

Supporting Information:

Appendix A: Data considerations inventoried, checked for quality and completeness, and utilized in some portion of the study.

Data Layer:	Description:	Source:
<i>Military</i>		
Danger Zones and Restricted Areas	These data represent the location of Danger Zones and Restricted Areas within coastal and marine waters, as outlined by the Code of Federal Regulations (CFR) and the Raster Navigational Charts (RNC). The CFR defines a Danger Zone as: "A defined water area (or areas) used for target practice, bombing, rocket firing or other especially hazardous operations, normally for the armed forces. The danger zones may be closed to the public on a full-time or intermittent basis, as stated in the regulations."	Code of Federal Regulations (CFR) and the Raster Navigational Charts (RNC)
Unexploded Ordnances	Unexploded ordnances are explosive weapons (bombs, bullets, shells, grenades, mines, etc.) that did not explode when they were employed and still pose a risk of detonation, potentially many decades after they were used or discarded. Sea disposal of munitions was an accepted international practice until 1970, when the Department of Defense prohibited the practice, and Congress followed up by passing the Marine Protection, Research, and Sanctuaries Act in 1972, generally banning sea disposal.	NOAA Office of Coast Survey (OCS); City of San Diego
All other military areas (e.g., Water Drop Zones, Military Ranges, Detonation Areas, Mine Warfare Areas, Military Anchorage Areas, Military Training Areas, Search and Rescue Areas, and Active Test Areas)	Numerous military training activities and areas are associated with the Southern California Operating Complex (SOCAL), the Southern California Offshore Range (SCORE), and the Silver Strand Training Complex (SSTC) located within and around the San Diego Bay area. Military training activities vary temporally and spatially, with notice to airmen and notice to mariners provided when activities occur.	U.S. Fleet Force: Environmental Readiness Branch
<i>Industry and Recreation</i>		
Beach Nourishment Projects	Projects where beach stabilization is occurring; nourishment sand is brought into the nourishment area to build back the berm that has lessened due to erosional events (e.g., storms)	U.S. Army Corps of Engineers

Catalina Sea Ranch Aquaculture Site	Catalina Sea Ranch is a mussel longline farm located southeast of Long Beach, about 6 miles from the coast in federal waters. Catalina Sea Ranch is planning to expand the initial 100 acres to over 1,000 acres.	CSR
Oil and Gas Drilling Platforms, Pipelines and Active Leases	Infrastructure for oil and gas offshore activities including drilling platforms for extracting minerals, particularly oil and gas, pipelines for transporting to onshore facilities, and the active leases, which include a portion of the Outer Continental Shelf (OCS) Lease Blocks that are currently leased to private entities for oil and/or gas mining rights. Importantly, active leases include those that are exploratory, non-producing, and producing.	Bureau of Ocean Energy Management (BOEM)
NOAA Charted Submarine Cables	These data depict the occurrence of submarine cables in and around U.S. navigable waters. Data are from NASCA and NOAA charted cables.	NOAA Office of Coast Survey (OCS)
Ocean Disposal Sites	Ocean disposal sites, including both active and discontinued or historical sites. Nearly all material ocean dumped today is dredged material (sediments) removed from the bottom of waterbodies in order to maintain navigation channels and berthing areas.	NOAA Office of Coast Survey (OCS)
Existing Aquaculture Areas	The presence and location of aquaculture sites were derived from multiple state websites and include only those in coastal and marine saltwater areas. The following states are included in this layer: Alaska, California, Connecticut, Florida, Louisiana, Maine, New York, North Carolina, Rhode Island, and Virginia.	NOAA Office for Coastal Management (OCM) & other state and federal agencies
Wastewater Outfall Discharge Structures	These structures run throughout the Southern California Bight area, particularly in populated areas. The most notable outfall pipes and diffusers are the Hyperion (average discharge rate of over 300 MGD) and Point Loma outfalls. Point Loma also a significant set of monitoring buoys that have a	Environmental Protection Agency (EPA)
<i>Commercial Fishing</i>		
Trawl Fishery Track Lines	Logbook-derived state-managed trawl fishery track lines; inclusive of all state-managed trawl fisheries between 2010 and 2016 (connected line between start and stop location for trawls)	California Department of Fish and Wildlife

Squid Landings by Micro-Block	Total squid landings (in short tonnes) by microblock (~700 acres) for the period of 2012-2017	California Department of Fish and Wildlife
Fishery Landings Receipt Data by Block	Total landings by fishery landings block, inclusive of multiple (20+) commercial fisheries species (e.g., halibut, spiny lobster, squid, etc.)	California Department of Fish and Wildlife
<i>Navigation</i>		
Principal Ports	Principal Ports are defined by port limits or U.S. Army Corps of Engineers (USACE) projects, these exclude non-USACE projects not authorized for publication. The determination for the published Principal Ports is based upon the total tonnage for the port for the particular year; therefore, the top 150 list can vary from year to year.	U.S. Army Corps of Engineers (USACE)
Shallow Draft Ports	National database of shallow draft ports, or ports accessible by small commercial and/or recreational vessels.	U.S. Army Corps of Engineers (USACE)
Aids to Navigation	Structures intended to assist a navigator to determine position or safe course, or to warn of dangers or obstructions to navigation. This dataset includes lights, signals, buoys, day beacons, and other aids to navigation.	U.S. Coast Guard
Anchorage Areas	An anchorage area is a place where boats and ships can safely drop anchor.	NOAA Office of Coast Survey (OCS)
Pilot Boarding Stations	Pilot Boarding Stations are specific point locations depicted on NOAA navigational charts where pilots rendezvous with ships.	NOAA Office of Coast Survey (OCS)
Environmental Sensors and Buoys	Buoys or structures, often near the surface of the water column, intended to collect water quality or other environmental data	NOAA National Data Buoy Center
Artificial Reefs	An artificial reef is a human-made underwater structure, typically built to promote marine life in areas with a generally featureless bottom.	NOAA Office for Coastal Management (OCM) & other state and federal agencies
Wrecks and Obstructions	In 1981, NOAA's National Ocean Service (NOS) implemented the Automated Wreck and Obstruction Information System (AWOIS) to assist in planning hydrographic survey operations and to catalog and store a substantial volume of reported wrecks and obstructions that are considered navigational hazards within U.S.	NOAA Office of Coast Survey (OCS)

	coastal waters. AWOIS is not a comprehensive record of wrecks in any particular area.	
Electronic Nautical Chart (ENC) Wrecks	Coast Survey compiles NOAA's electronic navigational charts (NOAA ENC) from sources on features that are navigationally significant. As the official chart data used in electronic chart and display information systems (ECDIS), ENCs are the authoritative source of information about known or reported wrecks and are much more comprehensive than AWOIS. However, the features in an ENC typically lack the historic information and context provided by AWOIS.	NOAA Office of Coast Survey (OCS)
RULET (Polluting) Wrecks	NOAA's Remediation of Underwater Legacy Environmental Threats (RULET) wrecks dataset contains information on potentially polluting wrecks.	NOAA Office of Response and Restoration (ORR)
Maintained Channels	This layer shows coastal channels and waterways that are maintained and surveyed by the U.S. Army Corps of Engineers (USACE).	U.S. Army Corps of Engineers (USACE)
Shipping Lanes	Shipping zones delineate activities and regulations for marine vessel traffic. Traffic lanes define specific traffic flow, while traffic separation zones assist opposing streams of marine traffic.	NOAA Office of Coast Survey (OCS)
AIS Vessel Count (including total count and by vessel type)	Automatic Identification Systems (AIS) are a navigation safety device that transmits and monitors the location and characteristics of many vessels in U.S. and international waters in real-time. This dataset represents vessel counts by vessel type for 2017. Vessel count raster data layers were created by CASS Spatial team and are derived from vessel density raster data layers generated from raw AIS data.	Bureau of Ocean Energy Management (BOEM)
<i>Natural Resources</i>		
Deep Sea Corals	The National Oceanic and Atmospheric Administration (NOAA) Deep Sea Coral Research and Technology Program (DSCRTP) have developed a National Database for Deep Sea Corals and Sponges (database).	NOAA National Centers for Coastal Ocean Science (NCCOS)
Hardbottom Habitat	Distribution of known hardbottom habitat within the Santa Barbara Channel region. Hard bottom habitat generally occurs in the ocean where rocks or other hard surfaces are exposed from bottom sand or mud; this structure can serve as habitat for fish and invertebrate species.	NOAA National Ocean Service (NOS)

Critical Habitat Designations	The Endangered Species Act (ESA) requires the Federal government to designate critical habitat, areas of habitat essential to the species' conservation, for ESA listed species. This dataset is a compilation of the NOAA National Marine Fisheries Service and the U.S. Fish & Wildlife Service designated critical habitat in coastal areas.	NOAA National Marine Fisheries Service / U.S. Fish & Wildlife Service (FWS)
Essential Fish Habitat / Habitat Areas of Particular Concern	Essential Fish Habitat (EFH) represent important habitat areas for every life stage of federally managed species. Habitat Areas of Particular Concern (HAPC) are discrete subsets of Essential Fish Habitat (EFH) that provide extremely important ecological functions or are especially vulnerable to degradation.	NOAA National Marine Fisheries Service (NMFS)
Marine Protected Areas	The MPA Inventory is a comprehensive catalog that provides detailed information for existing marine protected areas in the United States.	NOAA National MPA Center
<i>Oceanographic and Biophysical</i>		
Bathymetry (water depth)	High-resolution (10 m) bathymetry data was obtained from NOAA's National Geophysical Data Center (NGDC). This bathymetric data is a composite of various sources, including NGDC, U.S. National Ocean Service (NOS), U.S. Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), and other federal, state, and local government agencies, academic institutions, and private companies. DEMs are referenced to the vertical tidal datum of Mean High Water (MHW) and horizontal datum of World Geodetic System 1984 (WGS84).	NOAA National Geophysical Data Center (NGDC)
Current Velocity and Direction	U.S. Integrated Ocean Observing System (IOOS) high-frequency radar data at 2 km resolution (SCCOOS 2021)	IOOS
Significant Wave Height	Pacific Northwest National Laboratory's SWAN (Simulating Waves Nearshore) model (Delft UT 2021).	PNNL
Water Temperature	MODIS Global Level 3 Mapped SST (via MGET) mean/min/max climatologies for 20-year period (1997 – 2016)	NASA MODIS
Salinity	Salinity data from HYCOM + NCODA Global 1/12 Degree Reanalysis, experiments 19.1 (1995-2012)	HYCOM

<i>Administrative Boundaries</i>		
Federal / State Waters Boundary	The Outer Continental Shelf Lands Act (OCSLA) boundary line (also known as State Seaward Boundary or Fed State Boundary) defines the seaward limit of a state's submerged lands and the landward boundary of federally managed OCS lands.	Bureau of Ocean Energy Management (BOEM)