy	*Lycengraulis grossidens*	0	1		Vendel et al. 2017 (I)
Pacific thread herring	*Opisthonema libertate*	0	1		Ory et al. 2018 (I)
Atlantic thread herring	*Opisthonema oglinum*	1	1		Nunes et al. 2018 (E4); Vendel et al. 2017 (I)
Bahia spat	*Rhinosardinia bahiensis*	0	1		Vendel et al. 2017 (I)
South American pilchard	*Sardinops sagax*	0	0	1	Ory et al. 2018 (0)
European pilchard	*Sardina pilchardus*	0	1		Anastasopoulou et al. 2018 (I); Avio et al. 2015 (I); Collard et al. 2015 (I); Collard et al. 2017 (I); Compa et al. 2018 (I); Digka et al. 2018 (I); Güven et al. 2017 (I); Lefebvre et al. 2019 (I)
Silver-stripe round herring	*Spratelloides gracilis*	0	1		Rochman et al. 2015 (I)
European sprat	*Sprattus sprattus*	0	1		Budimir et al. 2018 (I); Hermsen et al. 2017 (I); Zouter Vanpoucke 2015 (I)
Commerson's anchovy	*Stolephorus commersonnii*	0	1		Kripa et al. 2014 (I)
Silverside	*Stolephorus heterolobus*	0	1		Tahir & Rochman 2015 (I)
Araucanian herring	*Strangomera bentincki*	0	1	1	Ory et al. 2018 (0); Pozo et al. 2019 (I)
Siluriformes					
Hardhead catfish	*Ariopsis felis*	1	0		Anderson & Alford 2014 (E4)
Coco sea catfish	*Bagre bagre*	0	1		Pegado et al. 2018 (I)
Gafftopsail sea catfish	*Bagre marinus*	0	1		Pegado et al. 2018 (I)
Catfish	*Cathorops agassizii*	1	1		Possatto et al. 2011 (I/E3)
Catfish	*Cathorops spixii*	0	1		Possatto et al. 2011 (I); Vendel et al. 2017 (I)

English name	*Scientific name*	Ent	Ing	0	References
Guri sea catfish	*Genidens genidens*	0	1		Dantas et al. 2019 (I)
Thomas sea catfish	*Notarius grandicassis*	0	0	1	Pegado et al. 2018 (0)
Catfish	*Sciades herzbergii*	0	1	1	Possatto et al. 2011 (I); Vendel et al. 2017 (0)
Osmeriformes					
Risso's smooth-head	*Alepocephalus rostratus*	0	0	1	Cartes et al. 2016 (0)
Greater argentine	*Argentina silus*	0	1		Murphy et al. 2017 (I)
Capelin	*Mallotus villosus*	1	0	1	Liboiron et al. 2019 (0); Stevens et al. 2000 (E4)
European smelt	*Osmerus eperlanus*	0	1		McGoran et al. 2017 (I)
Bluntsnout smooth-head	*Xenodermichthys copei*	0	1		Lusher et al. 2016 (I)
Salmoniformes					
Pink salmon	*Oncorhynchus gorbuscha*	0	1		Day 1988 (I)
Chum salmon	*Oncorhynchus keta*	1	0		DeGange & Newby 1980 (E4)
Coho salmon	*Oncorhynchus kisutch*	1	0		DeGange & Newby 1980 (E4)
Chinook salmon	*Oncorhynchus tshawytscha*	0	1		Collicutt et al. 2019 (I); Rochman et al. 2015 (I)
Atlantic salmon	*Salmo salar*	0	0	1	Liboiron et al. 2019 (0)
Brown trout	*Salmo trutta*	0	1		Karlsson et al. 2017 (I)
Stomiiformes					
Pacific hatchet fish	*Argyropelecus affinis*	0	0	1	Davison & Asch 2011 (0)
Half-naked hatchetfish	*Argyropelecus hemigymnus*	0	0	1	Davison & Asch 2011 (0)
Indo-Pacific snaggletooth	*Astronesthes indopacifica*	0	1		Boerger et al. 2010 (I)
Benttooth bristlemouth	*Cyclothone acclinidens*	0	0	1	Davison & Asch 2011 (0)
Deep-water bristlemouth	*Cyclothone atraria*	0	0	1	Davison & Asch 2011 (0)
Tan bristlemouth	*Cyclothone pallida*	0	0	1	Davison & Asch 2011 (0)
Slender bristlemouth	*Cyclothone pseudopallida*	0	0	1	Davison & Asch 2011 (0)
Bottlelights	*Danaphos oculatus*	0	0	1	Davison & Asch 2011 (0)
Bristlemouth	*Gonostoma denudatum*	0	1		Wieczorek et al. 2018 (I)
Pacific blackdragon	*Idiacanthus antrostomus*	0	1		Davison & Asch 2011 (I)
	Maurolicus mucronatus	0	1		Baalkhuyur et al. 2018 (I)
Pearlsides	*Maurolicus muelleri*	0	1		Lusher et al. 2016 (I)
Diaphanous hatchetfish	*Sternoptyx diaphana*	0	1		Davison & Asch 2011 (I)
Highlight hatchetfish	*Sternoptyx pseudobscura*	0	1		Davison & Asch 2011 (I)
Scaly dragonfish	*Stomias boa boa*	0	1		Lusher et al. 2016 (I); Wieczorek et al. 2018 (I)
	Vinciguerria mabahiss	0	0	1	Baalkhuyur et al. 2018 (0)
Aulopiformes					
Longnose lancetfish	*Alepisurus ferox*	0	1		Choy & Drazen 2013 (I); Fujieda et al. 2008 (I); Jantz et al. 2013 (I); Kubota 1990 (I)
Spotted barracudina	*Arctozenus risso*	0	1		Lusher et al. 2016 (I)
Bombay-duck	*Harpadon nehereus*	0	1		Jabeen et al. 2017 (I); Su et al. 2019 (I)
Greater lizardfish	*Saurida tumbil*	0	1		Abbasi et al. 2018 (I)
Brushtooth lizardfish	*Saurida undosquamis*	0	1		Güven et al. 2017 (I)

English name	*Scientific name*	Ent	Ing	0	References
Barracudina	*Sudis hyalina*	0	0	1	Anastasopoulou et al. 2013 (0)
Myctophiformes					
Glacier lanternfish	*Benthosema glaciale*	0	1		Lusher et al. 2016 (I); Wieczorek et al. 2018 (I)
Skinnycheek lanternfish	*Benthosema pterotum*	0	1		Baalkhuyur et al. 2018 (I)
Popeye lampfish	*Bolinichthys longipes*	0	0	1	Davison & Asch 2011 (0)
Andre's lanternfish	*Centrobranchus andreae*	0	1		Van Noord 2013 (I)
Warming's lanternfish	*Ceratoscopelus warmingii*	0	0	1	Davison & Asch 2011 (0)
Andersen's lanternfish	*Diaphus anderseni*	0	1		Davison & Asch 2011 (I)
	Diaphus fulgens	0	1		Davison & Asch 2011 (I)
Spothead lanternfish	*Diaphus metopoclampus*	0	1		Romeo et al. 2016 (I)
Bolin's lanternfish	*Diaphus phillipsi*	0	1		Davison & Asch 2011 (I)
White-spotted lanternfish	*Diaphus rafinesquii*	0	1		Wieczorek et al. 2018 (I)
Longfin lanternfish	*Diogenichthys atlanticus*	0	0	1	Davison & Asch 2011 (0)
Electric lanternfish	*Electrona risso*	0	1		Romeo et al. 2016 (I)
Nichol's lanternfish	*Gymnoscopelus nicholsi*	0	0	1	Cannon et al. 2016 (0)
Benoit's lanternfish	*Hygophum benoiti*	0	1		Romeo et al. 2016 (I)
Firefly lanternfish	*Hygophum proximum*	0	0	1	Davison & Asch 2011 (0)
Reinhardt's lanternfish	*Hygophum reinhardtii*	0	1	1	Boerger et al. 2010 (I); Davison & Asch 2011 (0)
Sunbeam lampfish	*Lampadena urophaos*	0	0	1	Davison & Asch 2011 (0)
Jewel lanternfish	*Lampanyctus crocodilus*	0	0	1	Lusher et al. 2016 (0)
Rakery beaconlamp	*Lampanyctus macdonaldi*	0	1		Wieczorek et al. 2018 (I)
Cocco's lanternfish	*Lobianchia gemellarii*	0	1		Davison & Asch 2011 (I)
	Loweina interrupta	0	1		Boerger et al. 2010 (I)
Golden lanternfish	*Myctophum aurolanternatum*	0	1		Boerger et al. 2010 (I)
	Myctophum lychnobium	0	1		Van Noord 2013 (I)
Pearly lanternfish	*Myctophum nitidulum*	0	1		Davison & Asch 2011 (I)
Spotted lanternfish	*Myctophum punctatum*	0	1	1	Lusher et al. 2016 (0); Romeo et al. 2016 (I); Wieczorek et al. 2018 (I)
	Nannobrachium fernae	0	0	1	Davison & Asch 2011 (0)
	Nannobrachium hawaiiensis	0	0	1	Davison & Asch 2011 (0)
Pinpoint lampfish	*Nannobrachium regale*	0	0	1	Davison & Asch 2011 (0)
Topside lampfish	*Notolychnus valdiviae*	0	0	1	Davison & Asch 2011 (0)
Lancet fish	*Notoscopelus kroyeri*	0	1		Lusher et al. 2016 (I)
Patchwork lampfish	*Notoscopelus resplendens*	0	0	1	Davison & Asch 2011 (0)
Bigfin lanternfish	*Symbolophorus californiensis*	0	1		Boerger et al. 2010 (I)
Evermann's lanternfish	*Symbolophorus evermanni*	0	1		Van Noord 2013 (I)
Deepwater lanternfish	*Taaningichthys bathyphilus*	0	1		Davison & Asch 2011 (I)
Lampriformes					
Southern opah	*Lampris immculatus*	0	1		Jackson et al. 2000 (I)

English name	*Scientific name*	Ent	Ing	0	References
Gadiformes					
Atlantic wolf fish	*Anarhichas lupus*	0	1		Prokhorova & Krivosheya 2013 (I)
Polar cod	*Boreogadus saida*	0	1		Kühn et al. 2018 (I); Morgana et al. 2018 (I)
Five-beard rockling	*Ciliata mustela*	0	1		Kartar et al. 1976 (I)
Roundnose grenadier	*Coryphaenoides rupestris*	0	0	1	Murphy et al. 2017 (0)
Acoupa weakfish	*Cynoscion acoupa*	0	1		Ferreira et al. 2016 (I); Ferreira et al. 2018 (I)
Fourbeard rockling	*Enchelyopus cimbrius*	0	1		Bour et al. 2018 (I)
Pacific cod	*Gadus macrocephalus*	1	0		High 1985 (E4); Stevens et al. 2000 (E4)
Atlantic cod	*Gadus morhua*	0	1	1	Bråte et al. 2016 (I); Brothers 1989 (E2); Carr et al. 1985 (E4); Foekema et al. 2013 (I); Gudger 1938 (E4); Hoss & Settle 1990 (I); Jawad et al. 2016 (I); Lenz et al. 2016 (I); Liboiron et al. 2016 (I); Liboiron et al. 2019 (I); Lucas 1992 (E2); McGoran et al. 2018 (0); Prokhorova & Krivosheya 2013 (E2); Rummel et al. 2016 (I)
Bigeye rockling	*Gaidropsaurus macrophtalmus*	0	0	1	López-López et al. 2018 (0)
Haddock	*Melanogrammus aeglefinus*	0	1		Foekema et al. 2013 (I); McGoran et al. 2018 (I)
Whiting	*Merlangius merlangus*	0	1		Foekema et al. 2013 (I); Lusher et al. 2013 (I); McGoran et al. 2018 (I); Steer et al. 2017 (I)
South Pacific hake	*Merluccius gayi*	0	1		Pozo et al. 2019 (I)
European hake	*Merluccius merluccius*	0	1	1	Anastasopoulou et al. 2013 (0); Avio et al. 2015 (I); Bellas et al. 2016 (I); Giani et al. 2019 (I); López-López et al. 2018 (0); Neves et al. 2015 (I)
Blue whiting	*Micromesistius poutassou*	0	1	1	Anastasopoulou et al. 2013 (0); Hoss & Settle 1990 (I); López-López et al. 2018 (I); Lusher et al. 2013 (I); Murphy et al. 2017 (0)
Spanish ling	*Molva macrophthalma*	0	0	1	Anastasopoulou et al. 2013 (0); López-López et al. 2018 (0)
Ling	*Molva molva*	0	0	1	Murphy et al. 2017 (0)
Common mora	*Mora moro*	0	1	1	Anastasopoulou et al. 2013 (0); Cartes et al. 2016 (I)
Greater forkbeard	*Phycis blennoides*	0	0	1	Anastasopoulou et al. 2013 (0); Cartes et al. 2016 (0); López-López et al. 2018 (0)
Pollack	*Pollachius pollachius*	0	0	1	Murphy et al. 2017 (0)
Pollock	*Pollachius virens*	0	1		Carpenter et al. 1972 (I); Day 1988 (I); Hoss & Settle 1990 (I)
Roughsnout grenadier	*Trachyrincus scabrus*	0	1		Cartes et al. 2016 (I)
Norway pout	*Trisopterus esmarkii*	0	1		Bour et al. 2018 (I)
Pouting	*Trisopterus luscus*	0	1		López-López et al. 2018 (I); McGoran et al. 2018 (I)
Poor cod	*Trisopterus minutus*	0	1	1	López-López et al. 2018 (0); Lusher et al. 2013 (I); McGoran et al. 2018 (0); Steer et al. 2017 (I)
Ophidiiformes					
Picuca	*Cataetyx laticeps*	0	1		Cartes et al. 2016 (I)
Batrachoidiformes					
Pacuma toadfish	*Batrachoides surinamensis*	0	0	1	Pegado et al. 2018 (0)
Gulf toadfish	*Opsanus beta*	1	0		Anderson & Alford 2014 (E4)
Oyster toadfish	*Opsanus tau*	1	0		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4); Voss et al. 2015 (E)
Lophiiformes					
American angler/ Goosefish	*Lophius americanus*	0	1		Perry et al. 2013 (I)
Blackbellied angler	*Lophius budegassa*	0	0	1	López-López et al. 2018 (0)
Angler	*Lophius piscatorius*	0	1	1	López-López et al. 2018 (0); Neves et al. 2015 (I)
Atheriniformes					
Brazilian silversides	*Atherinella brasiliensis*	0	1		Vendel et al. 2017 (I)
Jacksmelt	*Atherinopsis californiensis*	0	1		Rochman et al. 2015 (I)
	Basilichthys australis	0	1		Pozo et al. 2019 (I)
Atlantic silverside	*Menidia menidia*	0	1		Carpenter et al. 1972 (I); Day et al. 1985 (I)

English name	*Scientific name*	Ent	Ing	0	References
Chilean silverside	*Odontesthes regia*	0	1		Ory et al. 2018 (I)
Cyprinodontiformes					
Striped killifish	*Fundulus majalis*	1	0		Bilkovic et al. 2014 (E4)
Cypriniformes					
Spotted steed	*Hemibarbus maculatus*	0	1		Su et al. 2019 (I)
Beloniformes					
Flying fish	*Cheilopogon pitcairnensis*	0	1		Markic et al. 2018 (I)
Easter island flyingfish	*Cheilopogon rapanouiensis*	0	1		Chagnon et al. 2018 (I); Thiel et al. 2018 (I)
Short-nosed flyingfish	*Cheilopogon simus*	0	1		Garnier et al. 2019 (I)
Whitetip flyingfish	*Cheilopogon xenopterus*	0	1		Van Noord 2013 (I)
Pacific saury	*Cololabis saira*	0	1		Boerger et al. 2010 (I)
Barbel flyingfish	*Exocoetus monocirrhus*	0	1		Van Noord et al. 2013 (I)
Tropical two-wing flyingfish	*Exocoetus volitans*	0	1		Van Noord et al. 2013 (I)
Banded flyingfish	*Hirundichthys marginatus*	0	1		Van Noord et al. 2013 (I)
Asian pencil halfbeak	*Hyporhamphus intermedius*	0	1		Jabeen et al. 2017 (I)
Southern sea garfish	*Hyporhamphus melanochir*	0	0	1	Cannon et al. 2016 (0)
Slender halfbeak	*Hyporhamphus roberti*	0	1		Vendel et al. 2017 (I)
Common halfbeak	*Hyporhamphus unifasciatus*	0	0	1	Vendel et al. 2017 (0)
Garfish	*Hyporhampus ihi*	0	0	1	Markic et al. 2018 (0)
Bigwing halfbeak	*Oxyporhamphus micropterus*	0	1		Van Noord et al. 2013 (I)
Sailor flyingfish	*Prognichthys sealei*	0	1		Van Noord et al. 2013 (I)
Tringa flyingfish	*Prognichthys tringa*	0	1		Van Noord et al. 2013 (I)
Beryciformes					
Brick soldierfish	*Myripristis amaena*	0	0	1	Forrest & Hindell 2018 (0)
Sammara squirrelfish	*Neoniphon sammara*	0	1		Baalkhuyur et al. 2018 (I)
Sabre squirrelfish	*Sargocentron spiniferum*	0	0	1	Baalkhuyur et al. 2018 (0)
Zeiformes					
John dory	*Zeus faber*	0	1	1	López-López et al. 2018 (0); Lusher et al. 2013 (I); Neves et al. 2015 (I)
Gasterosteiformes					
Three-spined stickleback	*Gasterosteus aculeatus*	0	0	1	Budimir et al. 2018 (0)
Scorpaeniformes					
Hooknose	*Agonus cataphractus*	0	0	1	McGoran et al. 2018 (0)
Red gurnard	*Aspitrigla cuculus*	0	1		Lusher et al. 2013 (I)
Red gurnard	*Chelidonichthys cuculus*	0	1	1	López-López et al. 2018 (I); McGoran et al. 2018 (0)
Grey gurnard	*Chelidonichthys gurnardus*	0	0	1	López-López et al. 2018 (0)
Bluefin gurnard	*Chelidonichthys kumu*	0	1		Markic et al. 2018 (I)
Tub gurnard	*Chelidonichthys lucerna*	0	1	1	Anastasopoulou et al. 2013 (0); Avio et al. 2015 (I); López-López et al. 2018 (0)
Longfin gurnard	*Chelidonichthys obscurus*	0	0	1	López-López et al. 2018 (0)
Grey gurnard	*Eutrigla gurnardus*	0	0	1	Foekema et al. 2013 (0)
Blackbelly rosefish	*Helicolenus dactylopterus*	0	0	1	Anastasopoulou et al. 2013 (0); López-López et al. 2018 (0)
Red Irish lord	*Hemilepidotus hemilepidotus*	1	0		Good et al. 2010 (E4)

English name	*Scientific name*	Ent	Ing	0	References
Yellow Irish lord	*Hemilepidotus jordani*	1	0		Stevens et al. 2000 (E4)
Sea raven	*Hemitripterus americanus*	1	0		Carr 1986 (E4)
Kelp greenling	*Hexagrammos decagrammus*	1	0		Gilardi et al. 2010 (E4); Good et al. 2010 (E4)
Kelp greenling	*Hexagrammos decagrammus*	1	0		Good et al. 2010 (E4)
Longfin sculpin	*Jordania zonope*	1	0		Good et al. 2010 (E4)
Pacific staghorn sculpin	*Leptocottus armatus*	1	0		Good et al. 2010 (E4)
Striped seasnail	*Liparis liparis*	0	1		Kartar et al. 1976 (I) Lydersen et al. 1989
Grubby	*Myoxocephalus aenaeas*	0	1		Carpenter et al. 1972 (I); Day 1988 (I)
Great sculpin	*Myoxocephalus polyacanthocephalus*	1	0		Good et al. 2010 (E4)
Shorthorn sculpin	*Myoxocephalus scorpius*	0	0	1	McGoran et al. 2018 (0)
Sailfin sculpin	*Nautichthys oculofasciatus*	1	0		Good et al. 2010 (E4)
Lingcod	*Ophiodon elongatus*	1	1		Gilardi et al. 2010 (E4); Good et al. 2010 (E4); Rochman et al. 2015 (I)
Bartail flathead	*Plachtycephalus indicus*	0	1		Abbasi et al. 2018 (I)
Sand flathead	*Platycephalus bassensis*	0	0	1	Cannon et al. 2016 (0)
Black flathead	*Platycephalus laevigatus*	0	0	1	Cannon et al. 2016 (0)
Sea robin	*Prionotus evolans*	0	1		Carpenter et al. 1972 (I); Day 1988 (I)
Slender rockfish	*Scorpaena elongata*	0	0	1	Anastasopoulou et al. 2013 (0)
Eastern red scorpionfish	*Scorpaena jackoniensis*	0	0	1	Cannon et al. 2016 (0)
Cadenat's rockfish	*Scorpaena loppei*	0	0	1	López-López et al. 2018 (0)
Red scorpionfish	*Scorpaena scrofa*	1	0	1	Houard et al. 2012 (E4); López-López et al. 2018 (0)
Cabezon	*Scorpaenichtys marmoratus*	1	0		Good et al. 2010 (E4)
Rough eye rockfish	*Sebastes aleutianus*	1	0		Stevens et al. 2000 (E4)
Cape redfish	*Sebastes capensis*	0	1		Thiel et al. 2018 (I)
Copper rockfish	*Sebastes caurinus*	0	0	1	Good et al. 2010 (E4); Rochman et al. 2015 (0)
Puget Sound rockfish	*Sebastes emphaeus*	1	0		Good et al. 2010 (E4)
Yellowtail rockfish	*Sebastes flavidus*	0	1		Rochman et al. 2015 (I)
Quillback rockfish	*Sebastes maliger*	1	0		Good et al. 2010 (E4)
Black rockfish	*Sebastes melanops*	1	0		Good et al. 2010 (E4)
Vermilion rockfish	*Sebastes miniatus*	0	0	1	Rochman et al. 2015 (0)
Blue rockfish	*Sebastes mystinus*	0	1		Rochman et al. 2015 (I)
False kelpfish	*Sebasticus marmoratus*	0	1		Jabeen et al. 2017 (I)
Longspined bullhead	*Taurulus bubalis*	0	1		McGoran et al. 2018 (I)
Atlantic thornyhead	*Trachyscorpia cristulata*	0	0	1	López-López et al. 2018 (0)
Tub gurnard	*Trigla lucerna*	0	1		Güven et al. 2017 (I)
Piper gurnard	*Trigla lyra*	0	1	1	López-López et al. 2018 (0); Neves et al. 2015 (I)
Bigeye sculpin	*Triglops nybelini*	0	1		Morgana et al. 2018 (I)

English name	*Scientific name*	Ent	Ing	0	References
Perciformes					
Scissortail sergeant	*Abudefduf sexfasciatus*	0	0	1	Baalkhuyur et al. 2018 (0)
Blackspot sergeant	*Abudefduf sordidus*	0	1		Forrest & Hindell 2018 (I)
Wahoo	*Acanthocybium solanderi*	0	1		Manooch & Hogarth 1983 (I)
Yellowfin bream	*Acanthopagrus australis*	0	1		Halstead et al. 2018 (I)
Blue tang surgeonfish	*Acanthurus coeruleus*	0	0	1	Miranda & de Carvalho-Souza 2016 (0)
Black surgeonfish	*Acanthurus gahm*	0	1		Baalkhuyur et al. 2018 (I)
Whitebar surgeonfish	*Acanthurus leucopareius*	1	0		Thiel et al. 2018 (E3)
Lined surgeonfish	*Acanthurus lineatus*	0	1		Markic et al. 2018 (I)
Sohal surgeonfish	*Acanthurus sohal*	0	0	1	Baalkhuyur et al. 2018 (0)
Sand lance	*Ammodytes personatus*	0	1		Hipfner et al. 2018 (I)
Sand eel	*Ammodytes tobianus*	0	1		Welden et al. 2018 (I)
Black margate	*Anisotremus surinamensis*	0	0	1	Pegado et al. 2018 (0)
Porkfish	*Anisotremus virginicus*	0	0	1	Pegado et al. 2018 (0)
Black scabbardfish	*Aphanopus carbo*	0	0	1	López-López et al. 2018 (0); Murphy et al. 2017 (0)
	Aplodactylus punctatus	0	1		Pozo et al. 2019 (I); Thiel et al. 2018 (I)
Sheepshead	*Archosargus probatocephalus*	1	0		Anderson & Alford 2014 (E4); Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4); Voss et al. 2015 (E)
Meagre	*Argyrosomus regius*	0	1		Güven et al. 2017 (I)
Shade-fish	*Argyrosomus regius*	0	1		Neves et al. 2015 (I)
Stargazer	*Astroscopus guttatus*	1	0		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4)
Frigate tuna	*Auxis thazard*	0	1		Alshawafi et al. 2018 (I)
Silver perch	*Bairdiella chrysoura*	1	0		Anderson & Alford 2014 (E4)
Ground croaker	*Bairdiella ronchus*	0	0	1	Pegado et al. 2018 (0)
Great blue spotted mudskipper	*Boleophthalmus pectinirostris*	0	1		Su et al. 2019 (I)
Bogue	*Boops boops*	0	1		Nadal et al. 2016 (I); Neves et al. 2015 (I)
Southern rays bream	*Brama australis*	0	1		Thiel et al. 2018 (I)
Atlantic pomfret	*Brama brama*	0	1	1	Anastasopoulou et al. 2013 (0); Neves et al. 2015 (I)
Pacific pomfret	*Brama japonica*	0	1		Day 1988 (I)
Horsehead tilefish	*Branchiostegus japonicus*	0	1		Jabeen et al. 2017 (I)
Common dragonet	*Callionymus lyra*	0	1	1	López-López et al. 2018 (0); Lusher et al. 2013 (I); Steer et al. 2017 (I)
Japanese darter dragonet	*Callionymus planus*	0	1		Jabeen et al. 2017 (I)
Blue runner	*Caranx crysos*	0	1	1	Güven et al. 2017 (I); Miranda & de Carvalho-Souza 2016 (0); Pegado et al. 2018 (0)
Crevalle jack	*Caranx hippos*	0	1		Pegado et al. 2018 (I)
Horse-eye jack	*Caranx latus*	0	0	1	Vendel et al. 2017 (0)
Bluefin trevally	*Caranx melampygus*	0	0	1	Forrest & Hindell 2018 (0)
Brassy trevally	*Caranx papuensis*	0	1		Markic et al. 2018 (I)
Bigeye trevally	*Caranx sexfasciatus*	0	0	1	Forrest & Hindell 2018 (0)
Fat snook	*Centropomus parallelus*	0	1		De Tarso Chavez 2010 (I)
Black seabass	*Centropristis striata*	1	0		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4); Voss et al. 2015 (E)
Peacock hind	*Cephalopholis argus*	0	0	1	Baalkhuyur et al. 2018 (0)
Redband fish	*Cepola macrophthalma*	0	1		Lusher et al. 2013 (I)
Atlantic spadefish	*Chaetodipterus faber*	1	1	1	Anderson & Alford 2014 (E4); Bilkovic et al. 2014 (E4); Pegado et al. 2018 (0); Peters et al. 2017 (I); Vendel et al. 2017 (I)

English name	*Scientific name*	Ent	Ing	0	References
Blacktail butterflyfish	*Chaetodon austriacus*	0	1		Baalkhuyur et al. 2018 (I)
Peruvian morwong	*Cheilodactylus variegatus*	0	0	1	Thiel et al. 2018 (0)
Daisy parrotfish	*Chlorurus sordidus*	0	1		Forrest & Hindell 2018 (I)
Big head croaker	*Collichthys lucidus*	0	1		Jabeen et al. 2017 (I); Su et al. 2019 (I)
Barred grunt	*Conodon nobilis*	0	0	1	Pegado et al. 2018 (0)
Clown coris	*Coris aygula*	0	0	1	Forrest & Hindell 2018 (0)
Pompano dolphinfish	*Coryphaena equiselis*	0			Sivadas et al. 2016 (I)
Common dolphinfish	*Coryphaena hippurus*	0	1	1	Boyle & Limpus 2008 (I); Brewton et al. 2016 (I); Choy & Drazen 2013 (I); del Carmen Alejo-Plata et al. 2019 (I); Forrest & Hindell 2018 (0); Markic et al. 2018 (I); Massutí et al. 1998 (I); Menezes et al. 2019 (I); Phillips & Bonner 2015 (I); Rudershausen et al. 2010 (I); Varghese et al. 2013 (I); Júnior & Lessa 2004 (I)
Straited surgeonfish	*Ctenochaetus striatus*	0	1		Markic et al. 2018 (I)
Darter goby	*Ctenogobius boleosoma*	0	0	1	Vendel et al. 2017 (0)
Barbel drum	*Ctenosciaena gracilicirrhus*	0	0	1	Pegado et al. 2018 (0)
Sand trout	*Cynoscion arenarius*	0	1		Peters et al. 2017 (I)
Jamaica weakfish	*Cynoscion jamaicensis*	0	0	1	Pegado et al. 2018 (0)
Smooth weakfish	*Cynoscion leiarchus*	0	1		Pegado et al. 2018 (I)
Smallscale weakfish	*Cynoscion microlepidotus*	0	1		Pegado et al. 2018 (I)
Spotted seatrout	*Cynoscion nebulosus*	0	1		Phillips & Bonner 2015 (I)
Green weakfish	*Cynoscion virescens*	0	1		Pegado et al. 2018 (I)
Threespot dascyllus	*Dascyllus trimaculatus*	0	0	1	Baalkhuyur et al. 2018 (0)
Shortfin scad	*Decapetrus macrosoma*	0	1		Markic et al. 2018 (I); Rochman et al. 2015 (I)
Amberstripe scad	*Decapterus muroadsi*	0	1		Markic et al. 2018 (I); Ory et al. 2017 (I)
Common dentex	*Dentex dentex*	0	0	1	Güven et al. 2017 (0)
Pink dentex	*Dentex gibbosus*	0	1		Güven et al. 2017 (I)
Large-eye dentex	*Dentex macrophthalmus*	0	1		Neves et al. 2015 (I)
Irish mojarra	*Diapterus auratus*	0	1		Vendel et al. 2017 (I)
Caitipa mojarra	*Diapterus rhombeus*	0	1		Ramos et al. 2012 (I); Vendel et al. 2017 (I)
Sea bass	*Dicentrarchus labrax*	0	1		Bessa et al. 2018 (I)
Annular seabream	*Diplodus annularis*	0	1		Güven et al. 2017 (I)
Zebra seabream	*Diplodus cervinus*	0	1		Alshawafi et al. 2018 (I)
Seabream	*Diplodus vulgaris*	0	1		Bessa et al. 2018 (I)
Antarctic toothfish	*Dissostichtus mawsoni*	0	1		Cannon et al. 2016 (I)
Patagonian blennie	*Eleginops maclovinus*	0	1		Pozo et al. 2019 (I)
Black cardinal fish	*Epigonus telescopus*	0	0	1	Anastasopoulou et al. 2013 (0)
Areolate grouper	*Epinephelus areolatus*	0	1		Baalkhuyur et al. 2018 (I)
Brownspotted grouper	*Epinephelus chlorostigma*	0	1		Baalkhuyur et al. 2018 (I)
Dotted grouper	*Epinephelus epistictus*	0	1		Baalkhuyur et al. 2018 (I)
Blacktip grouper	*Epinephelus fasciatus*	0	0	1	Forrest & Hindell 2018 (0)
Atlantic goliath grouper	*Epinephelus itajara*	0	0	1	Pegado et al. 2018 (0)
Honeycomb grouper	*Epinephelus merra*	0	1		Garnier et al. 2019 (I); Kumar et al. 2018 (I)
Oblique-banded grouper	*Epinephelus radiatus*	0	1		Baalkhuyur et al. 2018 (I)
Silver mojarra	*Eucinostomus argenteus*	1	1		Nunes et al. 2018 (E4); Vendel et al. 2017 (I)

English name	*Scientific name*	Ent	Ing	0	References
Flagfin mojarra	*Eucinostomus melanopterus*	0	1	1	Ramos et al. 2012 (I); Vendel et al. 2017 (0)
Brazilian mojarra	*Eugerres brasilianus*	0	1		Ramos et al. 2012 (I); Vendel et al. 2017 (I)
Little tunny	*Euthymnus alletteratus*	0	1		Falautano et al. 2007 (I); Manooch et al. 1985 (I)
Mackerel tuna	*Euthynnus affinis*	0	1		Griffiths et al. 2009 (I)
Black skipjack	*Euthynnus lineatus*	0	1		del Carmen Alejo-Plata et al. 2019 (I)
Snake mackerel	*Gempylus serpens*	0	1		Choy & Drazen 2013 (I)
Torroto grunt	*Genyatremus luteus*	0	0	1	Pegado et al. 2018 (0)
Silverbiddy	*Gerres subfasciatus*	0	1		Halstead et al. 2018 (I)
	Girella laevifrons	0	1		Mizraji et al. 2017 (I)
Luderick	*Girella tricuspidata*	0	1		Markic et al. 2018 (I)
Striped large-eye bream	*Gnathodentex aureolineatus*	0	1		Markic et al. 2018 (I)
Sand goby	*Gobius minutus*	0	1		Day 1988 (I); Kartar et al. 1976 (I)
Blue-lined large-eye bream	*Gymnocranius grandoculis*	0	1		Baalkhuyur et al. 2018 (I)
Dogtooth tuna	*Gymnosarda unicolor*	0	0	1	Forrest & Hindell 2018 (0)
White grunt	*Haemulon plumierii*	0	0	1	Pegado et al. 2018 (0)
Tomtate grunt	*Haemulon aurolineatum*	1	0		Nunes et al. 2018 (E4)
Chere-chere grunt	*Haemulon steindachneri*	0	0	1	Pegado et al. 2018 (0)
Blue weed whiting	*Haletta semifasciata*	0	0	1	Cannon et al. 2016 (0)
Glasseye	*Heteropriacanthus cruentatus*	0	1		Markic et al. 2018 (I)
Feather blenny	*Hypsoblennius hentz*	1	0		Bilkovic et al. 2014 (E4);
Ragfish	*Icosteus aenimaticus*	1	0		DeGange & Newby 1980 (E4)
Black marlin	*Istiompax indica*	0	1		Fujieda et al. 2008 (I)
Indo-Pacific sailfish	*Istiophorus platypterus*	0	1		del Carmen Alejo-Plata et al. 2019 (I)
Skipjack tuna	*Katsuwonus pelamis*	0	1	1	Cannon et al. 2016 (0); Choy & Drazen 2013 (0); Markic et al. 2018 (I); Rochman et al. 2015 (0)
Hawaiian flagtail	*Kuhlia sandvicensis*	0	1		Forrest & Hindell 2018 (I)
Pacific drummer	*Kyphosus pacificus*	0	0	1	Forrest & Hindell 2018 (0)
Pacific chub	*Kyphosus sandwicensis*	1	1		Markic et al. 2018 (I); Thiel et al. 2018 (I/E4)
Silver drummer	*Kyphosus sydneyanus*	0	0	1	Forrest & Hindell 2018 (0)
Pinfish	*Lagodon rhomboides*	1	1		Bilkovic et al. 2014 (E4); Peters et al. 2017 (I); Phillips & Bonner 2015 (I); Voss et al. 2015 (E4)
Large yellow croaker	*Larimichthys crocea*	0	1		Jabeen et al. 2017 (I)
Japanese seabass	*Lateolabrax japonicus*	0	1		Jabeen et al. 2017 (I)
Barramundi	*Lates calcarifer*	1	0		Ceccarelli 2009 (E2)
Spot	*Leiostomus xanthurus*	1	0		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4)
Smith's escolar	*Lepidocybium flavobrunneum*	0	0	1	Choy & Drazen 2013 (0)
Silver scabbardfish	*Lepidopus caudatus*	0	0	1	Anastasopoulou et al. 2013 (0)
Ambon emperor	*Lethrinus ambionensis*	0	1		Markic et al. 2018 (I)
Smalltooth emperor	*Lethrinus microdon*	0	1		Baalkhuyur et al. 2018 (I)
Orange-striped emperor	*Lethrinus obsoletus*	0	1		Markic et al. 2018 (I)
Tang's snapper	*Lipocheilus carnolabrum*	0	1		Baalkhuyur et al. 2018
Sand steenbras	*Lithognathus mormyrus*	0	1	1	Güven et al. 2017 (I); López-López et al. 2018 (0)
Mutton snapper	*Lutjanus analis*	0	1	1	Miranda & de Carvalho-Souza 2016 (0); Pegado et al. 2018 (I)
Red snapper	*Lutjanus campechanus*	0	1		Phillips & Bonner 2015 (I)

English name	*Scientific name*	Ent	Ing	0	References
Humpback red snapper	*Lutjanus gibbus*	0	1	1	Forrest & Hindell 2018 (0); Markic et al. 2018 (I); Rochman et al. 2015 (0)
Mangrove snapper	*Lutjanus griseus*	0	1		Phillips & Bonner 2015 (I)
Dog snapper	*Lutjanus jocu*	0	0	1	Miranda & de Carvalho-Souza 2016 (0)
Common bluestripe snapper	*Lutjanus kasmira*	0	1		Baalkhuyur et al. 2018 (I)
Lane snapper	*Lutjanus synagris*	0	1		Pegado et al. 2018 (I)
King weakfish	*Macrodon ancylodon*	0	1		Pegado et al. 2018 (I)
Southern kingfish	*Menticirrhus americanus*	0	1	1	Pegado et al. 2018 (0); Peters et al. 2017 (I)
Whitemouth croaker	*Micropogonias furnieri*	0	0	1	Pegado et al. 2018 (0)
Atlantic croacker	*Micropogonias undulatus*	1	1	1	Anderson & Alford 2014 (E4); Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4); Hoss & Settle 1990 (I); Peters et al. 2017 (I); Phillips & Bonner 2015 (0)
White perch	*Morone americana*	1	1		Bilkovic et al. 2014 (E4); Carpenter et al. 1972 (I); Day 1988 (I)
Striped bass	*Morone saxatilis*	1	1		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4); Rochman et al. 2015 (I)
Yellowstripe goatfish	*Mulloidichthys flavolineatus*	0	0	1	Forrest & Hindell 2018 (0)
Red mullet	*Mullus barbatus*	0	1		Anastasopoulou et al. 2018 (I); Avio et al. 2015 (I); Bellas et al. 2016 (I); Digka et al. 2018 (I); Giani et al. 2019 (I); Güven et al. 2017 (I)
Surmullet	*Mullus surmuletus*	0	1	1	Alomar et al. 2017 (I); Anastasopoulou et al. 2018 (0); Güven et al. 2017 (I); López-López et al. 2018 (0); Neves et al. 2015 (I)
Humpback unicornfish	*Naso brachycentron*	0	0	1	Forrest & Hindell 2018 (0)
Orangespine unicornfish	*Naso lituratus*	0	1		Markic et al. 2018 (I)
Bluespine unicornfish	*Naso unicornis*	0	1	1	Baalkhuyur et al. 2018 (0); Markic et al. 2018 (I)
Tarakihi	*Nemadactylus macropterus*	0	1		Markic et al. 2018 (I)
Randall's threadfin bream	*Nemipterus randalli*	0	1		Güven et al. 2017 (I)
Blue-throated wrasse	*Notolabrus tetricus*	0	0	1	Cannon et al. 2016 (0)
Leatherjacket	*Oligoplites saurus*	0	1		Vendel et al. 2017 (I)
Tilapia	*Oreochromis niloticus*	0	0	1	Rochman et al. 2015 (0)
Pigfish	*Orthopristis chrysoptera*	1	1		Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4); Peters et al. 2017 (I)
Corocoro grunt	*Orthopristis ruber*	0	0	1	Pegado et al. 2018 (0)
Ringtail maori wrasse	*Oxycheilinus unifasciatus*	0	0	1	Forrest & Hindell 2018 (0)
Marble goby	*Oxyeleotris marmorata*	0	1		Jabeen et al. 2017 (I)
Axillary seabream	*Pagellus acarne*	1	1	1	Barreiros & Guerreiro 2014 (E4); Güven et al. 2017 (I); López-López et al. 2018 (0); Neves et al. 2015 (I)
Blackspot red seabream	*Pagellus bogaraveo*	0	1	1	Anastasopoulou et al. 2013 (I); López-López et al. 2018 (0); Savoca et al. 2019 (I)
Common pandora	*Pagellus erythrinus*	0	1	1	Anastasopoulou et al. 2018 (I); Digka et al. 2018 (I); Güven et al. 2017 (I); López-López et al. 2018 (0); Savoca et al. 2019 (I)
Australasian snapper	*Pagrus auratus*	0	1		Markic et al. 2018 (I)
Red porgy	*Pagrus pagrus*	0	1		Güven et al. 2017 (I)
Silver pomfret	*Pampus argenteus*	0	1		Su et al. 2019 (I)
Silver pomfret	*Pampus cinereus*	0	1		Jabeen et al. 2017 (I)
Banded croaker	*Paralonchurus brasiliensis*	0	1		Pegado et al. 2018 (I)

English name	*Scientific name*	Ent	Ing	0	References
Rosy dwarf monocle bream	*Parascolopsis eriomma*	0	1		Baalkhuyur et al. 2018 (I)
Fourlined terapon	*Pelates quadrilineatus*	0	1		Güven et al. 2017 (I)
American harvestfish	*Peprilus paru*	0	0	1	Pegado et al. 2018 (0)
Butterfish	*Peprilus triacanthus*	1	0		Bilkovic et al. 2014 (E4)
Rock gunnel	*Pholis gunnellus*	0	0	1	McGoran et al. 2018 (0)
Orangefin ponyfish	*Photopectoralis bindus*	0	1		Jabeen et al. 2017 (I)
Chilean sandperch	*Pinguipes chilensis*	0	0	1	Thiel et al. 2018 (0)
Blackspotted rubberlip	*Plectorhinchus gaterinus*	0	1		Baalkhuyur et al. 2018 (I)
Leopard coralgrouper	*Plectropomus leopardus*	0	1		Kroon et al. 2018 (I)
Spotted coralgrouper	*Plectropomus maculatus*	0	1		Kroon et al. 2018 (I)
Black drum	*Pogonias cromis*	1	0	1	Bilkovic et al. 2014 (E4); Phillips & Bonner 2015 (0)
Littlescale threadfin	*Polydactylus oligodon*	0	1		Pegado et al. 2018 (I)
Barbu	*Polydactylus virginicus*	0	0	1	Pegado et al. 2018 (0)
Wreckfish	*Polyprion americanus*	0	0	1	Anastasopoulou et al. 2013 (0)
Bastard grunt	*Pomadasys incisus*	0	1		Güven et al. 2017 (I)
Bluefish	*Pomatomus saltatrix*	1	0	1	Bilkovic et al. 2014 (E4); Pegado et al. 2018 (0)
Atlantic bigeye	*Priacanthus arenatus*	0	1		Cardozo et al. 2018 (I)
Goldbanded jobfish	*Pristipomoides multidens*	0	1		Baalkhuyur et al. 2018 (I)
Sharptooth jobfish	*Pristipomoides typus*	0	0	1	Baalkhuyur et al. 2018 (0)
Pacific rudderfish	*Psenopsis anomala*	0	1		Jabeen et al. 2017 (I)
Regal angelfish	*Pygoplites diacanthus*	0	0	1	Baalkhuyur et al. 2018 (0)
Cobia	*Rachycentron canadum*	0	0	1	Pegado et al. 2018 (0)
Indian mackerel	*Rastrelliger kanagurta*	0	1		Kumar et al. 2018 (I); Rochman et al. 2015 (I)
Oilfish	*Ruvettus pretiosus*	0	1		Viana et al. 2012 (I)
	Scarthychthys viridis	0	1		Mizraji et al. 2017 (I)
Dusky parrotfish	*Scarus niger*	0	1		Markic et al. 2018 (I)
Dark capped parrotfish	*Scarus oviceps*	0	1		Markic et al. 2018 (I)
Common parrotfish	*Scarus psittacus*	0	1		Markic et al. 2018 (I)
Imperial blackfish	*Schedophilus ovalis*	0	0	1	Anastasopoulou et al. 2013 (0)
Violet warehou	*Schedophilus velaini*	0	1		Markic et al. 2018 (I)
Brown meagre	*Sciaena umbra*	0	1		Güven et al. 2017 (I) (I)
Red drum	*Sciaenops ocellatus*	1	1		Anderson & Alford 2014 (E4); Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4); Phillips & Bonner 2015
Blue mackerel	*Scomber australasicus*	0	0	1	Cannon et al. 2016 (0)
Atlantic chub mackerel	*Scomber colias*	0	1		Herrera et al. 2019 (I)
Chub mackerel	*Scomber japonicus*	0	1	1	Anastasopoulou et al. 2018 (I); Güven et al. 2017 (I); Neves et al. 2015 (I); Ory et al. 2018 (I); Rochman et al. 2015 (0); Su et al. 2019 (I)
Atlantic mackerel	*Scomber scombrus*	0	1	1	Foekema et al. 2013 (0); Nelms et al. 2018 (I); Neves et al. 2015 (I); Rummel et al. 2016 (I)
Serra Spanish mackerel	*Scomberomorus brasiliensis*	0	0	1	Pegado et al. 2018 (0)
King mackerel	*Scomberomorus cavalla*	0	1	1	Miranda & de Carvalho-Souza 2016 (I); Phillips & Bonner 2015 (0)

English name	*Scientific name*	Ent	Ing	0	References
Oxeye scad	*Selar boops*	0	0	1	Rochman et al. 2015 (0)
Atlantic moonfish	*Selene setapinnis*	0	0	1	Pegado et al. 2018 (0)
Lookdown	*Selene vomer*	0	1		Pegado et al. 2018 (I)
Yellowtail amberjack	*Seriola lalandi*	0	1	1	Forrest & Hindell 2018 (0); Gassel et al. 2013 (I); Markic et al. 2018 (I)
Comber	*Serrannus cabrilla*	0	1		Güven et al. 2017 (I)
Rabbitfish	*Siganus argenteus*	0	1		Rochman et al. 2015 (I)
Rabbitfish	*Siganus canaliculatus*	0	1		Rochman et al. 2015 (I)
Mottled spinefoot	*Siganus fuscescens*	0	0	1	Rochman et al. 2015 (0)
Streaked spinefoot	*Siganus javus*	0	1		Perpetua et al. 2013 (I)
Dusky spinefoot	*Siganus luridus*	0	1		Güven et al. 2017 (I); van der Hal et al. 2018 (I)
Goldspotted rabbitfish	*Siganus punctatus*	0	0	1	Markic et al. 2018 (0)
Marbled spinefoot	*Siganus rivulatus*	0	1		van der Hal et al. 2018 (I)
Spotted sillago/King George whiting	*Sillaginodes punctatus*	0	1		Cannon et al. 2016 (I)
Flinders' Sillago/ Eastern School whiting	*Sillago flindersi*	0	0	1	Cannon et al. 2016 (0)
Northern whiting	*Sillago sihama*	0	1		Abbasi et al. 2018 (I); Jabeen et al. 2017 (I)
Gray parrotfish	*Sparisoma axillare*	1	0		Nunes et al. 2018 (E4)
Gilthead seabream	*Sparus aurata*	0	1		Anastasopoulou et al. 2018 (I); Güven et al. 2017 (I)
Bigeye barracuda	*Sphyraena forsteri*	0	1		Markic et al. 2018 (I)
Guachanche barracuda	*Sphyraena guachancho*	0	0	1	Miranda & de Carvalho-Souza 2016 (0)
Blackfin barracuda	*Sphyraena qenie*	0	1		Forrest & Hindell 2018 (I)
Black seabream	*Spondyliosoma cantharus*	0	0	1	López-López et al. 2018 (0)
	Stellifer brasiliensis	0	1		Dantas et al. 2012 (I)
Little croaker	*Stellifer stellifer*	0	1		Dantas et al. 2012 (I)
Scup	*Stenotomus chrysops*	1	0		Bilkovic et al. 2014 (E4)
Tautog	*Tautoga onitis*	0			Bilkovic et al. 2014 (E4); Carr et al. 1985 (E4); Havens et al. 2011 (E4);
Cunner	*Tautogolabrus adspersus*	1	1		Bilkovic et al. 2014 (E4); Carpenter et al. 1972 (I); Day 1988 (I); Havens et al. 2011 (E4)
Jarbua terapon	*Terapon jarbua*	0	1		Jabeen et al. 2017 (I)
Surge wrasse	*Thalassoma purpureum*	0	1		Forrest & Hindell 2018 (I)
Klunzinger's wrasse	*Thalassoma rueppellii*	0	1		Baalkhuyur et al. 2018 (I)
Christmas wrasse	*Thalassoma trilobatum*	0	1		Forrest & Hindell 2018 (I)
Albacore tuna	*Thunnus alalunga*	0	1	1	Rochman et al. 2015 (0); Romeo et al. 2015 (I)
Yellowfin tuna	*Thunnus albacares*	1	1	1	Chagnon et al. 2018 (I); Choy & Drazen 2013 (0); Manooch & Mason 1983 (I); Markic et al. 2018 (I); Lucas 1992 (E2); Rudershausen et al. 2010 (I); Sajikumar et al. 2013 (I); Thiel et al. 2018 (I)
Blackfinfin tuna	*Thunnus atlanticus*	0	1		Manooch & Mason 1983 (I)
Southern bluefin tuna	*Thunnus maccoyii*	0	1		Young et al. 1997 (I)
Bigeye tuna	*Thunnus obesus*	0	1		Choy & Drazen 2013 (I)
Atlantic bluefin tuna	*Thunnus thynnus*	0	1		Butler et al. 2015 (I); De la Serna et al. 2012 (I); Karakulak et al. 2009 (I); Romeo et al. 2015 (I); Uriarte et al. 2019 (I)
Snoek	*Thyrsites atun*	0	1	1	Cannon et al. 2016 (0); Markic et al. 2018 (I)
Pompano	*Trachinotus ovatus*	0	1		Battaglia et al. 2016 (I)

English name	*Scientific name*	Ent	Ing	0	References
Greenback horse mackerel	*Trachurus declivis*	0	0	1	Cannon et al. 2016 (0)
Mediterranean horse mackerel	*Trachurus mediterraneus*	0	1	1	Anastasopoulou et al. 2018 (0); Güven et al. 2017 (I)
Chilean jack mackerel	*Trachurus murphyi*	0	1		Pozo et al. 2019 (I)
Yellowtail jack mackerel	*Trachurus novaezelandiae*	0	1		Markic et al. 2018 (I)
Blue jack mackerel	*Trachurus picturatus*	0	1	1	Anastasopoulou et al. 2018 (0); Neves et al. 2015 (I)
Atlantic horse mackerel	*Trachurus trachurus*	0	1	1	Anastasopoulou et al. 2018 (I); Foekema et al. 2013 (I); Lusher et al. 2013 (I); Murphy et al. 2017 (0); Neves et al. 2015 (I)
Ribbonfish	*Trichiurus lepturus*	0	1		Di Beneditto & Awabdi 2014 (I); Pegado et al. 2018 (I)
Shokihaze goby	*Tridentiger barbatus*	0	1		Su et al. 2019 (I)
Shi drum	*Umbrina cirrosa*	0	0	1	Güven et al. 2017 (0)
Goldband goatfish	*Upeneus moluccensis*	0	1		Güven et al. 2017 (I)
Por's goatfish	*Upeneus pori*	0	1		Güven et al. 2017 (I)
Yellow-edged lyretail	*Variola louti*	0	1		Forrest & Hindell 2018 (I)
Broadbill swordfish	*Xiphias gladius*	0	1	1	Anastasopoulou et al. 2013 (0); Choy & Drazen 2013 (0); Romeo et al. 2015 (I)
Eelpout	*Zoarces viviparus*	0	1		Wesch et al. 2016 (I)
Mugiliformes					
Yellow-eye mullet	*Aldrichetta forsteri*	0	0	1	Cannon et al. 2016 (0)
Golden grey mullet	*Chelon auratus*	0			Anastasopoulou et al. 2013 (I)
Squaretail mullet	*Ellochelon vaigiensis*	0	1		Markic et al. 2018 (I)
Golden grey mullet	*Liza aurata*	0	1		Güven et al. 2017 (I)
So-iuy mullet	*Liza haematocheila*	0	1		Jabeen et al. 2017 (I); Su et al. 2019 (I)
Flathead grey mullet	*Mugil cephalus*	0	1	1	Cannon et al. 2016 (0); Cheung et al. 2018 (I); Halstead et al. 2018 (I); Jabeen et al. 2017 (I); Markic et al. 2018 (I); Naidoo et al. 2016 (I); Phillips & Bonner 2015 (I)
White mullet	*Mugil curema*	0	0	1	Vendel et al. 2017 (0)
Pleuronectiformes					
Plainfin sole	*Achirus declivis*	0	1		Vendel et al. 2017 (I)
Lined sole	*Achirus lineatus*	0	1		Vendel et al. 2017 (I)
Arrowteeth flounder	*Atheresthes stomias*	1	0		Stevens et al. 2000 (E4)
Solenette	*Buglossium luteum*	0	1		Lusher et al. 2013 (I)
Pacific sanddab	*Citharichthys sordidus*	0	1		Rochman et al. 2015 (I)
Bay whiff	*Citharichthys spilopterus*	0	0	1	Vendel et al. 2017 (0)
Spotted flounder	*Citharus linguatula*	0	1		Anastasopoulou et al. 2018 (I)
Tongue sole	*Cynoglossus abbreviatus*	0	1		Abbasi et al. 2018 (I); Jabeen et al. 2017 (I)
Robust tonguefish	*Cynoglossus robustus*	0	1		Su et al. 2019 (I)
Witch flounder	*Glyptocephalus cynoglossus*	1	1		Brothers 1989 (E2); McGoran et al. 2018 (I)
Flathead sole	*Hippoglossoides elassodon*	1	0		Stevens et al. 2000 (E4)
Long rough dab	*Hippoglossoides platessoides*	1	1		Bour et al. 2018 (I); Brothers 1989 (E2); McGoran et al. 2018 (I)
Atlantic halibut	*Hippoglossus hippoglossus*	0	0	1	Murphy et al. 2017 (0)
Pacific halibut	*Hippoglossus stenolepis*	1	0		High & Worlund 1979 (E2)
Four-spot megrim	*Lepidorhombus boscii*	0	1	1	López-López et al. 2018 (0); Neves et al. 2015 (I)
Megrim	*Lepidorhombus whiffiagonis*	0	1	1	López-López et al. 2018 (0); Murphy et al. 2017 (I)

English name	*Scientific name*	Ent	Ing	0	References
Common dab	*Limanda limanda*	0	1		McGoran et al. 2018 (I); Murphy et al. 2017 (I); Rummel et al. 2016 (I)
Slender sole	*Lyopsetta exilis*	1	0		Good et al. 2010 (E4)
Thickback sole	*Microchirus variegatus*	0	1		Lusher et al. 2013 (I); Steer et al. 2017 (I)
Brazilian flounder	*Paralichthys brasiliensis*	0	0	1	Miranda & de Carvalho-Souza 2016 (0)
Southern flounder	*Paralichthys lethostigma*	1	1		Anderson & Alford 2014 (E4); Phillips & Bonner 2015 (I)
English sole	*Parophrys vetulus*	1	0		Good et al. 2010 (E4)
Norwegian topknot	*Phrynorhombus norvegicus*	0	0	1	McGoran et al. 2018 (0)
European flounder	*Platichthys flesus*	0	1		Bessa et al. 2018 (I); Day 1988 (I); Kartar et al. 1973 (I); Kartar et al. 1976 (I); McGoran et al. 2017 (I); McGoran et al. 2018 (I); Murphy et al. 2017 (I); Rummel et al. 2016 (I)
Starry flounder	*Platichthys stellatus*	1	0		Good et al. 2010 (E4)
European plaice	*Pleuronectes platessa*	0	1		McGoran et al. 2018 (I); Murphy et al. 2017 (I); Welden et al. 2018 (I)
Winter flounder	*Pseudopleuronectes americanus*	1	1		Carpenter et al. 1972 (I); Carr et al. 1985 (E4); Day 1988 (I)
Common sole	*Solea solea*	0	1		Pellini et al. 2018 (I); Anastasopoulou et al. 2018 (I); McGoran et al. 2018 (I)
	Symphurus tessellatus	0	1		Vendel et al. 2017 (I)
Hogchoker	*Trinectes maculatus*	1			Bilkovic et al. 2014 (E4); Havens et al. 2011 (E4)
Tetraodontiformes					
Striped burrfish	*Chilomycterus schoepfii*	1	0		Bilkovic et al. 2014 (E4)
Banded puffer	*Colomesus psittacus*	0	0	1	Pegado et al. 2018 (0)
Smooth puffer	*Lagocephalus laevigatus*	0	0	1	Miranda & de Carvalho-Souza 2016 (0)
Half-smooth golden pufferfish	*Lagocephalus spadiceus*	0	0	1	Güven et al. 2017 (0)
Leatherjacket	*Meuschenia scaber*	0	1		Markic et al. 2018 (I)
Green puffer	*Sphoeroides greeleyi*	0	0	1	Vendel et al. 2017 (0)
Northern puffer	*Sphoeroides masculates*	1	0		Havens et al. 2011 (E4)
Checkered puffer	*Sphoeroides testudineus*	0	1		Vendel et al. 2017 (I)
Greenfin horse-faced filefish	*Thamnaconus sepentrionalis*	0	1		Jabeen et al. 2017 (I); Su et al. 2019 (I)
Invertebrates					
Crustacea					
Red fur crab	*Acantholithodes hispidus*	1	0		Good et al. 2010 (E4)
	Aristeus antennatus	0	1		Carreras-Colom et al. 2018 (I)
	Athanas nitescens	0	1		Remy et al. 2015 (I)
Striped barnacle	*Balanus amphitrite*	0	1		Thushari et al. 2017 (I)
Giant barnacle	*Balanus nubilis*	1	0		Good et al. 2010 (E4)
Blue crab	*Callinectes sapidus*	1	0		Anderson & Alford 2014 (E4); Havens et al. 2011 (E4)
Northern cancer crab	*Cancer borealis*	1	0		Carr et al. 1985 (E4); Carr 1986 (E4)
Graceful crab	*Cancer gracilis*	1	0		Good et al. 2010 (E4)
Dungeness crab	*Cancer magister*	1	0		Gilardi et al. 2010 (E4); Good et al. 2010 (E4); Maselko et al. 2013 (E4)
Hairy cancer crab	*Cancer oregonensis*	1	0		Good et al. 2010 (E4)
Red rock crab	*Cancer productus*	1	0		Gilardi et al. 2010 (E4); Good et al. 2010 (E4); High 1985 (E4)
	Carcinus aestuarii	0	1		Piarulli et al. 2019 (I)
Tanner crab	*Chionoecetes bairdi*	1	0		Stevens et al. 2000 (E4)
Snow crab	*Chionoecetes opilio*	0	1		Fang et al. 2018 (I)
De Haan's shore crab	*Chiromantes dehaani*	1	0		Hong et al. 2013 (E2)

English name	*Scientific name*	Ent	Ing	0	References
Longhorn decorator crab	*Chorilia longipes*	1	0		Good et al. 2010 (E4)
	Crangon allmanni	0	1		Bour et al. 2018 (I)
Brown shrimp	*Crangon crangon*	0	1		Devriese et al. 2015 (I); McGoran et al. 2018 (I)
Butterfly crab	*Cryptolithodes typicus*	1	0		Good et al. 2010 (E4)
Pacific mole crab	*Emerita analoga*	0	1		Horn et al. 2019 (I)
Chinese mitten crab	*Eriocheir sinensis*	0	1		Wójcik-Fudalewska et al. 2016 (I)
Longhorn decorator crab	*Eualus avinus*	1	0		Gilardi et al. 2010 (E4);
North Pacific krill	*Euphausia pacifica*	0	1		Desforges et al. 2015 (I)
	Eurythenes gryllus	0	1		Jamieson et al. 2019 (I)
	Galathea intermedia	0			Remy et al. 2015 (I)
	Gammarella fucicola	0	1		Remy et al. 2015 (I)
	Gammarus aequicaudi	0	1		Remy et al. 2015 (I)
Geryon crab	*Geryon trispinosus*	1	0		Ramirez-Llodra et al. 2011 (E4)
Hairy lithodid	*Hapalogaster mertensii*	1	0		Good et al. 2010 (E4)
Purple shore crab	*Hemigrapsus nudus*	1	0		Good et al. 2010 (E4)
	Hirondellea dubia	0	1		Jamieson et al. 2019 (I)
	Hirondellea gigas	0	1		Jamieson et al. 2019 (I)
American lobster	*Homarus americanus*	1	1		Carr et al. 1985 (E4); Carr 1986 (E4); Carter & Steele 1982 (I); Elner & Campbell 1987 (I); Havens et al. 2011 (E4)
Lyre crab	*Hyas lyratus*	1	0		Stevens et al. 2000 (E4)
Gooseneck barnacles	*Lepas anatifera*	0	1		Goldstein & Goodwin 2013 (I)
Gooseneck barnacles	*Lepas pacifica*	0	1		Goldstein & Goodwin 2013 (I)
Horseshoe crab	*Limulus polyphemus*	1	0		Havens et al. 2011 (E4)
	Liocarcinus navigator	0	1		Remy et al. 2015 (I)
Brown box crab	*Lopholithodes foraminatus*	1	0		Good et al. 2010 (E4)
Pudget Sound king crab	*Lopholithodes mandtii*	1	0		Good et al. 2010 (E4)
European spider crab	*Maja squinado*	1	1		Houard et al. 2012 (E4); Welden et al. 2018 (I)
	Melita hergensis	0	1		Remy et al. 2015 (I)
Stone crab	*Menippe adina*	1	0		Anderson & Alford 2014 (E4)
Squat lobster	*Munida quadrispina*	1	0		Good et al. 2010 (E4)
	Nebalia strausi	0	1		Remy et al. 2015 (I)
	Neocalanus cristatus	0	1		Desforges et al. 2015 (I)
Norway lobster	*Nephrops norvegicus*	0	1		Cristo & Cartes 1998 (I); Murray & Cowie 2011 (I); Welden & Cowie 2016 (I)
	Nototropis guttatus	0	1		Remy et al. 2015 (I)
Granular claw crab	*Oedignathus inermis*	1	0		Good et al. 2010 (E4)
Decorator crab	*Oregonia gracilis*	1	0		Stevens et al. 2000 (E4)
Signal crayfish	*Pacifastacus leniusculus*	1	0		Good et al. 2010 (E4)
Black-eyed hermit crab	*Pagurus armatus*	1	0		Good et al. 2010 (E4)
Hairy hermit crab	*Pagurus hirsutiusculus*	1	0		Good et al. 2010 (E4)
Spot shrimp	*Pandalus platyceros*	1	0		Good et al. 2010 (E4)
	Palaemon xiphias	0	1		Remy et al. 2015 (I)
Northern prawn	*Pandalus borealis*	0	1		Fang et al. 2018 (I)

English name	*Scientific name*	Ent	Ing	0	References
Atlantic mud crab	*Panopeus herbstii*	0	1		Waite et al. 2018 (I)
King crab	*Paralithodes camtschaticus*	1	0		High 1985 (E4); Breen 1990 (E4); Stevens et al. 2000 (E4)
Heart crab	*Phyllolithodes papillosus*	1	0		Good et al. 2010 (E4)
Narwal shrimp	*Plesionika narval*	0	1		Bordbar et al. 2018 (I)
Slender kelp crab	*Pugettia gracilis*	1	0		Good et al. 2010 (E4); Stevens et al. 2000 (E4)
Northern kelp crab	*Pugettia producta*	1	0		Gilardi et al. 2010; Good et al. 2010 (E4); High 1985 (E4)
Cryptic kelp crab	*Pugettia richii*	1	0		Good et al. 2010 (E4)
Golfball crab	*Rhinolithodes wosnessenskii*	1	0		Gilardi et al. 2010; Good et al. 2010 (E4)
Mud crab	*Scylla serrata*	1	0		Ceccarelli 2009 (E2)
Sharpnose crab	*Scyra acutofrons*	1	0		Good et al. 2010 (E4)
Helmet crab	*Telmessus cheiragonus*	1	0		Good et al. 2010 (E4)
Echinodermata					
	Amphiura filiformis	0	1		Bour et al. 2018 (I)
Common starfish	*Asterias rubens*	0	1		Fang et al. 2018 (I)
	Astrospartus mediterraneus	1	0		Oliveira et al. 2015 (E4)
	Brissopsis lyrifera	0	1		Bour et al. 2018 (I)
Hatpin urchin	*Centrostephanus longispinus*	1	0		Oliveira et al. 2015 (E4)
Long-spine slate pen sea urchin	*Cidaris cidaris*	1	0		Mordecai et al. 2011 (E4); Oliveira et al. 2015 (E4)
Rose star	*Crossaster papposus*	1	0		Good et al. 2010 (E4)
Deposit-feeding starfish	*Ctenodiscus crispatus*	0	1		Fang et al. 2018 (I)
Orange sea cucumber	*Cucumaria miniata*	1	0		Good et al. 2010 (E4)
Mottled star	*Evasterias troschelii*	1	0		Good et al. 2010 (E4); Stevens et al. 2000 (E4)
Gunpowder star	*Gephyreaster swifti*	1	0		Good et al. 2010 (E4)
Blood star	*Henricia leviuscula*	1	0		Good et al. 2010 (E4)
Fat henricia	*Henricia sanguinolenta*	1	0		Good et al. 2010 (E4)
Tubular sea cucumber	*Holothuria tubulosa*	0	1		Renzi et al. 2018 (I)
	Hymenaster pellucidus	0	1		Courtene-Jones et al. 2017 (I); Courtene-Jones et al. 2019 (I)
polar six-rayed star	*Lepatsterias polaris*	0	1		Fang et al. 2018 (I)
Spiny mud star	*Luidia foliolata*	1	0		Good et al. 2010 (E4)
Vermilion sea star	*Mediaster aequialis*	1	0		Good et al. 2010 (E4)
	Ophiomusium lymani	0	1		Courtene-Jones et al. 2017 (I); Courtene-Jones et al. 2019 (I)
Daisy brittle star	*Ophiopholis aculeata*	1	0		Good et al. 2010 (E4)
Serpent's table brittle star	*Ophiura albida*	0	1		Bour et al. 2018 (I)
	Ophiura sarsii	0	1		Fang et al. 2018 (I)
Painted star	*Orthasterias koehleri*	1	0		Good et al. 2010 (E4)
California sea cucumber	*Parastichopus californicus*	1	0		Good et al. 2010 (E4)
Spiny pink star	*Pisaster brevispinus*	1	0		Good et al. 2010 (E4)
Sunflower sea star	*Pycnopodia helianthoides*	1	0		Good et al. 2010 (E4); Stevens et al. 2000 (E4)
Striped sunstar	*Solaster stimpsoni*	1	0		Good et al. 2010 (E4)

English name	*Scientific name*	Ent	Ing	0	References
Great/Green sea urchin	*Strongylocentrotus droebachiensis*	1	0		Good et al. 2010 (E4)
Red sea urchin	*Strongylocentrotus franciscanus*	1	0		Gilardi et al. 2010 (E); Good et al. 2010 (E4); Stevens et al. 2000 (E4)
Green sea urchin	*Strongylocentrus droebachensis*	1	0		Gilardi et al. 2010 (E4)
Long ray star	*Styliasterias forreri*	1	0		Good et al. 2010 (E4)
Mollusca					
Hudson's dorid	*Acanthodoris hudsoni*	1	0		Good et al. 2010 (E4)
	Alectryonella plicatula	0	1		Li et al. 2015 (I)
	Amiantis purpuratus	0	1		Naji et al. 2018 (I)
	Amiantis umbonella	0	1		Naji et al. 2018 (I)
Saddle oyster	*Anomia ephippium*	0	1		Bonello et al. 2018 (I)
	Astarte crenata	0	1		Fang et al. 2018 (I)
Purple dye murex	*Bolinus brandaris*	0	1		Abidli et al. 2019 (I)
Yellow margin dorid	*Cadlina luteomarginata*	1	0		Good et al. 2010 (E4)
Leafy hornmouth	*Ceratostoma foliatum*	1	0		Good et al. 2010 (E4)
	Cerithidea cingulata	0	1		Naji et al. 2018 (I)
Hind's scallop	*Chlamys rubida*	1	0		Good et al. 2010 (E4); Stevens et al. 2000 (E4)
Nuttall's cockle	*Clinocardium nuttalli*	1	0		Good et al. 2010 (E4)
	Colus jeffreysianus	0	1		Courtene-Jones et al. 2017 (I)
Rock scallop	*Crassedoma giganteum*	1	0		Good et al. 2010 (E4)
Pacific oyster	*Crassostrea gigas*	0	1		Abidli et al. 2019 (I); Bonello et al. 2018 (I); Cho et al. 2019 (I); Good et al. 2010 (E4); Phuong et al. 2018 (I); Rochman et al. 2015 (I)
Eastern oyster	*Crassostrea virginica*	0	1		Waite et al. 2018 (I)
Giant Pacific chiton	*Cryptochiton stelleri*	1	0		Good et al. 2010 (E4)
Chinese venus	*Cyclina sinensis*	0	1		Li et al. 2015 (I)
Humboldt squid	*Dosidicus gigas*	0	1		Rosas-Luis 2016 (I)
	Ennucula tenuis	0	1		Bour et al. 2018 (I)
Tiny moonsnail	*Euspira nana*	0	1		Fang et al. 2018 (I)
Hairy triton	*Fusitriton oregonensis*	1	0		Stevens et al. 2000 (E4)
Northern abalone	*Haliotis kamtschatkana*	1	0		Gilardi et al. 2010 (E)
Banded dye-murex	*Hexaplex trunculus*	0	1		Abidli et al. 2019 (I)
	Latisipho hypolispus	0	1		Fang et al. 2018 (I)
Bent nose macoma	*Macoma nasuta*	1	0		Good et al. 2010 (E4)
	Macoma tokyoensis	0	1		Fang et al. 2018 (I)
Asian hard clam	*Meretrix lusoria*	0	1		Li et al. 2015 (I)
Northern horsemussel	*Modiolus modiolus*	0	1		Catarino et al. 2018 (I)
Blunt gaper	*Mya truncata*	1	0		Good et al. 2010 (E4)
Blue mussel	*Mytilus edulis*	0	1		Cho et al. 2019 (I); Li et al. 2018b (I); Phuong et al. 2018 (I); Van Cauwenberghe et al. 2015 (I)
Mediterranean mussel	*Mytilus galloprovincialis*	0	1		Abidli et al. 2019 (I); Bonello et al. 2018 (I); Digka et al. 2018 (I); Jin-Feng et al. 2018 (I); Li et al. 2015 (I)
Blue mussel	*Mytilus trossulus*	1	0		Good et al. 2010 (E4); Stevens et al. 2000 (E4)
Ribbed neptune	*Neptunea lyrata*	1	0		Stevens et al. 2000 (E4)
Dogwinkle	*Nucella lamellosa*	1	0		Stevens et al. 2000 (E4)
Common Pacific octopus	*Octopus dolfleini*	1	0		Good et al. 2010 (E4); Stevens et al. 2000 (E4)

English name	*Scientific name*	Ent	Ing	0	References
Flying squid	*Ommastrephes bartramii*	0	1		Day 1988 (I)
Geoduck clam	*Panopea abrupta*	1	0		Good et al. 2010 (E4)
Yesso scallop	*Patinopecten yessoensis*	0	1		Cho et al. 2019 (I); Li et al. 2015 (I)
Brown mussel	*Perna perna*	0	1		Santana et al. 2016 (I)
Green mussel	*Perna viridis*	0	1		Naidu 2019 (I)
Gulf pearl oyster	*Pinctada radiata*	0	1		Naji et al. 2018 (I)
Moon snail	*Polinices lewisii*	1	0		Good et al. 2010 (E4)
Green false-jingle	*Popodesmus machrochisma*	1	0		Good et al. 2010 (E4)
Pacific littleneck clam	*Protothaca staminea*	1	0		Good et al. 2010 (E4)
Rappa whelk	*Rapana venosa*	1	0		Havens et al. 2011 (E4)
	Retifusus daphnelloides	0	1		Fang et al. 2018 (I)
Grooved carpet shell	*Ruditapes decussatus*	0	1		Abidli et al. 2019 (I)
Manila clam	*Ruditapes philippinarum*	1	0		Good et al. 2010 (E4)
Hooded oyster	*Saccostrea cucullata*	0	1		Li et al. 2018a (I)
Rock oyster	*Saccostrea forskalii*	0	1		Thushari et al. 2017 (I)
Butter clam	*Saxidomus giganteus*	0			Good et al. 2010 (E4)
	Scapharca subcrenata	0	1		Li et al. 2015 (I)
European common cuttlefish	*Sepia officinalis*	0	1		Abidli et al. 2019 (I)
Southern calamari squid	*Sepioteuthis australis*	0	0	1	Cannon et al. 2016 (0)
Chinese razor clam	*Sinonovacula constricta*	0	1		Li et al. 2015 (I)
Blood cockle	*Tegillarca granosa*	0	1		Li et al. 2015 (I)
Common lampshell	*Terebratalia transversa*	1	0		Good et al. 2010 (E4)
	Thais mutabilis	0	1		Naji et al. 2018 (I)
Clown dorid	*Triopha catalinae*	1	0		Good et al. 2010 (E4)
Manila clam	*Venerupis philippinarum*	0	1		Cho et al. 2019 (I); Davidson & Dudas 2016 (I); Li et al. 2015 (I)
Chaetognatha					
	Parasagitta elegans	0	1		Carpenter et al. 1972 (I)
Polychaeta					
Lugworm	*Arenicola marina*	0	1		Van Cauwenberghe et al. 2015 (I)
	Claudrilus ovarium	0	0	1	Gusmão et al. 2016 (0)
Ragworm	*Hediste diversicolor*	0	1		Bour et al. 2018 (I)
	Hesionura laubieri	0	0	1	Gusmão et al. 2016 (0)
	Marphysa sanguinea	0	1		Jang et al. 2018 (I)
	Megadrilus schneideri	0	0	1	Gusmão et al. 2016 (0)
	Meiodrilus gracilis	0	0	1	Gusmão et al. 2016 (0)
	Nerilla mediterranea	0	0	1	Gusmão et al. 2016 (0)
	Protodrilus albicans	0	0	1	Gusmão et al. 2016 (0)
	Protodrilus oculifer	0	0	1	Gusmão et al. 2016 (0)
Peacock worm	*Sabella pavonina*	0	1		Bour et al. 2018 (I)
	Saccocirrus papillocercus	0	1		Gusmão et al. 2016 (I)
	Saccocirrus pussicus	0	1		Gusmão et al. 2016 (I)

Online Supplement Table 2. Frequency of Occurrence per Species (Sp-%FO) in marine birds, mammals and turtles.

Only data on species with known sample size and affected individuals are taken into consideration. Given are the sample size of all individuals analysed, the number of individuals with plastic ingested and the Sp-%FO. Study records present the number of times, the certain species is mentioned in all references below.

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Seabirds					
Anseriformes					
Long-tailed duck	*Clangula hyemalis*	15	0	0%	2
King eider	*Somateria spectabilis*	44	0	0%	1
Common eider	*Somateria mollissima*	679	2	0%	2
Surf scoter	*Melanitta perspicillata*	51	0	0%	3
White-winged scoter	*Melanitta deglandi*	5	0	0%	1
Common scoter	*Melanitta nigra*	2	0	0%	1
Harlequin duck	*Histrionicus histrionicus*	7	0	0%	2
Greater scaup	*Aythya marila*	4	0	0%	2
Lesser scaup	*Aythya affinis*	1	0	0%	1
Podicipediformes					
Australasian grebe	*Tachybaptus novaehollandiae*	5	0	0%	1
Red-necked grebe	*Podiceps grisegena*	1	0	0%	1
Western grebe	*Aechmophorus occidentalis*	2	0	0%	1
Phaethontiformes					
Red-billed tropicbird	*Phaethon aethereus*	3	0	0%	1
Red-tailed tropicbird	*Phaethon rubricauda*	180	20	11%	4
White-tailed tropicbird	*Phaethon lepturus*	38	11	29%	2
Gaviformes					
Red-throated loon	*Gavia stellata*	25	1	4%	4
Arctic loon	*Gavia arctica*	1	1	100%	1
Pacific loon	*Gavia pacifica*	3	1	33%	2
Common loon	*Gavia immer*	3	0	0%	2
Sphenisciformes					
Emperor Penguin	*Aptenodytes forsteri*	25	0	0%	1
Gentoo Penguin	*Pygoscelis papua*	5	0	0%	1
Adelie Penguin	*Pygoscelis adeliae*	104	0	0%	1
Southern Rockhopper Penguin	*Eudyptes chrysocome*	177	2	1%	1
Little Penguin	*Eudyptula minor*	24	3	13%	1
Magellanic Penguin	*Spheniscus magellanicus*	693	199	29%	4
Humboldt Penguin	*Spheniscus humboldti*	450	10	2%	1
Procellariiformes					

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Wilson's Storm-petrel	*Oceanites oceanicus*	244	83	34%	3
Grey-backed Storm-petrel	*Garrodia nereis*	11	3	27%	1
White-faced Storm-petrel	*Pelagodroma marina*	34	27	79%	2
White-bellied Storm-petrel	*Fregetta grallaria*	37	12	32%	3
Black-bellied Storm-petrel	*Fregetta tropica*	7	0	0%	2
Polynesian Storm-petrel	*Nesofregetta fuliginosa*	14	0	0%	1
European Storm-petrel	*Hydrobates pelagicus*	21	0	0%	1
Band-rumped Storm-petrel	*Hydrobates castro*	11	0	0%	2
Wedge-rumped Storm-petrel	*Hydrobates tethys*	472	3	1%	2
Leach's Storm-petrel	*Hydrobates leucorhous*	470	124	26%	7
Tristram's Storm-petrel	*Hydrobates tristrami*	150	127	85%	3
Markham's Storm-petrel	*Hydrobates markhami*	107	4	4%	2
Fork-tailed Storm-petrel	*Hydrobates furcatus*	36	33	92%	2
Northern Royal Albatross	*Diomedea sanfordi*	36	14	39%	1
Southern Royal Albatross	*Diomedea epomophora*	27	5	19%	3
Wandering Albatross	*Diomedea exulans*	79	8	10%	8
Antipodean Albatross	*Diomedea antipodensis*	3	0	0%	2
Tristan Albatross	*Diomedea dabbenena*	12	2	17%	3
Sooty Albatross	*Phoebetria fusca*	74	1	1%	2
Light-mantled Albatross	*Phoebetria palpebrata*	9	1	11%	3
Waved Albatross	*Phoebastria irrorata*	43	3	7%	1
Black-footed Albatross	*Phoebastria nigripes*	423	308	73%	6
Laysan Albatross	*Phoebastria immutabilis*	962	890	93%	11
Short-tailed Albatross	*Phoebastria albatrus*	6	4	67%	1
Atlantic Yellow-nosed Albatross	*Thalassarche chlororhynchos*	112	15	13%	9
Indian Yellow-nosed Albatross	*Thalassarche carteri*	77	0	0%	1
Grey-headed Albatross	*Thalassarche chrysostoma*	4	1	25%	1
Black-browed Albatross	*Thalassarche melanophris*	313	69	22%	12
Campbell Albatross	*Thalassarche impavida*	4	0	0%	1
Buller's Albatross	*Thalassarche bulleri*	310	13	4%	4
Shy Albatross	*Thalassarche cauta*	1311	13	1%	5
White-capped Albatross	*Thalassarche steadi*	102	0	0%	2
Chatham Albatross	*Thalassarche eremita*	1	0	0%	1
Salvin's Albatross	*Thalassarche salvini*	67	3	4%	3
Northern Giant Petrel	*Macronectes halli*	13	7	54%	4
Southern Giant Petrel	*Macronectes giganteus*	125	78	62%	8
Northern Fulmar	*Fulmarus glacialis*	3095	2537	82%	26
Southern Fulmar	*Fulmarus glacialoides*	179	41	23%	8
Antarctic Petrel	*Thalassoica antarctica*	196	3	2%	3
Cape Petrel	*Daption capense*	282	54	19%	12
Snow Petrel	*Pagodroma nivea*	410	5	1%	3

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Blue Petrel	*Halobaena caerulea*	121	88	73%	4
Broad-billed Prion	*Pachyptila vittata*	393	61	16%	3
Salvin's Prion	*Pachyptila salvini*	730	155	21%	4
Antarctic Prion	*Pachyptila desolata*	81	33	41%	6
Slender-billed Prion	*Pachyptila belcheri*	243	66	27%	6
Fairy Prion	*Pachyptila turtur*	1123	181	16%	4
Kerguelen Petrel	*Aphrodroma brevirostris*	70	5	7%	4
White-winged Petrel	*Pterodroma leucoptera*	209	32	15%	4
Collared Petrel	*Pterodroma brevipes*	3	2	67%	1
Stejneger's Petrel	*Pterodroma longirostris*	72	48	67%	3
Cook's Petrel	*Pterodroma cookii*	16	5	31%	2
Pycroft's Petrel	*Pterodroma pycrofti*	7	3	43%	2
Bonin Petrel	*Pterodroma hypoleuca*	72	29	40%	3
Black-winged Petrel	*Pterodroma nigripennis*	105	4	4%	3
Murphy's Petrel	*Pterodroma ultima*	12	1	8%	2
Providence Petrel	*Pterodroma solandri*	111	12	11%	3
Kermadec Petrel	*Pterodroma neglecta*	19	0	0%	2
Trindade Petrel	*Pterodroma arminjoniana*	37	9	24%	2
Herald Petrel	*Pterodroma heraldica*	12	0	0%	2
Phoenix Petrel	*Pterodroma alba*	30	0	0%	2
Barau's Petrel	*Pterodroma baraui*	98	45	46%	2
Mottled Petrel	*Pterodroma inexpectata*	10	1	10%	4
White-necked Petrel	*Pterodroma cervicalis*	24	2	8%	4
Juan Fernandez Petrel	*Pterodroma externa*	287	2	1%	2
Soft-plumaged Petrel	*Pterodroma mollis*	21	3	14%	3
Black-capped Petrel	*Pterodroma hasitata*	57	1	2%	1
Atlantic Petrel	*Pterodroma incerta*	134	28	21%	4
White-headed Petrel	*Pterodroma lessonii*	6	1	17%	1
Great-winged Petrel	*Pterodroma macroptera*	4	0	0%	1
Grey-faced Petrel	*Pterodroma gouldi*	4	0	0%	1
Grey Petrel	*Procellaria cinerea*	12	1	8%	2
White-chinned Petrel	*Procellaria aequinoctialis*	817	83	10%	14
Spectacled Petrel	*Procellaria conspicillata*	19	5	26%	3
Westland Petrel	*Procellaria westlandica*	17	3	18%	2
Black Petrel	*Procellaria parkinsoni*	10	1	10%	2
Wedge-tailed Shearwater	*Ardenna pacifica*	1277	229	18%	15
Buller's Shearwater	*Ardenna bulleri*	4	4	100%	2
Short-tailed Shearwater	*Ardenna tenuirostris*	2358	1754	74%	17
Sooty Shearwater	*Ardenna grisea*	1169	617	53%	20

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Great Shearwater	*Ardenna gravis*	555	422	76%	14
Flesh-footed Shearwater	*Ardenna carneipes*	638	319	50%	8
Scopoli's Shearwater	*Calonectris diomedea*	1	1	100%	1
Cory's Shearwater	*Calonectris borealis*	624	430	69%	8
Christmas Shearwater	*Puffinus nativitatis*	44	9	20%	2
Fluttering Shearwater	*Puffinus gavia*	81	11	14%	2
Hutton's Shearwater	*Puffinus huttoni*	6	1	17%	2
Newell's Shearwater	*Puffinus newelli*	48	17	35%	2
Manx Shearwater	*Puffinus puffinus*	175	73	42%	11
Yelkouan Shearwater	*Puffinus yelkouan*	31	22	71%	1
Balearic Shearwater	*Puffinus mauretanicus*	46	32	70%	1
Little Shearwater	*Puffinus assimilis*	23	7	30%	3
Audubon's Shearwater	*Puffinus lherminieri*	175	50	29%	2
Mascarene Petrel	*Pseudobulweria aterrima*	1	1	100%	1
Tahiti Petrel	*Pseudobulweria rostrata*	190	2	1%	4
Bulwer's Petrel	*Bulweria bulwerii*	98	2	2%	4
Peruvian Diving-petrel	*Pelecanoides garnotii*	103	4	4%	1
South Georgia Diving-petrel	*Pelecanoides georgicus*	1	0	0%	1
Common Diving-petrel	*Pelecanoides urinatrix*	209	17	8%	5
Pelecaniformes					
Australian Pelican	*Pelecanus conspicillatus*	15	4	27%	1
Great White Pelican	*Pelecanus onocrotalus*	1	1	100%	1
Suliformes					
Lesser Frigatebird	*Fregata ariel*	1	0	0%	1
Great Frigatebird	*Fregata minor*	84	23	27%	2
Magnificent Frigatebird	*Fregata magnificens*	11	0	0%	1
Northern Gannet	*Morus bassanus*	60	7	12%	6
Cape Gannet	*Morus capensis*	2	1	50%	1
Australasian Gannet	*Morus serrator*	19	1	5%	2
Red-footed Booby	*Sula sula*	190	4	2%	3
Brown Booby	*Sula leucogaster*	52	9	17%	3
Masked Booby	*Sula dactylatra*	661	240	36%	5
Little Pied Cormorant	*Microcarbo melanoleucos*	1	0	0%	1
Guanay Cormorant	*Leucocarbo bougainvilliorum*	363	12	3%	1
Imperial Shag	*Leucocarbo atriceps*	1	0	0%	1
Double-crested Cormorant	*Nannopterum auritus*	7	0	0%	3
Pelagic Cormorant	*Urile pelagicus*	14	2	14%	3
European Shag	*Gulosus aristotelis*	51	27	53%	2
Great Cormorant	*Phalacrocorax carbo*	96	4	4%	4

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Great Pied Cormorant	*Phalacrocorax varius*	47	6	13%	4
Charadriiformes					
Snowy sheathbill	*Chionis albus*	2	0	0%	1
Black-faced sheathbill	*Chionis minor*	3	3	100%	1
Red-necked Phalarope	*Phalaropus lobatus*	39	9	23%	2
Red Phalarope	*Phalaropus fulicarius*	74	56	76%	4
Brown Noddy	*Anous stolidus*	187	5	3%	6
Lesser Noddy	*Anous tenuirostris*	24	9	38%	2
Black Noddy	*Anous minutus*	44	1	2%	2
Blue Noddy	*Anous ceruleus*	3	0	0%	1
Common White Tern	*Gygis alba*	54	1	2%	3
Sabine's Gull	*Xema sabini*	3	1	33%	3
Ivory Gull	*Pagophila eburnea*	1	0	0%	1
Red-legged Kittiwake	*Rissa brevirostris*	61	10	16%	2
Black-legged Kittiwake	*Rissa tridactyla*	574	46	8%	9
Bonaparte's Gull	*Larus philadelphia*	36	6	17%	2
Black-headed Gull	*Larus ridibundus*	66	21	32%	5
Brown-hooded Gull	*Larus maculipennis*	3	0	0%	1
Silver Gull	*Larus novaehollandiae*	14	1	7%	2
Laughing Gull	*Larus atricilla*	14	2	14%	1
Mediterranean Gull	*Larus melanocephalus*	5	1	20%	2
Audouin's Gull	*Larus audouinii*	16	2	13%	2
Pacific Gull	*Larus pacificus*	43	1	2%	1
Black-tailed Gull	*Larus crassirostris*	19	19	100%	1
Ring-billed Gull	*Larus delawarensis*	2	0	0%	1
Mew Gull	*Larus canus*	364	8	2%	4
Kelp Gull	*Larus dominicanus*	1929	280	15%	6
Lesser Black-backed Gull	*Larus fuscus*	439	40	9%	4
European Herring Gull	*Larus argentatus*	14	4	29%	2
Yellow-legged Gull	*Larus michahellis*	479	239	50%	5
Arctic Herring Gull	*Larus smithsonianus*	33	24	73%	2
Iceland Gull	*Larus glaucoides*	3	2	67%	2
Glaucous-winged Gull	*Larus glaucescens*	676	73	11%	4
Glaucous Gull	*Larus hyperboreus*	33	1	3%	1
Great Black-backed Gull	*Larus marinus*	13	7	54%	3
Aleutian Tern	*Onychoprion aleuticus*	8	0	0%	1
Sooty Tern	*Onychoprion fuscatus*	242	11	5%	7
Bridled Tern	*Onychoprion anaethetus*	67	0	0%	1
Grey-backed Tern	*Onychoprion lunatus*	41	0	0%	3

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Little Tern	*Sternula albifrons*	3	0	0%	1
Least Tern	*Sternula antillarum*	1	0	0%	1
Common Gull-billed Tern	*Gelochelidon nilotica*	3	0	0%	1
Caspian Tern	*Hydroprogne caspia*	2	0	0%	1
Black Tern	*Chlidonias niger*	9	1	11%	2
Roseate Tern	*Sterna dougallii*	1	0	0%	1
South American Tern	*Sterna hirundinacea*	3	0	0%	1
Common Tern	*Sterna hirundo*	787	7	1%	3
Arctic Tern	*Sterna paradisaea*	47	0	0%	3
Antarctic Tern	*Sterna vittata*	17	0	0%	1
Forster's Tern	*Sterna forsteri*	3	0	0%	1
Snowy-crowned Tern	*Sterna trudeaui*	1	0	0%	1
Sandwich Tern	*Thalasseus sandvicensis*	45	0	0%	2
Royal Tern	*Thalasseus maximus*	28	0	0%	2
Greater Crested Tern	*Thalasseus bergii*	4	0	0%	2
Long-tailed Jaeger	*Stercorarius longicaudus*	19	3	16%	2
Arctic Jaeger	*Stercorarius parasiticus*	7	2	29%	3
Pomarine Jaeger	*Stercorarius pomarinus*	43	2	5%	3
Great Skua	*Catharacta skua*	1521	169	11%	4
South Polar Skua	*Catharacta maccormicki*	25	0	0%	1
Brown Skua	*Catharacta antarctica*	577	4	1%	4
Rhinoceros Auklet	*Cerorhinca monocerata*	59	0	0%	4
Tufted Puffin	*Fratercula cirrhata*	647	150	23%	4
Atlantic Puffin	*Fratercula arctica*	383	48	13%	4
Horned Puffin	*Fratercula corniculata*	270	99	37%	3
Cassin's Auklet	*Ptychoramphus aleuticus*	1059	78	7%	6
Parakeet Auklet	*Aethia psittacula*	325	281	86%	3
Least Auklet	*Aethia pusilla*	102	1	1%	2
Whiskered Auklet	*Aethia pygmaea*	513	1	0%	3
Crested Auklet	*Aethia cristatella*	125	1	1%	2
Marbled Murrelet	*Brachyramphus marmoratus*	164	0	0%	3
Kittlitz's Murrelet	*Brachyramphus brevirostris*	22	0	0%	2
Black Guillemot	*Cepphus grylle*	4	0	0%	2
Pigeon Guillemot	*Cepphus columba*	71	1	1%	3
Ancient Murrelet	*Synthliboramphus antiquus*	89	0	0%	3
Guadalupe Murrelet	*Synthliboramphus hypoleucus*	5	0	0%	1
Razorbill	*Alca torda*	108	1	1%	4
Little Auk	*Alle alle*	427	119	28%	7
Thick-billed Murre	*Uria lomvia*	2575	143	6%	9
Common Murre	*Uria aalge*	814	45	6%	9
	Marine Mammals				

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Carnivora					
Seals (Pinnipeds)					
Otariidae					
South American fur seal	*Arctocephalus australis*	184	43	23%	2
Antarctic fur seal	*Arctocephalus gazella*	3453	9	0%	2
Subantarctic fur seal	*Arctocephalus tropicalis*	4905	0	0%	1
New Zealand sea lion	*Phocarctos hookeri*	51	6	12%	1
Phocidae					
Grey seal	*Halichoerus grypus*	126	6	5%	2
Mediterranean monk seal	*Monachus monachus*	2	1	50%	1
Harp seal	*Phoca groenlandica*	1	1	100%	1
Harbour seal	*Phoca vitulina*	1062	26	2%	3
Baleen whales (Mysticeti)					
Balaenopteridae					
Common minke whale	*Balaenoptera acutorostrata*	2	2	100%	2
Sei whale	*Balaenoptera borealis*	1	1	100%	1
Bryde's whale	*Balaenoptera edeni*	1	1	100%	1
Blue whale	*Balaenoptera musculus*	1	1	100%	1
Fin whale	*Balaenoptera physalus*	89	9	10%	5
Humpback whale	*Megaptera novaeangliae*	2	2	100%	2
Toothed whales (Odontoceti)					
Physeteridae					
Sperm whale	*Physeter macrocephalus*	145	37	26%	13
Kogiidae					
Pygmy sperm whale	*Kogia breviceps*	38	9	24%	8
Dwarf sperm whale	*Kogia sima*	1	1	100%	1
Ziphiidae					
Baird's beaked whale	*Berardius bairdii*	86	23	27%	1
Northern bottlenose whale	*Hyperoodon ampullatus*	21	3	14%	2
Longman's beaked whale	*Indopacetus pacificus*	6	5	83%	3
Sowerby's beaked whale	*Mesoplodon bidens*	8	2	25%	2
Hubbs' beaked whale	*Mesoplodon carlhubbsi*	3	1	33%	1
Gervais' beaked whale	*Mesoplodon europaeus*	40	3	8%	3
Ginkgo-toothed beaked whale	*Mesoplodon gingkodens*	2	1	50%	1
Deraniyagala's beaked whale	*Mesoplodon hotaula*	1	1	100%	1
True's beaked whale	*Mesoplodon mirus*	8	6	75%	3
Stejneger's beaked whale	*Mesoplodon stejnegeri*	13	3	23%	2
Blainville's beaked whale	*Mesoplodon densirostris*	9	5	56%	3
Cuvier's beaked whale	*Ziphius cavirostris*	69	13	19%	6
Pontoporiidae					
Franciscana	*Pontoporia blainvillei*	197	44	22%	2
Monodontidae					
Narwhal	*Monodon monoceros*	1	1	100%	1

English name	*Scientific name*	sample size	Individuals with plastic	Sp %FO	study records
Delphinidae					
Common dolphin	*Delphinus delphis*	443	69	16%	5
Short-finned pilot whale	*Globicephala macrorhynchus*	42	1	2%	2
Long-finned pilot whale	*Globicephala melas*	5	3	60%	2
Risso's dolphin	*Grampus griseus*	31	12	39%	7
Fraser's dolphin	*Lagenodelphis hosei*	4	2	50%	2
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	1	1	100%	1
White-beaked dolphin	*Lagenorhynchus albirostris*	1	1	100%	1
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	1	1	100%	1
Killer whale	*Orcinus orca*	16	5	31%	3
Melon-headed whale	*Peponocephala electra*	2	2	100%	2
False killer whale	*Pseudorca crassidens*	2	0	0%	2
Indo-Pacific humpback dolphin	*Sousa chinensis*	3	3	100%	1
Guiana river dolphin	*Sotalia guianensis*	78	2	3%	2
Striped dolphin	*Stenella coeruleoalba*	207	13	6%	7
Atlantic spotted dolphin	*Stenella frontalis*	110	14	13%	2
Rough-toothed dolphin	*Steno bredanensis*	23	4	17%	3
Common bottlenose dolphin	*Tursiops truncatus*	1526	72	5%	9
Phocoenidae					
Narrow-ridged finless porpoise	*Neophocaena asiaeorientalis*	7	7	100%	1
Harbour porpoise	*Phocoena phocoena*	1852	100	5%	9
Manatees and Dugongs (Sirenia)					
West Indian/Florida manatee	*Trichechus manatus*	4604	281	6%	3
Reptiles					
Turtles					
Cheloniidea					
Loggerhead turtle	*Caretta caretta*	3919	843	22%	41
Kemp's ridley turtle	*Lepidochelys kempii*	304	106	35%	6
Olive ridley turtle	*Lepidochelys olivacea*	179	81	45%	10
Green turtle	*Chelonia mydas*	2720	1275	47%	49
Hawksbill turtle	*Eretmochelys imbricata*	86	31	36%	9
Flatback turtle	*Natator depressis*	2	2	100%	2
Dermochelyidae					
Leatherback turtle	*Dermochelys coriacea*	669	198	30%	23

Online Supplement Table 3. Comparison of data on ingestion and entanglement from Kühn et al. (2015) and the current data

	Kühn et al. 2015*							Current review						
Taxa	*species*	Ingestion		Enatanglement		Ingestion & Entanglement		*species*	Ingestion		Enatanglement		Ingestion & Entanglement	
	n	n	%	n	%	n	%	*n*	n	%	n	%	n	%
Seabirds														
Anseriformes (marine ducks)	*13*	1	7.70%	5	38.50%	5	38.50%	*26*	2	8%	6	23%	6	23%
Podicipediformes (grebes)	*23*	0	0%	6	26.10%	6	26.10%	*20*	0	0%	6	30%	6	30%
Phaetontiformes (tropicbirds)	*3*	2	66.70%	0	0%	2	66.70%	*3*	2	67%	1	33%	3	100%
Gaviformes (loons)	*5*	3	60%	3	60%	4	80%	*5*	4	80%	5	100%	5	100%
Sphenisciformes (penguins)	*18*	5	27.80%	6	33.30%	9	50%	*18*	5	28%	6	33%	9	50%
Procellariiformes (tubenoses)	*141*	84	59.60%	24	17%	85	60.30%	*144*	91	63%	18	13%	91	63%
Pelecaniformes (pelicans)	*8*	2	25%	4	50%	5	62.50%	*8*	3	38%	4	50%	5	63%
Suliformes (gannets, cormorants)	*56*	12	21.40%	16	28.60%	20	35.70%	*49*	15	31%	19	39%	24	49%
Charadriiformes (gulls, terns, skuas, auks)	*139*	55	39.60%	39	28.10%	67	48.20%	*136*	58	43%	47	35%	77	57%
All Seabirds	***406***	**164**	**40.40%**	**103**	**25.40%**	**203**	**50%**	***409***	**180**	**44%**	**112**	**27%**	**226**	**55%**
Marine Mammals														
Ursidae (polar bears)	*1*	0	0%	1	100%	1	100%	*1*	0	0%	1	100%	1	100%
Mustelidae (marine otters)	*2*	0	0%	1	50%	1	50%	*2*	0	0%	2	100%	2	100%
Pinnipedia (seals)	*33*	12	36.40%	22	66.70%	22	66.70%	*31*	15	48%	22	71%	22	71%
Cetartiodactyla (whales)	*80*	47	58.75%	25	31.25%	54	67.50%	*86*	52	60%	22	26%	59	69%
Mysticeti (baleen whales)	*13*	7	53.80%	9	69.20%	10	76.90%	*14*	8	57%	10	71%	12	86%
Odontoceti (toothed whales)	*67*	40	59.70%	16	23.90%	44	65.70%	*72*	44	61%	12	17%	47	65%
Sirenia (manatees, dugongs)	*5*	3	60%	2	40%	3	60%	*3*	2	67%	2	67%	2	67%
All Marine Mammals	***123***	**62**	**50.40%**	**51**	**41.50%**	**81**	**65.90%**	***123***	**69**	**56%**	**49**	**40%**	**86**	**70%**
Other taxa														
All Turtles	***7***	**7**	**100%**	**7**	**100%**	**7**	**100%**	***7***	**7**	**100%**	**7**	**100%**	**7**	**100%**
All Squamata (sea snakes)	***62***	**0**	**0%**	**2**	**3.20%**	**2**	**3.20%**	***62***	**0**	**0%**	**2**	**3%**	**2**	**3%**
All Fish	***32554***	**92**		**89**		**166**		***31243***	**363**		**101**		**430**	
All Invertebrates	***159000***	**6**		**92**		**99**		***159000***	**82**		**83**		**163**	
All Species		**331**		**344**		**557**			**701**		**354**		**914**	

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