Supplementary Material S1. Creating a list of the marine mammal species that occur in an area, such as the EEZ of a country based on Red List of Threatened Species maintained by the International Union for Conservation of Nature (IUCN)

https://www.iucnredlist.org/search/ provides search tools for filtering lists based on location, taxonomy, and other specifications.

A simple search filtering by taxonomy (Kingdom Animalia, Phylum Chordata, Class Mammalia) and marine region (e.g., Atlantic - southwest) will give a comprehensive list of all marine mammal species that might occur in the marine waters of a specific area. Each species can be clicked on to bring up a distribution map for that species that will indicate the range of the species. Other tools are available, such as the ability to draw a polygon around a specific area on a map, and bring up a list of species for just that area.

The IUCN Red List website also provides a tool for downloading spatial data for plotting, including polygons in shapefile format containing the known range of each species. https://www.iucnredlist.org/resources/spatial-data-download

Supplementary Material S2. Information needed to describe a fishery.

Characterize each fishery	● What gear is used and how is it fished? ○ Gear type (e.g., gillnet, longline, trawl, purse seine, trap/pot, aquaculture operation, etc.) ○ Description of gear (e.g., line diameter, hook/mesh size, anchoring systems, surface systems, etc.) ○ Target species ○ Fishing practices (e.g., hook sizes, mesh size, bait type, depth fished, soak times, trawl speeds, methods of deployment - mechanical versus manual, lights used to concentrate target species, etc.) ● What is the fishing effort? ○ Number of participants/vessels ○ Number of fishing trips ○ Number of sets/tows per day ○ Number of hooks/nets/pots per set ○ Length of line/net deployed per set ○ Duration of sets/tows ● Where does fishing occur? ○ Geographic location (e.g., lat/long?) ○ Marine zone (e.g., coastal, continental shelf edge, deep water) ○ Location gear is deployed within the water column (e.g., surface, bottom, mid-water)

	● When does fishing occur? ○ Seasonal or year-round ○ Time of day gear fished (deployed and hauled) (e.g., day, night, 24H) ● What is the nature of the interaction between the fishing gear and marine mammals? ○ Type of interaction (e.g., hooking, entanglement, entrapment, depredation) ○ Disposition of marine mammals when released from gear (e.g., dead, injured, gear remaining, etc.)
Evaluate Data Quality	● No data on all of the following: effort/location/timing/nature of interactions ● Limited data for some of the following: effort/location/timing/nature of interactions ● Minimal data on all of the following: effort/location/timing/nature of interactions ● Robust, but potentially biased, data on nature of interaction (e.g., observer data), characteristics of hauls/tows/sets with and without interactions, short-term data (1-2 years) ● Unbiased data, robust data on nature of interaction (e.g., understanding animal behavior), characteristics of hauls/tows/sets with and without interactions, multi-year data accounting for inter-annual variability

Supplementary Material S3. Contents of US population (stock) assessment reports.

An assessment report serves as a concise summary of all essential information about a population, and sources of anthropogenic threats to that population, especially from fisheries bycatch. Each Report should include:

1. Description of the population's geographic range.
2. An estimate of the size of the population, including a CV and confidence limit.
    1. If needed for a calculation, also an estimate of the Minimum population size.
3. Current population trends.
4. Current and maximum net productivity rates.
5. The calculation of a mortality reference point, such as a PBR.
6. Estimates of annual mortality from bycatch in fisheries, along with other human-caused mortality, by source (attempt to summarize what is known about fisheries bycatch mortality in the absence of observer data using information about incidental mortality and serious injury from logbooks, fishermen's self-reports, strandings, etc).
7. Descriptions of other factors that may be causing a decline or impeding the recovery of a depleted population.
8. A summary of the status of the stock (listed as endangered or not, whether human-caused mortality exceed the bycatch reference point or not)

Supplementary Material S4.

Across all marine mammal stocks in the USA for which an abundance estimate was available, 63% used line transect methods, with 44% from ships or boats, and 19% from aerial surveys (Table S4-1). 22% had abundance estimates based on individual identification, 10% were based on an all-age haul-out count, and 4% were based on pup counts. All porpoise estimates were based on line-transect surveys, with two thirds of those being aerial surveys. 67% of the dolphin abundance estimates were based on line transect surveys (mostly from ships or boats), with the other 33% from individual identification. 83% of the small whale abundance estimates were from line-transect surveys (nearly all from ships or boats), with 15% from individual identification. 66% of the large whale estimates were from line-transect surveys, with 33% from individual identification. Within pinnipeds, only one phocid stock (monk seals, which used a combination of several methods) and one otariid stock had abundance estimates based at least partly on individual identification. The majority of abundance estimates for phocids were based on all-age haul-out counts, usually including a correction for the fraction hauled-out from telemetry, with a smaller number based on pup counts. Abundance estimates for otariids were split nearly evenly between all-age haul-out counts and pup counts.

Supplementary Table 1. Methods for surveying marine mammals in the USA, summarized from the most recent Stock Assessment Reports available. The number in the table is the number of stocks in that Taxa group that had their abundance estimated using that method. If more than one method was used to estimate abundance for the stock, the two primary methods were both counted. For example, this occurred multiple times for cetacean stocks in the Gulf of Maine, where ship and aerial surveys were used to cover the entire area. At the time this was compiled, this was from

the 2019 Final Stock Assessment Reports, or from an earlier version (e.g., 2017 or 2018) if not revised in 2019. Table S2 contains the underlying data on which the following summary is based, showing the abundance method for each stock. All versions of the Stock Assessment Reports are available here:

https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

Taxa group	Ship/boat line-transect survey	Aerial line-transect survey	Individual ID	All-age haul out count	Pup counts	Other	Not available	Total
Cetacean - porpoise	4	9						13
Cetacean - dolphin	37	18	27				32	82
Cetacean - small whale	36	8	8			1	16	53
Cetacean - large whale	19	3	10			1	4	33
Pinnipeds- Phocids		4	1	18	4	4		31
Pinnipeds- Otariids			1	3	4			8
Total	96	42	47	21	8	6	52	220

Categories

Ship/boat line-transect survey. This includes any survey conducted from a ship or boat using visual line-transect (distance sampling) methods, which generally involves the estimation of a perpendicular detection function. Strip-transect surveys are included here as a special case of a line-transect survey. Information about whether an availability correction factor was calculated (e.g., for submerged animals) was not summarized.

Aerial line-transect survey. This includes any survey conducted from an airplane, helicopter, or drone using visual, photograph, or other sensor-based line-transect (distance sampling) methods. Strip-transect surveys are included here as a special case of a line-transect survey. Information

about whether an availability correction factor was calculated (e.g., for submerged animals) was not summarized.

Individual ID. This included any abundance estimate made using identification of individual animals, including the use of photographs, marking of individuals, or genetic-based identification. Estimates in this category were usually made using mark-recapture analysis methods, but also included other methods such as a direct count/cenus of individuals or other methods (e.g., discovery curve method).

All-age haul-out count. This included any survey of pinnipeds involving a direct count of individuals of all age-groups hauled-out on land or ice, including surveys from land, ship or boat, airplane, or drone. This could involve direct counting, or the taking of photographs or video to be used to count individuals later. Most of these surveys also included a correction for the fraction of the population hauled-out from additional telemetry studies.

Pup counts. This included any survey of pinnipeds involving a direct count of the number of newborn pup hauled-out on land or ice, including surveys from land, ship or boat, airplane, or drone. This could involve direct counting, or the taking of photographs or video to be used to count individuals later. All of these surveys also included some method for extrapolating the pup count to an estimate of the total population size, usually by using a life-history model.

Other. This category was used to include a small number of surveys that did not easily fit into the other categories. This included the Cook Inlet beluga whale stock, where an aerial survey

represents a census of groups (so not a line-transect survey), with video data used to estimate group sizes. This also included four ice seal stocks in Alaska, where multiple methods were used involving an aerial strip transect survey using photographs and thermal imaging, with substantial modeling including spatial regression, species misclassification, and probability of detection; these were counted in both the aerial survey column and the other column.

Supplementary Table 2 (excel file). Methods for surveying marine mammals in the USA, summarized from the most recent Stock Assessment Reports available. Listed is the taxa group, scientific name, common Name, stock name, and the reference to the document where the abundance estimate was calculated. At the time this was compiled, this was from the 2019 Final Stock Assessment Reports, or from an earlier version (e.g., 2017 or 2018) if not revised in 2019. https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock