Draft
Environmental Assessment
for a Fishing Program at
San Diego Bay National Wildlife Refuge
South San Diego Bay Unit

Date: March 2020

This Environmental Assessment (EA) evaluates the effects associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

Proposed Action:

The U.S. Fish and Wildlife Service (Service) is proposing to open fishing opportunities on the Service managed South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge (Refuge or NWR). In 2006, the Service published a final Comprehensive Conservation Plan and Environmental Impact Statement (CCP/EIS) for the Refuge. This draft EA is tiered from the 2006 CCP/EIS and focuses specifically on opening a portion of the South San Diego Bay Unit to sport fishing. The South San Diego Bay Unit encompasses approximately 2,300 acres of land and water located in the southern portion of San Diego Bay in San Diego County, California. Refuge habitats offer breeding, resting and foraging areas for a diverse assemblage of birds, a variety of fish and marine and terrestrial invertebrates, and a smaller array of amphibians, reptiles, and mammals. The Service is formally opening 875 acres, defined as the Project Area, of the South San Diego Bay Unit to sport fishing (see Figure 1).

This proposed action is often iterative and evolves over time during the process as the agency refines its proposal and learns more from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will be made at the conclusion of the public comment period for the EA and the Draft 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations. The Service cannot open a refuge to hunting and/or fishing until a final rule has been published in the Federal Register formally opening the refuge to hunting and/or fishing.

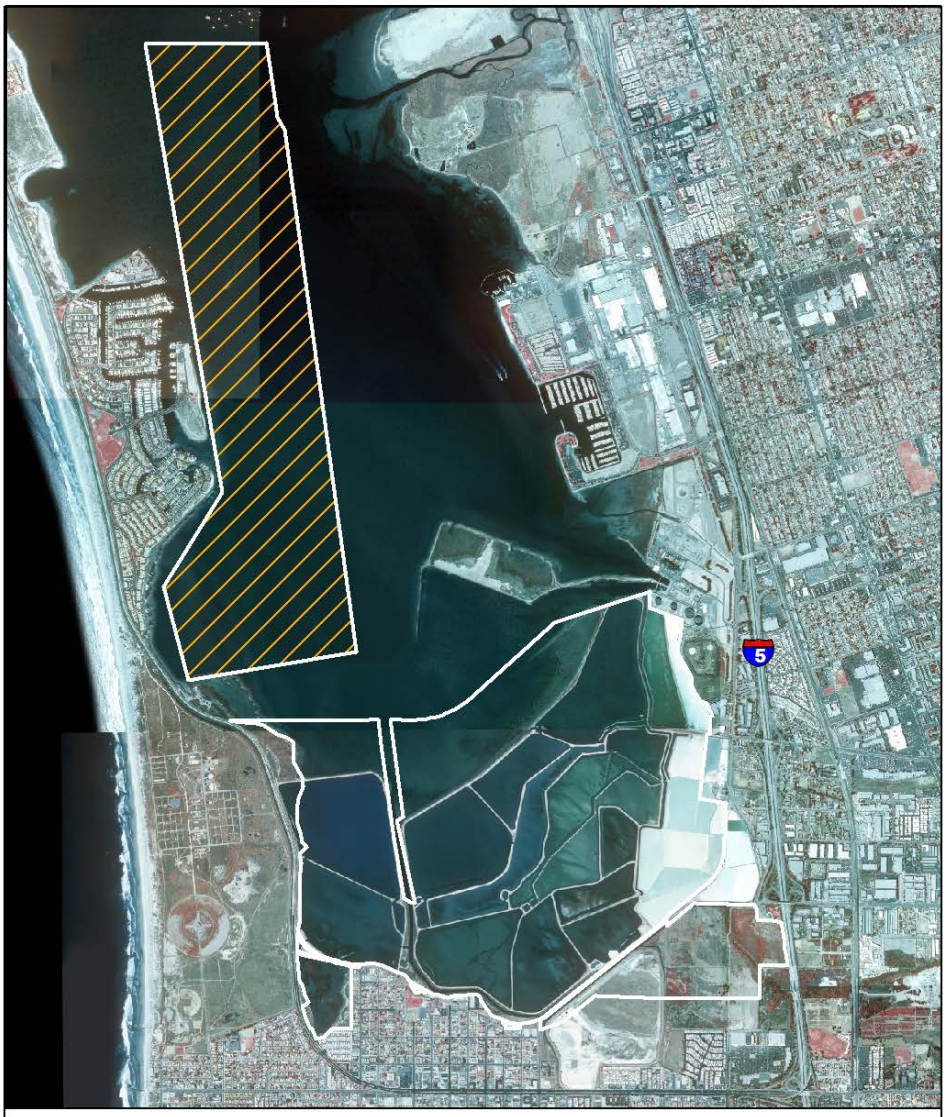

Figure 1
Refuge Area to be Opened to Fishing

Refuge Boundary - South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge
Proposed Fishing Area

Sources: USFWS, Local Agency Partnership (2 ft Imagery)

N

0 0.2 0.4 Miles

Carlsbad Field Office - 2019
/emilie/maps/SSDBAYFishing.mxd

Background:

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

The refuge was established pursuant to the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742a-742j, not including 742d-742l) and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543). The primary purpose of the refuge is to protect, manage, and restore habitats for federally listed endangered and threatened species and migratory birds, and to maintain and enhance the biological diversity of native plants and animals.

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSAA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is to:

"... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans"

The NWRSAA mandates the Secretary of the Interior in administering the System to (16 U.S.C. 668dd(a)(4):

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the NWRS are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the NWRS and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife;
- Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Therefore, it is a priority of the Service to provide for wildlife-dependent recreation opportunities, including hunting and fishing, when those opportunities are compatible with the

purposes for which the refuge was established and the mission of the National Wildlife Refuge System.

Fishing currently occurs in the Project Area. The waters in the South San Diego Bay Unit are considered United States Navigable Waters and as such are open to the public for boating and fishing. The shallow water depths in the South San Diego Bay Unit (1 foot to 6 feet at low tide), limit the type of boats used in this area to motorized and non-motorized shallow draft vessels.

Purpose and Need for the Proposed Action:

The purpose of this proposed action is to provide compatible wildlife-dependent recreational opportunities on the South San Diego Bay Unit of the Refuge. The need for the proposed action is to meet the Service's priorities and mandates as outlined by the NWRSAA to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the NWRS" and "ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses" 16 U.S.C. 668dd(a)(4)). The purpose and need for the action is tied to the management direction adopted in the 2006 CCP/EIS. Goal 4 of the CCP/EIS is to provide opportunities for compatible wildlife-dependent recreation and interpretation that foster public appreciation of the unique natural and cultural heritage of South San Diego Bay. Objective 4.4 is to maintain the current level of recreational boating and fishing opportunities occurring in the open water portions of the South San Diego Bay Unit.

Alternatives Considered

Alternative A – Proposed Action Alternative:

The refuge has prepared a fishing plan, which is presented in this document as the Proposed Action Alternative.

Under the Proposed Action Alternative, the Service would formally open a portion of the South San Diego Bay Unit to sport fishing. San Diego Bay provides habitat for harvestable fish allowed for legal take such as leopard shark, Pacific mackerel, spotted sand bass, and barred sand bass (CDFW 2019). Other legally harvestable species may be available depending on the season and tides, per State of California Regulations. Fishing is currently allowed year-round in accordance with the State of California Sport Fishing Regulations. Fishing in the South San Diego Bay Unit is restricted to the open waters in the northwest part of the Unit and is by boat or an appropriate floating device. There are no boat ramps on the Refuge and none are proposed, so fishing access would be through public and private boat ramps in the immediate vicinity of the refuge. Public boat ramps in the vicinity are in Chula Vista at Bayfront Park, near the Chula Vista Marina, and in National City at Pepper Park.

While fishing occurs in this area, the Service has not formally opened this part of the Refuge to fishing.

Refuge-specific regulations will be published in the Federal Register as part of the 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations.

Mitigation Measures to Avoid Conflicts:

- No mitigation measures are needed to avoid conflicts to other biological resources on the Refuge. The Sweetwater Marsh Unit and the active and restored salt ponds, as well as the shoreline, of the South San Diego Bay Unit would remain closed to fishing.

This alternative recognizes existing opportunities for public fishing and fulfills the Service's mandate under the National Wildlife Refuge System Improvement Act of 1997. The Service has determined that the fishing plan is compatible with the purposes of the San Diego Bay NWR and the mission of the NWRS.

Alternative B –No Action Alternative:

Under the No Action Alternative, the Service would not formally open a portion of the South San Diego Bay Unit of the Refuge to fishing. It is likely that fishing would continue under this alternative. Both the Sweetwater Marsh Unit and the active and restored salt ponds, as well as the shoreline, of the South San Diego Bay Unit would remain closed to fishing.

Affected Environment and Environmental Consequences

Affected Environment

The discussion of the affected environment and the impact analysis that follows focus specifically on opening the northwest portion of the South San Diego Bay Unit (see Figure 1) to fishing. Because the Proposed Action would not physically alter the landscape of the South San Diego Bay Unit and because fishing is an activity that occurred prior to Refuge establishment and continues today, the following resources were not evaluated in this EA: Hydrology, Water Quality and Contaminants, Geology and Soils, Air Quality, Hazardous Materials; Terrestrial Vegetation, Cultural Resources, and the Social and Economic Environment. For information related to the Refuge environment in general please see Chapter 3 of the Final CCP/EIS for the San Diego Bay NWR at: San Diego Bay NWR Final Comprehensive Conservation Plan and EIS.

The San Diego Bay Refuge consists of the Sweetwater Marsh and South San Diego Bay Units. It is located about ten miles north of the United States and Mexico border in San Diego County. The Refuge, which is situated at the south end of San Diego Bay, is surrounded by the urban communities of National City, Chula Vista, San Diego, Imperial Beach, and Coronado. The two Units within the Refuge were established to protect endangered and threatened species, and collectively encompass approximately 2,620 acres of land and water in and around San Diego Bay. The 316-acre Sweetwater Marsh Unit is located along the eastern edge of San Diego Bay. The Sweetwater Marsh Unit will remain closed to fishing and is not further discussed.

The South San Diego Bay Unit lies at the south end of San Diego Bay. The Service currently has management authority for approximately 2,300 acres within the approve Refuge boundary. Most of the remaining areas within the acquisition boundary are State Tidelands managed by the San Diego Unified Port District (Port). The lands and waters included within the current management boundary consist of portions of the open bay, active solar salt evaporation ponds, restored salt ponds, and the western end of the Otay River drainage basin. The active salt

evaporation ponds along with the restored salt ponds, as well as the western end of the Otay River drainage basin will remain closed to fishing.

The proposed action is located in the bay waters of the Refuge. The Service proposes to formally open these bay waters to fishing as shown in Figure 1. Other recreational uses include wildlife observation and photography, environmental education and interpretation, and a regional trail. These uses occur, or are planned, near the active and restored salt evaporation ponds and the western end of the Otay River drainage basin.

Environmental Consequences of the Action

This section analyzes the direct and indirect environmental consequences of the action on each affected resource. Cumulative effects are addressed in a separate section.

Impact Types:

- *Direct effects* are those which are caused by the action and occur at the same time and place.
- *Indirect effects* are those which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.
- *Cumulative impacts* result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.

Affected Habitats and Associated Fisheries and Anticipated Impacts of the Alternatives

The habitat type of the Project Area is open water. A summary of the biological resources associated with open water is summarized below. Much of this information comes from the San Diego Bay Integrated Natural Resources Management Plan (INRMP), prepared by the U.S. Navy and the Port of San Diego in 2000 (and updated in 2013) with input from a variety of other entities, including the Service, National Marine Fisheries Service, non-governmental organizations, and scientific advisors. Refer to the INRMP (U.S. Navy 2013) for a more detailed discussion of these habitats.

Moderately Deep Subtidal

Moderately deep subtidal habitat occurs between the depths of -12 feet and -20 feet mean lower low water (MLLW), extends from the approximate lower depth of most eelgrass to the approximate edge of the shipping channels in the bay. In the Project Area, this habitat occurs only at the upper end of the Emory Cove channel, near the northeastern edge of the South San Diego Bay Unit. Within the south bay, this habitat generally represents areas that have been dredged in the past.

Fish that dominate this habitat include round stingray (*Urolophus halleri*), spotted sand bass (*Paralabrax maculatofasciatus*), California halibut (*Paralichthys californicus*), and barred sand bass (*Paralabrax nebulifer*). This habitat also provides resting areas for bottom feeding diving birds, particularly rafting surf scoter (*Melanitta perspicillata*), lesser scaup (*Aythya affinis*),

greater scaup (*Aythya marila*), and bufflehead (*Bucephala albeola*) and feeding areas for plunge divers, such as terns.

Shallow Subtidal

The majority of open waters of the South San Diego Bay Unit are classified as shallow subtidal habitat. This habitat is defined as continually submerged, shallow water habitat that extends from -2.2 feet to -12 feet MLLW. In San Diego Bay, shallow subtidal habitat supports and abundance of fish, and bird abundance and diversity is higher in this habitat than any other subtidal habitats in the bay (U.S. Navy 2013).

From about the Coronado Cays south, the open bay consists almost exclusively of shallow subtidal habitat. This habitat includes both unvegetated, soft bottom areas and areas vegetated with eelgrass (*Zostera marina*). The vegetated areas of the shallow subtidal habitat are dominated by eelgrass, a flowering plant that has adapted to growing submerged in shallow, saltwater environments. Where eelgrass occurs, the substrate at the bottom of the bay is stabilized by the roots and rhizomes produced by the eelgrass. In addition, the eelgrass leaves slow the current and reduce the effects of wind and wave motion, allowing sediment and organic material to drop out and accumulate on the bottom (U.S. Navy 2013). According to the San Diego Bay eelgrass survey conducted in 2014, approximately 60 percent of the Project Area is vegetated with eelgrass (NAVFAC and Port 2014).

Eelgrass beds provide highly productive microhabitats for a wide variety of invertebrates and small fish. The eelgrass blades provide shelter for small fish, while small plants (epiphytes) and small animals (epizoites) use the leaves as a substrate for attachment. Other burrowing animals live in the sediment bed that has been stabilized by the eelgrass (U.S. Navy 2013).

Eelgrass provides food both directly and indirectly to a wide array of organisms. It can enter the food web as detritus, be eaten by fish that are sometimes eaten by fish-eating birds, or be consumed directly by birds, such as Pacific black brant (*Branta bernicla*), gadwall (*Anas strepera*), and northern pintail (*Anas acuta*). The bay's population of east Pacific green turtles (*Chelonia mydas*) also relies on eelgrass as an important food source.

The south bay's shallow subtidal habitat is important to a variety of fish species. The first comprehensive study on fish populations in San Diego Bay conducted between 1994 and 1999 provided a definitive assessment of the fish populations inhabiting San Diego Bay (Allen 1999). Sampling was replicated in 2005, 2008, and 2012. These surveys have continued to add important data about fish populations in the bay (VRG 2006, 2009, 2012). In the 1994 surveys the most abundant species in the southern end of the bay included slough anchovy (*Anchoa delicatissima*), topsmelt (*Atherinops affinis*), arrow goby (*Clevelandia ios*), round stingray (*Urolophus halleri*), northern anchovy (*Engraulis mordax*), and shiner surfperch (*Cymatogaster aggregate*). In the sampling events of 2008 and 2012, the northern anchovy was not among the most abundant fish species caught. The topsmelt, slough anchovy, and shiner surfperch have continued to be one of the most abundant fish species caught (U.S. Navy 2013). With respect to biomass, round stingrays continued to dominate throughout the surveys. Spotted sand bass has also consistently been included in the list of highest biomass of fish species caught. Of these

species, the slough anchovy, topsmelt, northern anchovy, and shiner surfperch represent important forage species for diving birds.

Allen also found that the south bay provides significant habitat for a group of twelve species of fish that are indigenous to the bays and estuaries of the Southern California Bight (see Table 3-7 in the Final CCP/EIS). According to Allen, the extensive shallow water habitat and eelgrass beds of the south bay support "very high standing stocks of both fisheries species and of midwater, schooling fishes, such as norther anchovies, slough anchovies and topsmelt" (Allen 1999). These species, in turn, represent a major forage resource for predatory fish and avian species. In addition, Allen found that the warmer, hypersaline waters of south bay offer shelter for a number of fish species commonly encountered further south in the Eastern Subtropical and Tropical Pacific. Such species include California halfbeaks (*Hyporhamphus rosae*), California needlefish (*Strongylura exilis*), Pacific seahorse (*Hippocampus ingens*), and red goatfish (*Pseudupeneus grandisquamous*). Other studies indicate that the south bay may also function as an important nursery area for juvenile California halibut and young spotted and barred sand bass (U.S. Navy 2013).

Shallow subtidal habitat also provides foraging and resting habitat for thousands of migratory and resident birds, with waterbirds being more abundant near the shoreline. Bottom-feeding divers such as scoters and scaup, dabbling ducks such as black brant, plunge divers such as terns, and the surface-foraging birds such as black skimmers (*Rynchops niger*) appear to prefer these waters over the other subtidal habitats in the bay (U.S. Navy 2013).

Alternative A – Proposed Action

Under this alternative, the Service would formally open the Project Area (see Figure 1) to fishing. However, because the area is already open to fishing, this action is not likely to increase current direct and indirect effects related to fish mortality. The continuation of fishing in this area will have a direct, lethal effect on individual fish, the target game species. Based on surveys conducted in 1990 and San Diego Bay fishing information available online (https://www.risentidefishing.com/san-diego-bay-fishing/), it is likely that anglers generally target the following fish species: Pacific mackerel, California lizardfish, barred sand bass, spotted sand bass, shortfin corvina, and California halibut. In the moderately deep subtidal habitat both the spotted and barred sand bass and shortfin corvine can be found. California halibut may be present in sandy areas along the edges of eelgrass beds. The number of mortalities depends on the angling pressure (e.g., the number of anglers, days of effort, catch success). To the extent that anglers engage in catch-and-release practices, the number of individual fish taken per angler would be reduced, but some percentage of mortality would remain. While fish mortality will occur from this recreational use, the harvest levels are set by the California Department of Fish and Wildlife (CDFW) and are low enough that population-level effects on fisheries are not expected. Anglers are required to adhere to all CDFW regulations and these regulations are designed to protect both sport fish and sensitive fish species from fishing impacts.

The open water habitats also provide foraging and resting habitat for migratory and resident birds. The moderately deep subtidal habitat provides resting areas for bottom feeding diving birds such as the lesser scaup and bufflehead and feeding areas for plunge divers such as terns.

Scoters, scaup, black brant, terns, and black skimmers all use this shallow subtidal habitat. Within the shallow subtidal habitat, which is the predominant habitat within the Project Area, migratory and resident birds, although not directly affected by fishing, would be indirectly effected as result of disturbance from boat and human activity. The effect would be minor as the permitted boat speed is slow (five miles per hour [5 mph]) and overall fishing activity in this area is low. Migratory and resident bird species that are disturbed by anglers would be able to relocate to other areas within the Project Area, as well as other areas within the bay. Fishing, when practiced as a solitary and stationary activity, tends to be less disturbing to wildlife than hunting or motorized boating (Tuite et al. 1983).

Alternative B – No Action

The effects of the No Action alternative are largely similar to the Proposed Action. Fishing was permitted in the area prior to the Refuge's establishment and continues today. The Project Area is within the San Diego Bay, which is considered United States Navigable Waters. The public has a broad right to access, use, and enjoy waterways that meet the federal title definition of navigability. Traditionally, the scope of the public's right to use such waters extended to commerce, navigation, and fishing.

Threatened and Endangered Species and Anticipated Impacts of the Alternatives

The Refuge was established to protect endangered and threatened species. Of the federal and state listed threatened and endangered species found in the South San Diego Bay Unit, the Project Area provides foraging habitat for the federally and state endangered California least tern (*Sternula antillarum browni*) and the federally threatened east Pacific green turtle. The least terns forage for small fish by plunge diving into the shallow waters, while the sea turtles forage on the eelgrass growing on the floor of the bay.

California least tern is a migratory tern species that breeds in the United States only along the immediate coast of California from San Francisco Bay south to the Mexican border. It usually arrives at its breeding areas in April (although monitoring efforts for this species begin in March), and generally departs in August for the coast of Central or South America (Thompson et al. 1997). The smallest of the tern species, California least tern, is an exclusive fish-eater that relies on a number of fish species (e.g., topsmelt [*Atherinops affinis*], northern anchovy [*Engraulis mordax*], jacksmelt [*Atherinopsis californiensis*]) in a variety of sizes as its primary food source (Atwood and Kelly 1984; Massey 1974). When they are juveniles, California least terns require a source of smaller fish as they learn to hunt for themselves. The need to locate smaller fish appears to result in the increased use of freshwater marsh systems, lagoons, and estuarine areas during the post-breeding dispersal phase, suggesting the importance of such habitats when juveniles are learning to fish (USFWS 2006a).

Historically, the species is known to have nested discontinuously throughout the California coastal zone, including in relatively undisturbed sandy beaches near estuaries, bays, and inlets, with the majority of the numbers occurring between Santa Barbara and San Diego Counties (USFWS 2006a). Statewide, numbers were in the tens of thousands before the 1960s. Beginning in the 1960s, suitable nesting areas were lost to coastal development and intense human recreational use of beaches. Today, these terns select nesting areas along sandbanks, on

dried mudflats, and on undisturbed levees and other sandy areas protected from human use and other significant disturbance.

In the San Diego Bay NWR, California least terns nest on the D Street Fill on the Sweetwater Unit of the San Diego Bay NWR and on the levees of the active solar salt works located within the South San Diego Bay Unit, to the southeast of the Project Area. During the nesting season, when terns are present, they forage in the bay as well as in the nearby Pacific Ocean.

The Pacific green turtle is one of six species of sea turtles found in the oceans in and around the United States. This species grows to a maximum size of about 4 feet and a weight of 440 pounds. The green turtle is unique among sea turtles in that this species is an herbivore, eating mostly seagrasses and algae. Hatchling green turtles eat a variety of plants and animals, but adults feed almost exclusively on seagrasses and marine algae.

Populations of the Pacific green turtle have seriously declined due primarily to direct take of turtles and eggs. The east Pacific green turtle is federally listed as threatened. The primary threats facing green turtles are bycatch in commercial and recreational fishing gear, direct killing of turtles and harvest of eggs, vessel strikes, loss and alteration of nesting habitat, degradation and loss of foraging habitat, and entanglement in or ingestion of marine debris (NOAA Fisheries 2020).

The population of east Pacific green turtles in south San Diego Bay is estimated at approximately 60 individuals. Although some believed the turtles were present in the bay due to elevated water temperatures associated with the now demolished South Bay Power Plant, turtles continue to remain active in the bay despite the closure of the power plant in 2010. Several researchers who have studied the bay's turtles since the 1980s concur that the bay's population of sea turtles is a natural population occurring at the northern end of their range (USFWS 2006). These researchers proposed that the turtles are not present because of the warmer water, but because the eelgrass available in the bay represents the only foraging area within their range in which they are not at risk of being taken by poachers. They do not breed or nest in San Diego Bay because they need undisturbed beaches for nesting (U.S. Navy 2013). The turtle has no natural predators in the bay. Mortalities tend to be caused by collisions with boats or ships (U.S. Navy 2013).

The Service and NOAA Fisheries combined efforts to protect and build sea turtle populations in the United States Pacific ocean through their March 1998 Recovery Plan for the east Pacific green turtle. NOAA Fisheries is the lead agency on sea turtle recovery for the San Diego Bay region because the Endangered Species Act delegates authority to NOAA Fisheries for green sea turtles in their marine environment and to the Service for green turtles on their nesting beaches. (U.S. Navy 2013).

Local management efforts primarily focus on monitoring the population status and the location of the turtle within the bay. This effort is presently coordinated by a NOAA Fisheries sea turtle scientist. More recently, the turtles' seasonal and migratory movements within and outside the bay are being studied by using transmitters that can track them to their source nesting beaches, as well as to their foraging and resting sites. Current investigation, coordinated with NOAA Fisheries, funded and performed by the U.S. Navy in conjunction with the Port, are tracking

green turtle movements within the San Diego Bay and provides data on movement and potential foraging patterns (U.S. Navy 2013). The 2013 INRMP (U.S. Navy 2013) states that the continued acquisition of green turtle habitat use and movement data is imperative to identifying valuable habitat and sensitive areas within San Diego Bay.

Alternative A – Proposed Action

Under the Proposed Action, the Service would formally open a portion of the Refuge to fishing. Fishing and motorized boating that accompanies fishing, all of which is already occurring within the area proposed for formal opening, can result in low levels of disturbance to east Pacific green turtles and foraging California least terns should they be present within this portion of the Refuge. Disturbance from fishing activity may cause foraging birds to avoid an area where fishing activity is occurring. Direct impacts are possible, but unlikely, and would involve the death of a tern due to entanglement in fishing gear or ingesting a hook. No evidence of such impacts have been documented to date in this area. The Propose Action will not increase the potential for direct or indirect impacts to terns over current levels, because no increase in fishing activity in the Project Area is anticipated.

Green turtle mortality is primarily related to boat collisions and ingestion of marine debris. Additional studies investigating potential impacts from motor vessels need to be addressed. Boat propellers and collisions have injured turtles in the bay, causing 80 percent of the turtle deaths reported in San Diego and Mission Bays (U.S. Navy 2013). A posted boat speed limit of 5 mph in the south bay, which is enforced by the San Diego Harbor Police, is primarily intended to protect birds from harassment, would benefit foraging terns and may also benefit sea turtles.

Several programs are currently in place that address debris entering the bay that could potentially reduce impacts to turtles. The Port regulates rubbish and waste disposal within its jurisdiction, while the Navy has similar controls over wastes from its operations in the bay. The U.S. Coast Guard is authorized to enforce federal marine pollution laws. The waste management programs currently in place by these entities could be more efficiently aligned and enforced to minimize potential impacts to the resident turtle population, especially in the south bay (U.S. Navy 2013).

To minimize the potential for adverse effects related to discarded monofilament fishing line, the San Diego Bay NWR has prepared and distributes a brochure addressing the danger of monofilament fishing line to birds and other wildlife. The brochure explains how to prevent entanglement, presents actions to take should an entangled bird be encountered, and describes how and why to properly dispose of fishing line. The brochure is available at the Refuge office, distributed at public events, and available at local marinas.

Alternative B – No Action

Effects to green turtles and California least terns under this alternative are the same as described under the Proposed Action. As a U.S. navigable water, the public is already allowed to fish and boat on these waters.

Visitor Use and Experience and Anticipated Impacts of the Alternatives

San Diego Bay represents one of many established tourist destinations in the San Diego region. According to the San Diego Convention and Visitors Bureau, it is estimated the San Diego region registered 35.8 million visitors in 2018. Unfortunately, no specific data is available regarding the number of tourists and residents who visit the attractions and open space areas around San Diego Bay each year. In the southern end of the bay there are opportunities to participate in a variety of recreation activities including boating, fishing, wildlife observation, biking, hiking, and some form of organized sports. Recreational activities that occur on the South San Diego Bay Unit are described below.

Boating

The San Diego Bay supports U.S. Navy ships and small boat activity, commercial ship traffic, and various forms of recreational boating. Studies conducted to characterize the boat traffic patterns in the bay demonstrate that most of the bay's boating activity takes place to the north of the Sweetwater Flood Control Channel (U.S. Navy 2000). This is due in large part to the shallow water depths in the south bay. Artificial deep water channels have been constructed along the east and west sides of the bay to facilitate the passage of larger boats into and out of the Chula Vista Marina and the Coronado Cays. Both of these channels are located outside of the boundary for the South San Diego Bay Unit.

Most boat activity that occurs within Refuge waters is associated with sightseeing, wildlife viewing, exercising, fishing, and general recreating. The shallow water depths, which range from 1 foot to 6 feet at low tide, limit the type of boats used in this area to motorized and non-motorized shallow draft vessels, such as rowboats, powerboats, canoes, kayaks, sail boards and personal water craft. Windsurfing and parasailing also occur within this area. As described in the 2006 CCP/EIS, no boat inventories for this area are available to depict actual usage by season or day of the week. During weekly bird inventories conducted by FWS biologists from 1993 to 1994 and during the human disturbance study conducted by Huffman (1999), boat usage was noted. During this time the majority of the boats observed within the south bay were motorized boats, followed by sailboats, personal watercraft, and sailboards. No additional surveys have been conducted, but individuals fishing from float tubes are observed in the south end of the bay from time to time.

No boat ramps are located within the Refuge but there are several public and private boat ramps and marinas just beyond the Refuge boundaries. Public boat ramps are available in Chula Vista at Bayfront Park, near the Chula Vista Marina, and in National City at Pepper Park. Marinas in located in proximity to the Refuge include the Chula Vista Marina, the Loew's Crown Island Marina, and two marinas in the Coronado Cays, and the National City Marina.

Boating speeds in the south end of the bay are regulated by the Port of San Diego. The Port of San Diego limits vessel speed to 5 mph in South San Diego Bay, except while transiting the Chula Vista Harbor Channel seaward of daymarks 11 and 12. (Daymarks are daytime identifiers to aid navigation.) Vessels must maintain a reasonable and prudent speed pursuant to Port code.

Alternative A – Proposed Action:

The Proposed Action would not restrict or modify the current boating activity in the bay.

Alternative B – No Action:
Boating would continue to occur within the Project Area for sightseeing, wildlife viewing, exercising, fishing, and general recreating in accordance with the existing speed limit.

Fishing
Although San Diego Bay is an important fishing spot in San Diego that supports a diverse array of fish species, sport fishing in San Diego Bay is a small component of the region's overall sport fishing industry. Much of San Diego's sport fishing activities focus on deep sea fishing in the Pacific Ocean where anglers seek yellowtail, yellowfin, albacore, and rockfish species. The most frequently caught species in San Diego Bay is the spotted bay bass, which are available and abundant throughout the year. Barred sand bass are also present in high number from November through March. The shallow areas at the southern end of the bay support small to medium sized bonefish. Although present throughout the year, the best chance of catching bonefish is late February through June. Additionally, the recreational fishery for leopard shark (*Triakis semifasciata*) is open year-round to boat-based anglers in San Diego Bay.

Sport fishing is also popular from piers in various locations around the bay. The pier closest to the Project Area is located at Pepper Park in National City, north of the Sweetwater River channel. In a 1990 study by the County of San Diego, anglers were surveyed at four locations around the bay. The study found that 75 percent of their catch was represented by four species: Pacific mackerel, California lizardfish, barred sand bass, and spotted sand bass (U.S. Navy 2013).

An evaluation of the potential health risk to humans from fish caught and consumed in the San Diego Bay was conducted in 1990 (San Diego County Department of Health Services 1990). This study identified potential health risks to unborn or young children through the consumption of mercury-contaminated fish by pregnant and/or breast-feeding women and also from direct consumption of contaminated fish by young children (up to ten years of age). Adult consumers who eat more than 165 grams per day of such fish, especially barred and spotted sand bass, could also be at risk. The levels of polychlorinated biphenyls (PCBs) found in fish analyzed in San Diego Bay were also considered a potential risk to human health at consumption levels at or above 165 grams per day. Based on these results, the San Diego County Health Officer posted health advisories at seven locations around the bay including the major public fishing piers to inform the public about the potential health risks associated with the consumption of fish from San Diego Bay (USFWS 2006). In 2005, new signs were posted by the Port, with the help of the County of San Diego, warning of the dangers of consuming fish and shellfish from San Diego Bay (US Navy 2013). In 2018, the State of California issued a health advisory and guidelines for eating fish from San Diego Bay (State of California 2018). The guidelines recommend that barred sand bass and shark caught in San Diego Bay not be consumed by women 18-45 years old and children ages one to 17 years old.

Alternative A – Proposed Action:
Under the Proposed Action, the Service would formally open the Project Area to sport fishing. This action would be consistent with Secretarial Order 3356, which directs Departmental agencies to support and expand hunting and fishing, enhance conservation stewardship, improve wildlife management, and increase outdoor recreation opportunities for all Americans. It is also

consistent with the status of the Project Area as a navigable water where fishing is already permitted.

Alternative B – No Action:
Under the No Action Alternative, the Service would not formally open the Project Area to sport fishing. However, fishing would continue in the Project Area consistent with its status as a navigable water.

Wildlife Observation and Photography

Within the South San Diego Bay Unit, opportunities for observing and photographing wildlife are available via boats traveling on the bay, from areas adjacent to the Refuge, such as the Bayshore Bikeway and the County's Biological Study Area, and during occasional guided nature tours of the salt works. Bird and sea turtle watching from kayaks and canoes is particularly popular in the south bay (USFWS 2006). Wildlife observation and photography within the Project Area occur only via boats or appropriate floating devices.

Alternative A – Proposed Action:
The public would continue to have opportunities to observe and photograph wildlife via boats traveling on the bay from areas adjacent to the Refuge. Opening the Refuge to sport fishing would not reduce wildlife observation and photography opportunities.

Alternative B – No Action:
Under the No Action Alternative, the public has opportunities to observe and photography wildlife via boats traveling on the bay from areas adjacent to the Refuge.

Refuge Management and Operations and Anticipated Impacts of the Alternatives

Land Use

Approximately 2,300 acres of land and water are currently managed in the south bay as part of the San Diego Bay NWR. Of the areas incorporated into the Refuge, approximately 38 percent consist of open water within the southern end of San Diego Bay. This area provides habitat for wildlife, while also accommodating commercial and recreational water uses, such as boating, fishing, parasailing, and windsurfing. These open water areas, as well as the other submerged lands and tidelands within the Refuge's management area, are leased to the Federal government from the State Lands Commission, acting by and through the Service, for the creation and continued maintenance of a National Wildlife Refuge. The area the Service proposes to formally open to fishing is entirely open water. A description of the remainder of the South San Diego Bay Unit and the Sweetwater Marsh Unit can be found in the Final CCP/EIS (USFWS 2006).

Alternative A – Proposed Action:
The proposed action would not alter current refuge management or operations, as no changes to the existing uses within the Project Area would occur under the Proposed Action.

Alternative B – No Action:
The effects under No Action to refuge management and operations would be the same as those addressed under the Proposed Action alternative.

Administration
The San Diego Bay NWR currently has three staff positions that are shared with the Tijuana Slough NWR to manage the habitats and public uses on the both the Sweetwater Marsh and South San Diego Bay Units. These include a Refuge Manager, Assistant Refuge Manager (currently vacant), and Park Ranger. In addition, the Refuge Complex maintains an active law enforcement presence throughout three San Diego Refuges included within the Complex. The Refuge law enforcement program periodically monitors activities on the open waters of the Refuge via a patrol boat.

A fishing brochure, prepared by the Refuge Complex, indicates where fishing is permitted on the Refuge. The brochure is available at the Refuge office, distributed at public events, and available at local marinas. Additionally, up-to-date regulatory information is provided by CDFW, the agency responsible for enforcing fishing regulations throughout San Diego Bay. This information is available online at: California Ocean Sport Fishing Regulations

Alternative A – Proposed Action:
The act of opening the Refuge to fishing will not result in any change in staff responsibility, nor will it require an increase in staffing or patrols. The area is already open to fishing and is regulated by CDFW in accordance with State regulations.

Alternative B – No Action:
No change in current staff responsibilities would be required.

Cumulative Impact Analysis

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7).

The 2006 Final CCP/EIS included a cumulative effects analysis. Although the Service did not formally open the Refuge to fishing in the Final CCP/EIS, the analysis in the Final CCP/EIS addresses the continuation of fishing in the Project Area as permitted under existing state regulations. Accordingly, the cumulative effects analysis is incorporated by reference and an updated focus on fisheries is provided below.

For more information on the national cumulative impacts of the Service's hunting and fishing program on the National Wildlife Refuge System, see the Cumulative Impacts Report, 2020-2021 National Wildlife Refuge and National Fish Hatchery Proposed Hunting and Sport Fishing Openings at regulations.gov.

Fishing
Fishing is one of the most popular outdoor recreational activities in the United States. In 2017, more than 49 million Americans participated in freshwater, saltwater, and fly fishing. Saltwater fishing was the second most popular type of fishing, engaging 13.1 million people across the

nation. Locally, yearly angling effort originating or taking place within San Diego Bay exceed 300,000 angling days per year (US Navy 2013).

Fisheries in and around the Project Area are managed at both state and federal levels. CDFW, as guided by State law and regulations set by the California Fish and Game Commission, manages inland (freshwater) and near-coastal (within 5 km of the shoreline) fisheries. NOAA Fisheries manages marine fisheries outside the state management limits and regulates anadromous and marine species listed by the federal government as threatened or endangered, including the east Pacific green turtle

Anticipated Cumulative Impacts

The Proposed Action is to formally open the area shown on Figure 1 to sport fishing. The context of impacts from sport fishing in this area in relation to fishing within the entire San Diego Bay is relatively minor. The Proposed Action would have no effect on the environment of other fishing opportunities locally, regionally, or at the national level. The Service anticipates no change in the number of anglers that may use this area.

Other Wildlife-Dependent Recreation

Outdoor recreation in San Diego Bay is extremely popular. There are opportunities to participate in a variety of recreational activities, including boating, fishing, wildlife observation, biking, and hiking. Sixteen public parks provide access for tourists and residents to the bay, along with opportunities for outdoor activities (US Navy 2013).

Anticipated Cumulative Impacts

Opening the Refuge to sport fishing would not impact any other recreational activities in the area. Therefore, there would be no incremental impacts to recreation from the Proposed Action that would contribute to cumulative impacts.

Development and Population Increase

San Diego along with Los Angeles are the two largest cities on the west coast of California. As defined by the State Wildlife Action Plan (SWAP), the South Coast area contains approximately 24 million residents and is the state's most populous region. Despite comprising only eight percent of the land area of California, the South Coast contains 56 percent of the total population (CDFW 2015). As a result, the most significant pressure on the South Coast's wildlife is urban, suburban, and rural development and the resulting habitat loss and fragmentation. California's population is projected to grow to 50 million people by 2050. The state's continued growth lead to an array of human-induced pressures that make supporting this growth in harmony with the state's wildlife a distinct challenge.

Large portions of the South Coast's natural areas have been converted to other uses. When the 2015 SWAP was issued, nearly 40 percent of the South Coast's land area was in urban and suburban use. Beyond the immediate footprint of development, urban, suburban, and rural growth patterns have fractured the landscape. Land-use planning and zoning laws have allowed sprawling development, including residential projects that are located far from existing urban

centers, requiring new roads and infrastructure, along with communities designed with large lot sizes and little or no preserved open space.

These development patterns not only reduce the amount of habitat available but also degrade the quality of adjacent habitat. With the expansion of the urban-wildland interface, remaining natural lands become more vulnerable to the incursion of invasive plants and animals, air and water pollution, and altered fire regimes.

The majority of the remaining natural habitat within the South San Diego Bay is protected within the boundaries of the Refuge. Beyond the Refuge boundaries, only limited natural habitat remains on the upland areas adjacent to the bay, and only scattered remnants of the coastal estuaries that once occupied the lower reaches of the Sweetwater and Otay Rivers have been preserved.

Anticipated Cumulative Impacts

Fisheries in and around the Project Area are managed adaptively at both state and federal levels. This adaptive management approach means that sport fishing regulations can be modified to ensure that fishing does not contribute further to the cumulative impacts of population growth and development on fisheries. In addition, implementation of the Service's 2006 CCP for the San Diego Bay NWR has and will continue to restore and/or enhance native coastal wetland and upland habitats within San Diego Bay and adjacent areas. The intent of these actions is to expand and/or improve the overall habitat value of the Refuge for a variety of species, including the many listed and sensitive species present within the south bay. While full restoration of the structure and function of the coastal wetland habitats, particularly for the South San Diego Bay Unit, may not be achievable within the life of the CCP, significant strides towards providing fully functional, high value habitat have and will continue to be achieved.

Agricultural Land Uses

Agriculture is an essential component of California's economy. Historic conversions of native habitat to agriculture in California have been significant. Diversion of water for irrigation can contribute to altered hydrologic regimes, and nutrient laden runoff can degrade aquatic habitat. Other impact from agricultural practices include the use of chemical fertilizers, herbicides, rodenticides, and other chemicals that can affect non-target species and degrade water quality. Ongoing agricultural practices can have a range of ecosystem consequences, positive or negative, based on timing, duration, and intensity (CDFW 2015).

Anticipated Cumulative Impacts

Fisheries in and around the Project Area would continue to be managed adaptively at both state and federal levels. This adaptive management approach means that sport fishing regulations can be modified to ensure that fishing does not contribute to potential cumulative impacts of agricultural land uses on fisheries.

Use of Lead Tackle

In California, research on the effect of lead ammunition on birds in the wild resulted in the passage of Assembly Bill 711, which prohibited the use of lead ammunition for hunting game mammals and birds in the state by July 1, 2019. However, there has been far less research on the

impact of lead fishing tackle on wildlife and in waterways. In 2019, the California Research Bureau, prepared a review of the available literature concerning lead fishing tackle and the impact on fish and other wildlife, as well as the results of queries made to wildlife rehabilitation centers along the west coast of the United States and Canada (Martin 2019). California does not currently regulate the use of lead fishing tackle. This review concluded that while the research is clear that lead-based fishing sinkers, jugs and other tackle are dangerous to animals that ingest them or become ensnared, there is not enough published research or data reported by wildlife rehabilitation centers at this time to conclude that the rate of ingestion of lead-based fishing tackle poses a threat on a population level to any specific species. This may be because lead ingestion is not occurring frequently enough to identify outcomes, or it may be the result of gaps in research.

Anticipated Cumulative Impacts

Fisheries in and around the Project Area would continue to be managed adaptively at both state and federal levels. This adaptive management approach means that sport fishing regulations can be modified should new research conclude that lead fishing tackle should be regulated.

Climate Change

Warming, whether it results from anthropogenic or natural causes, is expected to affect a variety of natural processes and associated resources. The San Diego region's precipitation regime is projected to become more variable with more dry days and more dry years. Drought may occur more frequently and could intensify because of warmer temperatures. (Jennings et al 2018) Rising sea levels will affect habitats and communities near the coastline.

Anticipated Cumulative Impacts

Fisheries in and around the Project Area would continue to be managed adaptively at both state and federal levels. This adaptive management approach means that sport fishing regulations can be modified to ensure that fishing does not contribute further to the cumulative impacts of climate change on fisheries.

Mitigation Measures and Conditions

Implementing the Proposed Action will have minimal effects. No mitigation is proposed.

Monitoring

Implementing the Proposed Action will have minimal effects. No monitoring specific to sport fishing is proposed.

Summary of Analysis

The purpose of this EA is to provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Alternative A – Proposed Action Alternative

As described above, the Proposed Action would have minor effects to biological resources and virtually no effect on other recreational uses of the Refuge. The east Pacific green turtle would

not be adversely affected by implementing the Proposed Action. Sport fishing would occur in accordance with CDFW fishing regulations. The Proposed Action would not affect other wildlife-dependent recreation because wildlife observation and photography can continue to occur via boats or personal floatation devices.

Alternative B – No Action Alternative

As described above, under the No Action Alternative the Service would not officially open the Refuge to sport fishing, however, sport fishing would continue to occur within the Project Area because the area is identified as navigable waters of the US and fishing is permitted in accordance with CDFW sport fishing regulations. Therefore, fishing would continue to occur on the Refuge under either alternative.

List of Sources, Agencies and Persons Consulted:

Mark Pelz, Chief, Natural Resources Division, California-Great Basin Region, DOI Unified Regions 8 and 10
Patricia Roberson, Natural Resources Division, California-Great Basin Region, DOI Unified Regions 8 and 10
Andy Yuen, Project Leader, San Diego NWR Complex
Brian Collins, Refuge Manager, San Diego Bay NWR
Victoria Touchstone, Refuge Planner, San Diego NWR Complex

List of Preparers:

Patricia Roberson, Natural Resources Division, California-Great Basin Region, DOI Unified Regions 8 and 10
Victoria Touchstone, Refuge Planner, San Diego NWR Complex

State Coordination:

The Regional Manager of CDFW's South Coast Region was briefed by Refuge staff regarding this proposal prior to issuance of the draft EA and any issues raised by the public during the public review process for the EA will be addressed in coordination with the State.

Tribal Consultation:

As no actual change in current use or management is proposed, no tribal consultation is required, however, notification of the availability of this EA has been provided.

Public Outreach:

The draft Environmental Assessment will be available to the public and interested agencies for a 60-day public review consistent with the publication of the draft 2020-2021 Refuge Specific Regulations for Hunting and Fishing on Regulations.gov. Comments received on the draft document will be addressed as appropriate.

References:

Allen, L.G. 1999. Fisheries inventory and utilization of San Diego Bay, 5th Annual Report, FY 1997-99. California State University Northridge Nearshore Marine Fish Research Program, under contract with U.S. Navy Southwest Division Naval Facilities Engineering Command, San Diego, CA. September 1999.

California Department of Fish and Wildlife (CDFW). 2015. California State Wildlife Action Plan, 2015 Update: A Conservation Legacy for Californians. Edited by Armand G. Gonzales and Junko Hoshi, PhD. Prepared with assistance from Ascent Environmental, Inc., Sacramento, CA.

DeLong, A.K. 2002. Managing visitor use and disturbance of waterbirds – a literature review of impacts and mitigation measures – prepared for Stillwater National Wildlife Refuge. Appendix L (114 pp.) in Stillwater National Wildlife Refuge Complex final environmental impact statement for the comprehensive conservation plan and boundary revision (Vol. II). Department of the Interior, U.S. Fish and Wildlife Service, Region 1, Portland OR.

Huffman, K. 1999. San Diego South Bay Survey Report – Effects of Human Activity and Water Craft on wintering Birds in the South San Diego Bay.

Jennings, Megan K., Dan Cayan, Julie Kalansky, Amber D. Pairis, Dawn M. Lawson, Alexandra D. Syphard, Udara Abeysekera, Rachel E.S. Clemesha, Alexander Gershunov, Kristen Guiguis, Joh M. Randall, Eric D. Stein, and Sula Vanderplank. (San Diego State University). 2018. San Diego County ecosystems: ecological impacts of climate change on a biodiversity hotspot. California's Fourth Climate Change Assessment, California Energy Commission. Publication number: CCCA4-EXT-2018-101.

Martin, Pamela. "Lead Fishing Tackle: Impacts on California Wildlife and the Environment." California Research Bureau, California State Library, Feb. 2019.

NAVFAC and Port (Naval Engineering Command Southwest and Unified Port District of San Diego). 2014. San Diego Bay 2014 Eelgrass Survey. Prepared by Merkel & Associates.

NOAA Fisheries. 2020. Green Turtle (Green turtle species account). Accessed on March 5, 2020.

Risen Tide Sport fishing, San Diego, California (San Diego Bay and inshore fishing charters webpage). Accessed on November 6, 2019.

San Diego Bay Watersheds. San Diego Bay watersheds information. San Diego State University. Accessed 2/6/2020

San Diego Convention and Visitor Bureau. 2019. San Diego County 2019 Visitor Industry General Facts. San Diego tourism industry facts . Accessed 10/28/2019.

San Diego County, Department of Health Services, Environmental Health Services. 1990. San

Diego Bay Health Risk Study: An Evaluation of the Potential Risk to Human Health From Fish Caught and Consumed From San Diego Bay, Executive Summary.

San Diego County Farm Bureau. 2020. San Diego County Farm Bureau Accessed 2/6/2020.

State of California, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. 2018. Health Advisory and Guidelines for Eating Fish from San Diego Bay (San Diego County). Guidelines for Eating Fish from San Diego Bay 2018 Updated July 2018.

U.S. Department of the Navy, Naval Facilities Engineering Command Southwest and Port of San Diego. 2013. San Diego Bay Integrated Natural Resources Management Plan, Final September 2013. San Diego, California. Prepared by Tierra Data Inc., Escondido, California.

U.S. Fish and Wildlife Service. 2006. Final Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS) August 2006. California/Nevada Refuge Planning Office. U.S.F.W.S. Sacramento, California.

Vanunu Research Group (VRG). 2005. Fisheries Inventory and Utilization of San Diego Bay, San Diego, California for Surveys Conducted In April And July 2004. By D. Ponselle and J. Williams, Moore Laboratory of Zoology, Occidental College.

Vantuna Research Group (VRG). 2006. Fisheries Inventory and Utilization of San Diego Bay, San Diego, California for Surveys Conducted In April And July 2005 By Dan Pondella, John Froeschke and Beth Young, Moore Laboratory of Zoology, Occidental College.

Vantuna Research Group (VRG). 2009. Fisheries Inventory and Utilization of San Diego Bay, San Diego, California for Surveys Conducted In April And July 2009. By D. Pondella, and J. Williams Moore Laboratory of Zoology, Occidental College.

Vantuna Research Group (VRG). 2012. Fisheries Inventory and Utilization of San Diego Bay, San Diego, California for Surveys Conducted In April And July 2012. By J.P. Williams, Moore and D.J. Pondella Laboratory of Zoology, Occidental College.