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3.11 Socioeconomic Resources

SOCIOECONOMIC RESOURCES SYNOPSIS

Stressors associated with the Proposed Action with the potential to affect socioeconomic resources were considered, and the following conclusions have been reached for the Preferred Alternative (Alternative 1):

- Accessibility: Accessibility stressors are not expected to measurably affect commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, or tourism and recreational use because inaccessibility to areas of co-use would be temporary and of short duration. As a result, effects would be less than significant.
- Airborne Acoustic: Airborne acoustic stressors are not expected to measurably affect tourism or recreational activity because most military readiness activities would occur well out to sea, far from tourism and recreation locations. Any noise in nearshore areas would be infrequent, short term, and temporary. As a result, effects would be less than significant.
- Physical Disturbance and Strike: Physical disturbance and strike stressors are not expected to measurably affect commercial and recreational fishing, subsistence fishing, or tourism and recreational use because of the large size of the HCTT Study Area, the limited areas of operations, and implementation of standard operating procedures. As a result, effects would be less than significant.

3.11.1 Introduction and Methods

Socioeconomic Resources. Socioeconomic sustainability is considered an important factor in federal decision-making. NEPA (42 U.S.C. 4321) Section 101(a) states: "The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment…declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." In accordance with NEPA, the socioeconomic analysis in this EIS/OEIS evaluates how elements of the human environment (encompassing social and economic characteristics) could be affected by ongoing and proposed military readiness activities in the HCTT Study Area. Four broad socioeconomic topics were identified based on their association with human activities and livelihoods in the HCTT Study Area. Each of these socioeconomic resources is an aspect of the human environment that involves economics (e.g., employment, income, or revenue) and social conditions (i.e., enjoyment and quality of life) associated with the marine environment of the HCTT Study Area. Therefore, this evaluation considered potential effects on four elements:

- Commercial transportation and shipping
- Commercial and recreational fishing
- Subsistence fishing
- Tourism and recreational use

The alternatives were evaluated based on the potential for and the degree to which military readiness activities could affect socioeconomic resources. The potential for effects depends on the likelihood that the military readiness activities would interface with public activities or infrastructure. Factors considered in the analysis include whether there would be temporal or spatial interfaces between the public or infrastructure and military readiness activities. If there is potential for this interface, factors considered to estimate the degree to which an exposure could affect socioeconomic resources include whether there could be an effect on livelihood, quality of experience, resource availability, income, or employment. If there is no potential for the public to interface with an activity, then no reasonably foreseeable effects would be expected.

3.11.2 Affected Environment

The primary area of interest for assessing potential effects on socioeconomic resources is the U.S. territorial waters of Hawaii and California (seaward of the mean high-water line to 12 NM). Limited socioeconomic resources outside this area of interest (i.e., that portion of the EEZ between 12 and 200 NM from shore) are also described when relevant to human activities.

The Center for Naval Analyses (CNA) characterized military and non-military vessel traffic within the HSTT Study Area. Data is based on a four-year average (2014–2018) acquired from approximately one billion positional vessel data records. Non-military vessels account for approximately 96 percent of vessel traffic in the HSTT Study Area, whereas military vessels (Navy and USCG vessels) account for 4 percent of traffic. Given that the highest densities of military vessels analyzed in this EIS/OEIS are expected to occur in within the same geographic boundaries as the HSTT Study Area, it can be assumed that the density of military vessels in the HCTT Study Area would likely account for less than 4 percent of all vessel traffic in the region.

3.11.2.1 Commercial Transportation and Shipping

3.11.2.1.1 Ocean Transportation

Ocean transportation is the transit of commercial, private, and military vessels at sea, including submarines. Most of the waterways in the HCTT Study Area are accessible to commercial vessels; however, some areas are restricted. These areas may limit access to non-military activities on either a full-time or temporary timeframe.

The flow of vessel traffic in congested waters, especially near coastlines, is controlled by the use of directional shipping lanes for large vessels and flow controls for all vessels in harbors, bays, and ports to ensure that ports-of-entry remain as uncongested as possible. Military and non-military vessels alike adhere to regulations governing shipping traffic in these areas.

3.11.2.1.1.1 Hawaii Study Area

Ocean shipping is an important component of Hawaii's economy. Major inter-island ports include Honolulu, Barbers Point, Hilo, Kawaihae, and Kahului (Figure 3.11-1). The U.S. Army Corps of Engineers ranks the top 150 U.S. ports by cargo volume (U.S. Army Corps of Engineers, 2020, 2021). Based on 2020 rankings, Honolulu (Oahu) ranked 38 in total trade (domestic and foreign) with over 14 million tons of goods transferred (U.S. Army Corps of Engineers, 2020, 2021). Other ranked ports in Hawaii were Barbers Point (Oahu) at 63, Kahului (Maui) at 87, Hilo (Hawaii) at 104, and Kawaihae at 111.

Primary shipping routes within the Main Hawaiian Islands and extending east to North America and west to Asia, primarily from Barbers Points, Oahu, are shown in Figure 3.11-1. In addition to routes traveled by large commercial vessels, other routes throughout the Study Area provide access to and from marinas, mooring locations, fishing harbors, and military installations located along the islands.

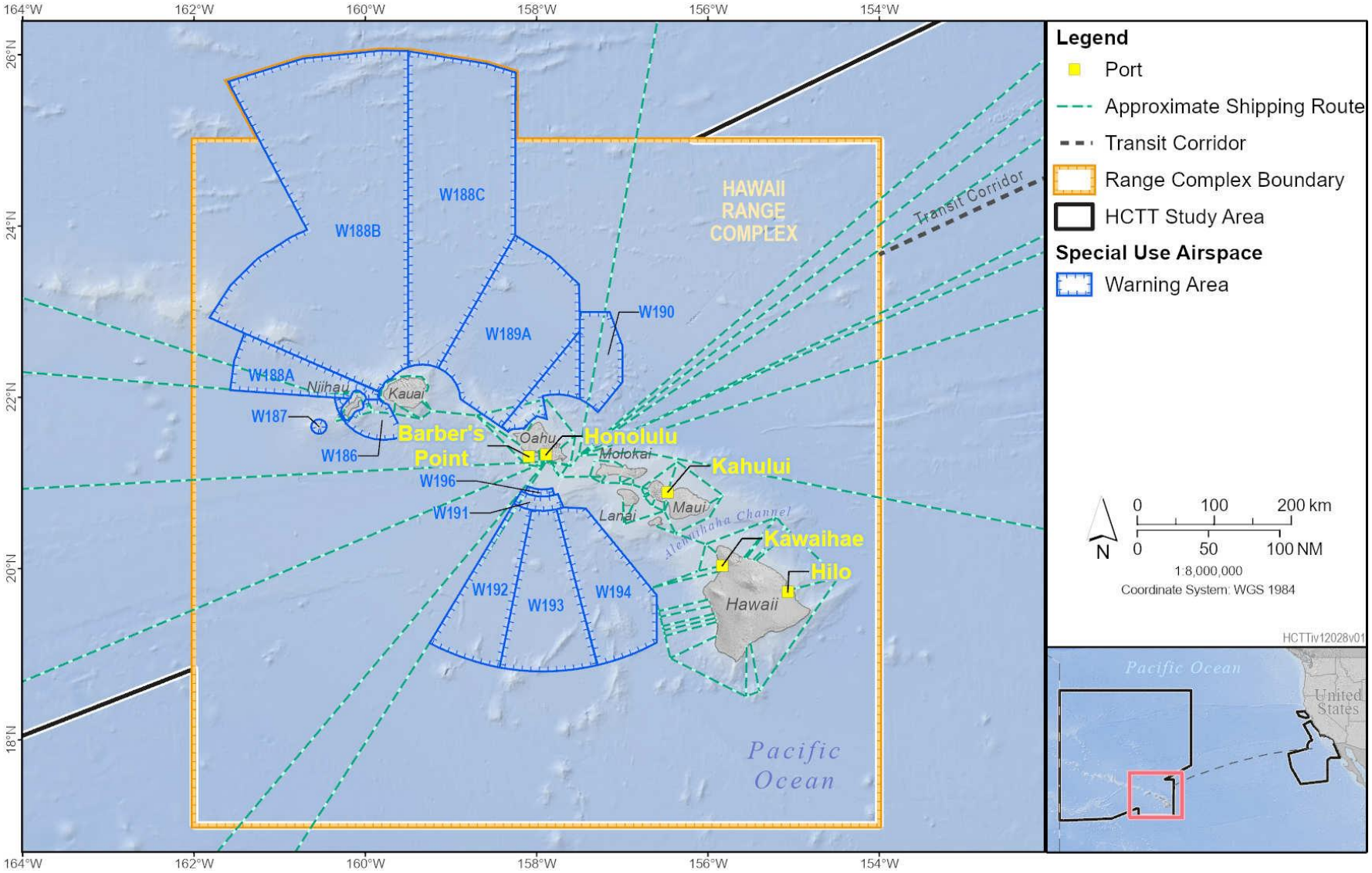


Figure 3.11-1: Main Hawaiian Islands Shipping Routes and Major Ports

3.11.2.1.1.2 California Study Area

Ocean shipping is a significant component of the California regional economy, and a large amount of shipping traffic occurs in Southern California. Of the 150 U.S. ports evaluated by the U.S. Army Corps of Engineers (2021), the Port of Long Beach ranked fifth in total trade (foreign and domestic) with 91.5 million tons of goods transferred in 2020. Los Angeles was ranked tenth, with over 64 million tons of goods transferred (U.S. Army Corps of Engineers, 2021). Port Hueneme, located in Ventura County, had over 1.9 million tons in foreign cargo volume traded in 2019 and ranked 63rd overall in total foreign trade (U.S. Army Corps of Engineers, 2021). The Port of San Diego traded approximately 1.3 tons in foreign cargo volume and ranked 75th overall in foreign trade (U.S. Army Corps of Engineers, 2021).

Major commercial shipping routes in California parallel the coastline, extending north to San Francisco, Seattle, Alaska, and Canadian ports and south to Central and South America. Transoceanic shipping routes extend westward from the major ports of San Diego, Long Beach, and Los Angeles to Hawaii. Several shipping routes cross the Study Area, particularly in PMSR, run through the Santa Barbra channel and north of the Channel Islands. A major commercial shipping channel established by the USCG is aligned just north of, and roughly parallel with, the northern Channel Islands. There are also shorter routes that run perpendicular to the coastline and connect smaller ports with the major shipping routes and the offshore islands as depicted in Figure 3.11-2. The shorter routes that connect vessels from Morro Bay Harbor and the Port of San Luis to shipping routes along the coastline may be in proximity to the proposed amphibious approach lanes between PMSR and the NOCAL Range Complex.

In addition to routes traveled by large commercial vessels, other routes throughout the Study Area provide access to and from marinas, mooring locations, fishing harbors, and military installations located both along the mainland and on offshore islands.

3.11.2.1.1.3 Transit Corridor

Major commercial shipping vessels use the transit corridor for shipping goods between Southern California and Hawaii, because it is the shortest distance between these two points (see Chapter 2; Figure 2-1). Vessels using this corridor are outside of military training areas and typically follow all USCG maritime regulations. The Action Proponents may use this corridor for military readiness activities while en route between Southern California and Hawaii.

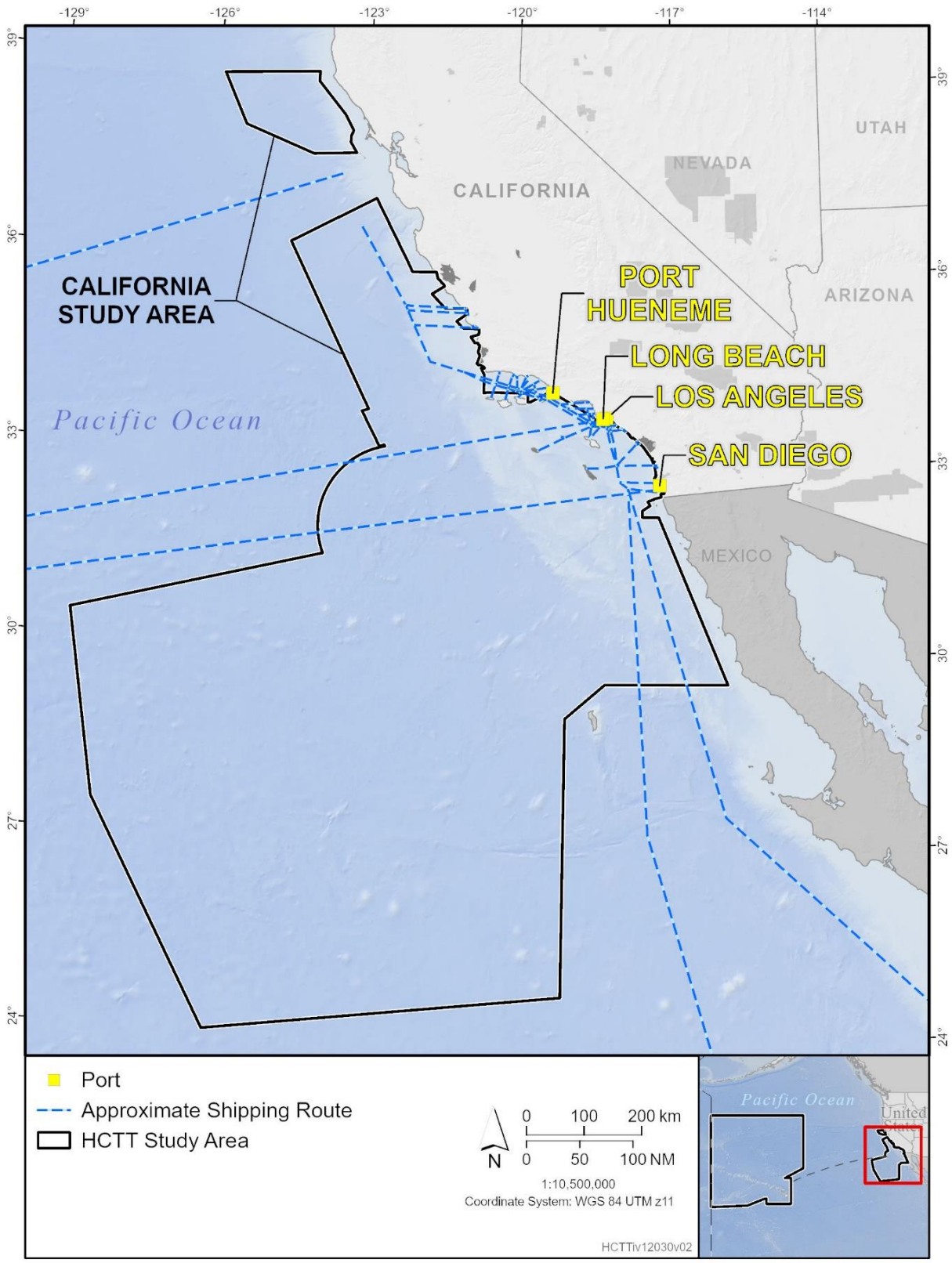


Figure 3.11-2: Shipping Routes and Major Ports in the California Study Area

3.11.2.1.2 Air Transport

3.11.2.1.2.1 Hawaii Study Area

Military Aviation. Several types of special use airspace (e.g., warning areas) are designated in the Hawaii Range Complex (Figure 3.11-3. For a detailed description of special use airspace in Hawaii, refer to the 2018 HSTT EIS/OEIS.

Commercial and General Aviation. Airspace within the Hawaii Range Complex includes several high-altitude commercial air traffic routes (Figure 3.11-3). For a detailed description of the airspace in Hawaii, refer to the 2018 HSTT EIS/OEIS.

3.11.2.1.2.2 California Study Area

Military Aviation. Several types of special use airspace and air traffic routes are designated throughout the California Study Area (Figure 3.11-4, Figure 3.11-5). San Diego Fleet Area Control and Surveillance Facility is the scheduling and controlling authority for most military airspace in the SOCAL Range Complex. The Proposed Action includes the establishment of two new airspaces, W-293 and W-294, in proximity to the existing W-291 warning area (see Chapter 2; Figure 2-2) in Southern California. The proposed airspaces would be scheduled and controlled through San Diego Fleet Area Control and Surveillance Facility.

The special use airspace in the NOCAL Range Complex is located least 12 NM from shore and encompasses approximately 16,000 NM^2 of airspace.

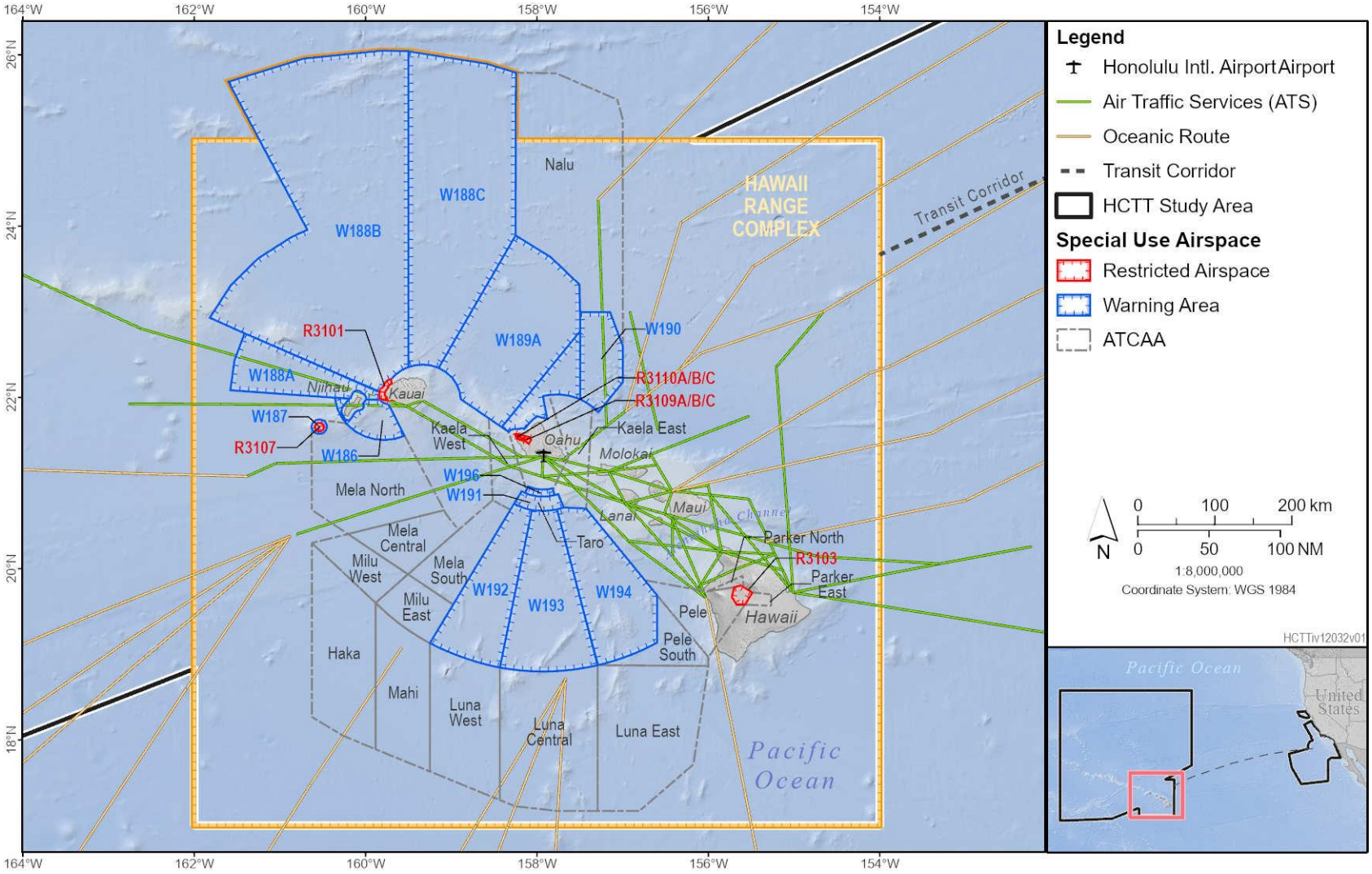


Figure 3.11-3: Air Traffic Routes and Special Use Airspace in the Hawaii Study Area

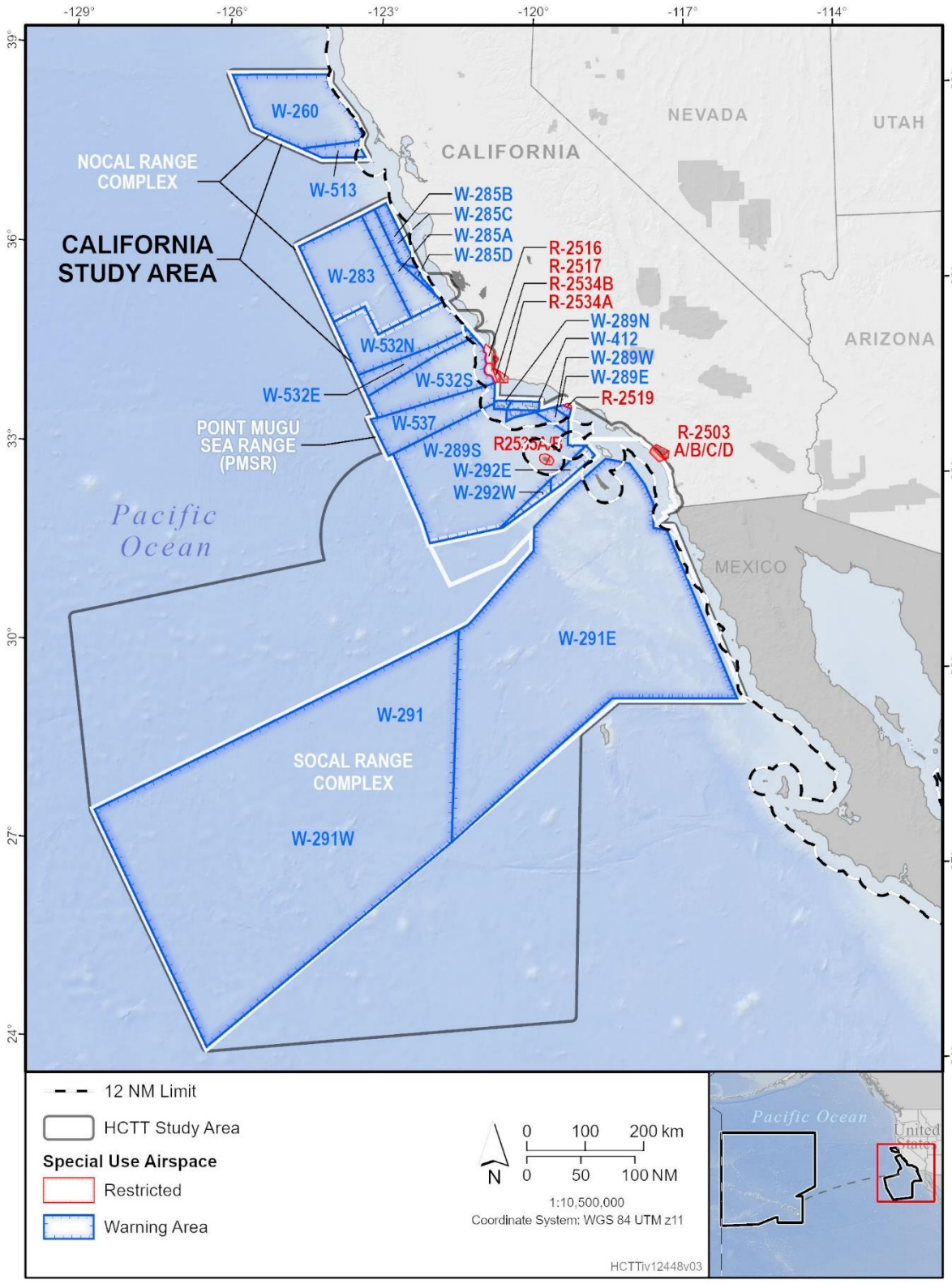
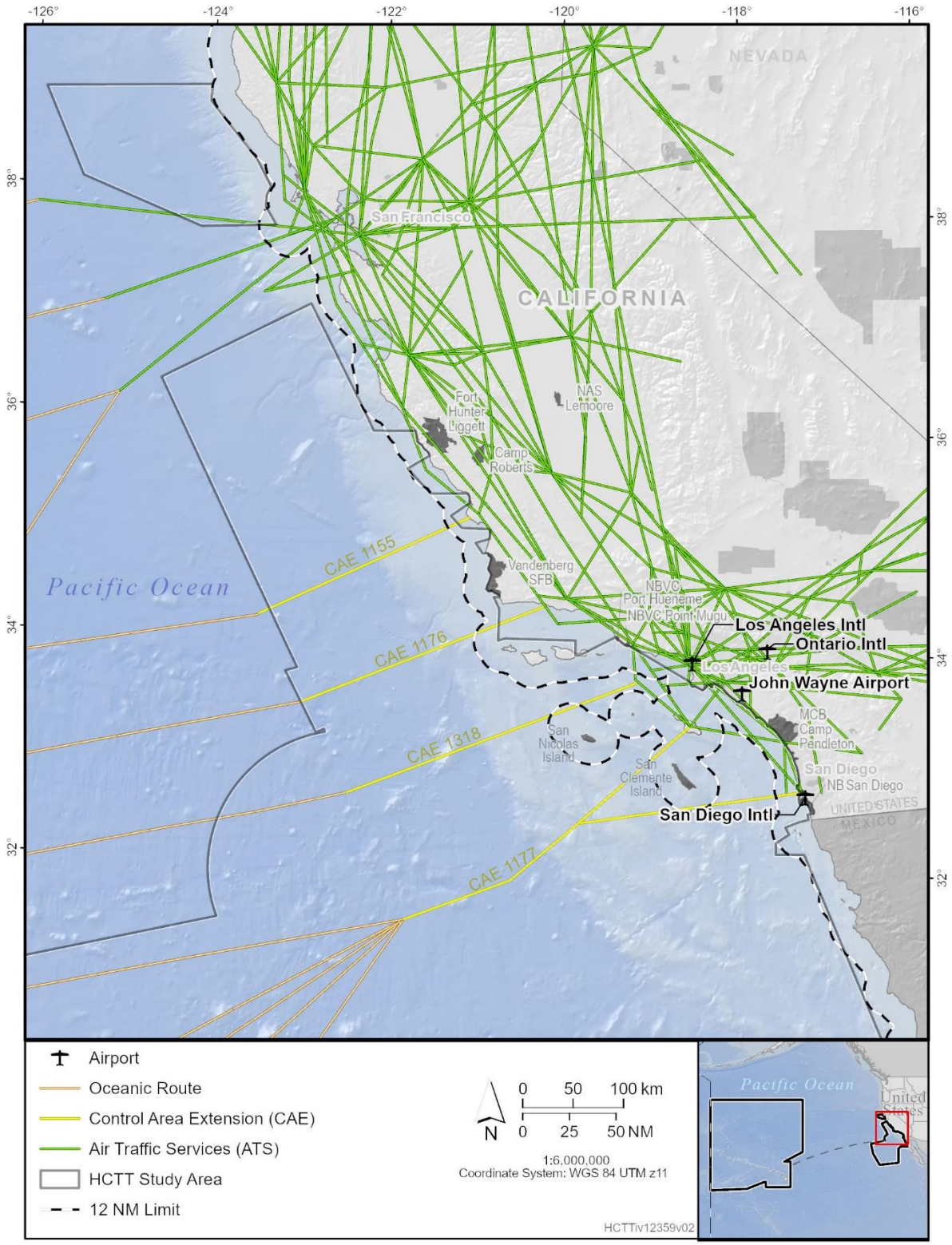


Figure 3.11-4: Special Use Airspace in the California Study Area



Notes: NAS = Naval Air Station, MCAS = Marine Corps Air Station, MCB = Marine Corps Base, Intl. = International

Figure 3.11-5: Air Traffic Routes in the California Study Area

Commercial and General Aviation. Established air routes enable general aviation and commercial air traffic to coordinate air travel with military operations. When a warning area is active, aircraft on Instrument Flight Rules clearances are precluded from entering by the Federal Aviation Administration (FAA). However, if a warning area is located entirely over international waters, non-participating aircraft operating under Visual Flight Rules are not prohibited from entering the area. Examples of aircraft flights of this nature include light aircraft, fish spotters, and whale watchers, which occur under Visual Flight Rules throughout many warning areas in California on a variable basis. Part or all of the warning areas lie within international airspace and are activated on an intermittent basis. At PMSR, air traffic routes for civilian aircraft with instrument flight rules clearances run north and south along the coast and do not enter the range. There are corridors for aircraft to cross the PMSR while under FAA control.

3.11.2.1.2.3 Transit Corridor

There are numerous commercial air routes over the transit corridor between California and Hawaii. Commercial aircraft typically fly above 30,000 ft. during transoceanic flight. These air routes are controlled by the FAA.

3.11.2.2 Commercial and Recreational Fishing

Commercial and recreational fishing takes place throughout much of the HCTT Study Area from waters adjacent to the mainland and offshore islands to offshore banks and deep waters far from land. Recreational fishing trips in Hawaii and California account for approximately 3.6 percent of total recreational fishing in the United States (National Marine Fisheries Service, 2021). Additionally, approximately 1.6 percent of total commercial landings in the United States are caught in Hawaii and California (National Marine Fisheries Service, 2021). Many fishing activities in these regions are seasonal and occur at varying degrees of intensity and duration throughout the year.

3.11.2.2.1 Hawaii Study Area

Commercial Fishing. The major fisheries in Hawaiian waters include tuna, billfishes, bottom fishes, other species of pelagic fish, as well as a smaller invertebrate fishery. In 2022, commercial landings in Hawaiian waters for all fisheries combined exceeded 29 million pounds and were valued at $135 million (National Marine Fisheries Service, 2023a). Offshore of the Hawaiian Islands, only 5 percent of commercial landings are caught from state waters, and over 50 percent are caught on the high seas, beyond 200 NM from the coast and outside of the U.S. EEZ.

The value of commercial landings in Hawaii has increased dramatically since the late 1980s (Figure 3.11-6). Between 1988 and 1993 the value of landings for all species increased from approximately $22 million to $73 million—an increase of over 230 percent (National Oceanic and Atmospheric Administration Fisheries, 2023a). After plateauing in the mid to late 1990s, the total value of all fisheries has increased steadily since 2001. The sharp decline in total landings and value of landings in 2020 is likely due to the Covid-19 pandemic; however, the total and value of commercial landings has since recovered and exceeded pre-pandemic levels (National Marine Fisheries Service, 2023c). The increase in the value of commercial fisheries over the past decades prior to the pandemic is indicative of the importance of commercial fishing to the Hawaiian economy.

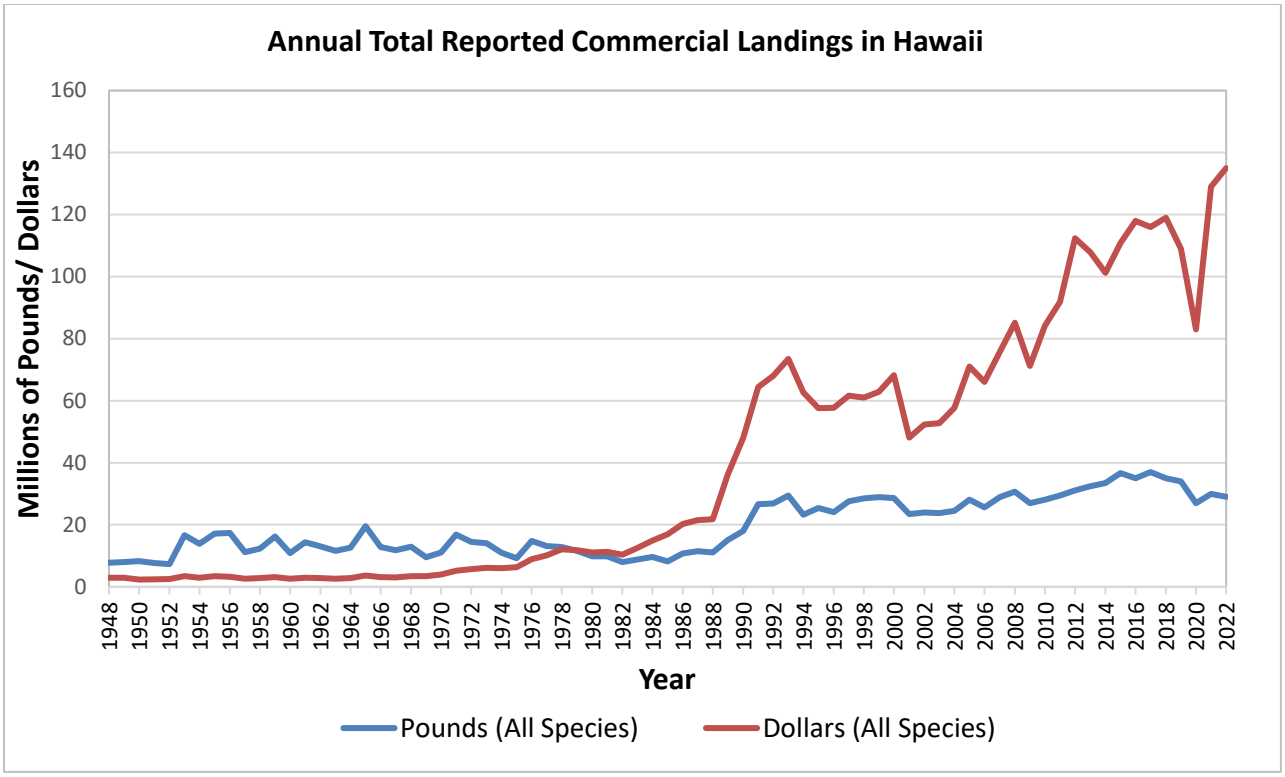


Figure 3.11-6: Annual Reported Commercial Landings for All Species in Hawaii (1948–2022)

Recreational Fishing. Hawaii does not have a mandatory recreational marine fishing license as many other coastal states do and does not have mandatory reporting of recreational catches (Hawaii Division of Aquatic Resources, 2015). The NMFS Office of Science and Technology maintains a database of statistical data on recreational fishing practices in coastal states (National Marine Fisheries Service, 2023b). Recreational catch between 2018 and 2022 totaled over 60 million fish in marine and estuarine waters (National Marine Fisheries Service, 2023b).

A report conducted by the American Sportfishing Association (2021) estimated that over 226,000 anglers spent nearly $509 million while fishing in Hawaii in 2018, generating almost $800 million in economic output for the State of Hawaii. This economic output was estimated to have supported over 5,400 jobs in Hawaii in 2018 (American Sportfishing Association, 2021).

3.11.2.2.2 California Study Area

Commercial Fishing. In California, commercial fisheries such as groundfishes (e.g., flatfishes, skates, some sharks, and rockfishes), highly migratory species (e.g., tuna, billfish, some sharks, dolphinfish, and swordfish), and coastal pelagic species (anchovies, mackerel, and sardines) are harvested and sold, with many of the same species also being targeted by recreational anglers. Most commercial fishing in California takes place in state waters, less than 3 NM from shore, where limited military readiness activities are conducted.

Commercial landings in California have significantly decreased since 2000, and values have fluctuated since a peak in 2013 (Figure 3.11-7). In recent years, landing values have surpassed the total pounds, indicating that the types of species landed in California remain economically valuable.

In 2022, over 184 million pounds of fishes and invertebrates valued at $197 million were harvested at California ports (California Department of Fish and Wildlife, 2022). Based on landings (pounds), Pacific sardines and sablefish were the finfish species most harvested by commercial fishers in California in 2022. California waters support a large and economically important invertebrate fishery as well, which, at a value of over $118 million in 2022, was over 2.5 times greater than the value of finfish landings (California Department of Fish and Wildlife, 2022).

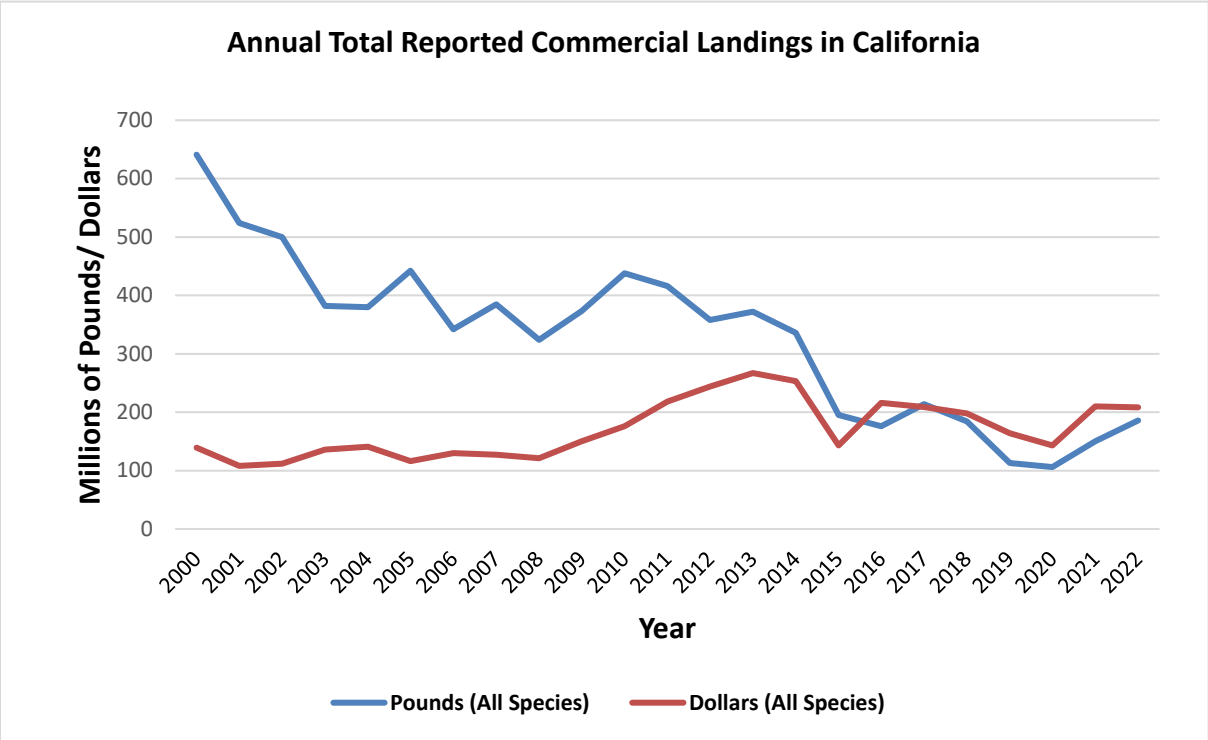


Figure 3.11-7: Annual Reported Commercial Landings for All Species in California (2000–2022)

Recreational Fishing. The California coastal marine environment, including areas within the California Study Area, continue to support a popular and thriving recreational fishing industry. From 2018 through 2022, recreational anglers caught over 47 million fishes in the waters of California (National Marine Fisheries Service, 2023b). Recreational fisheries on the U.S. West Coast primarily occur in waters 3 NM or less off the coast.

A survey conducted by the National Oceanic and Atmospheric Administration estimated that marine recreational fishing trips in California generated over $795 million in sales and $498 million in gross domestic product for the state in 2017 (Lovell et al., 2020). Sales from shore angler trips amounted to over $287 million, private boat rental trips generated nearly $141 million, and for-hire trips totaled to over $366 million in sales (Lovell et al., 2020). Recreational angler trips in 2017 were estimated to support approximately 6,311 jobs and generate $290 million in income in California (Lovell et al., 2020).

3.11.2.2.3 Transit Corridor

There are no data on commercial or recreational fishing within the transit corridor. Minimal fishing activity is likely to occur in the transit corridor because of the great distance from shore.

3.11.2.3 Subsistence Fishing

The USEPA considers subsistence fishers to be people who rely on fish as an affordable food source or for whom fish are culturally important (U.S. Environmental Protection Agency, 2024). There are no particular criteria or thresholds (such as income level or frequency of fishing) that define subsistence fishers; however, survey-based studies indicate that Native Americans, low-income urban populations, and Asian Americans are more likely to be subsistence fishers (Gassel, 1997; Schumann & Macinko, 2007). Regions with a high percentage of individuals below the poverty line or a high percentage classified as Native American or Asian American may have a greater number of subsistence fishers. Most subsistence fishing is expected to occur within 3 NM from shore, because the smaller boats that are typically used by subsistence fishers are not equipped for long trips offshore, and traditional fishing sites are generally associated with nearshore reefs.

The multifaceted nature of traditional fishing practices and their contribution to local communities remains difficult to quantify; however, it is clear that there is both a social and economic benefit to many in those communities, even for those who rarely or never actually fish (e.g., someone who doesn't fish may receive fish at low or no cost within their community). Allen (2013) reported on the complicated issue of defining traditional fishers. Many fishers identifying as traditional or subsistence fishers also participate in recreational and commercial fishing. It is not always clear when fishers are engaging in subsistence fishing, fishing for cultural or social reasons, fishing for financial gain or leisure, or some combination, which can occur even on a single fishing trip.

3.11.2.3.1 Hawaii Study Area

In Hawaii, subsistence practices are considered to be "customary and traditional native Hawaiian uses of renewable ocean resources for direct personal or family consumption or sharing" (Zanre, 2014). The cultural and economic value of subsistence fishing to Native Hawaiians is considered an important component of many communities (McClenachan & Kittinger, 2013; Steutermann-Rogers, 2015a).

The Hawaii bottomfish handline fishery is a culturally significant resource for Native Hawaiian populations that practice subsistence fishing. Hawaii bottomfish fisheries (both commercial and non-commercial) harvest approximately 14 shallow and deep-water species consisting of 9 snappers, 4 jacks, and 1 species of grouper (National Oceanic and Atmospheric Administration, 2024). The primary high-value targets, also known as the Deep 7 bottom fishery, consist of six deep-water snappers and the grouper species. Native Hawaiians have targeted bottomfish species, particularly the Deep 7 bottom fishery, for hundreds of years using traditional handline fishing methods (National Oceanic and Atmospheric Administration, 2024).

The shallow-water reef associated fisheries in Hawaii consist of important finfishes, invertebrates, and coastal pelagic fishes that support subsistence activities. Approximately 72–74 percent of fish caught by non-commercial fishers in nearshore reef fisheries are kept for personal consumption or for sharing with their community (Grafeld et al., 2017). In 2017, the shallow-water reef associated fisheries in Hawaii were valued between approximately 10 and 16 million dollars (Grafeld et al., 2017). The majority of this value (between 7 and 12 million dollars) was associated with non-commercial fishing practices and amounts to over 7 million meals annually (Grafeld et al., 2017).

Recent efforts to preserve important fisheries has resulted in the establishment of community-based subsistence fishing areas (CBSFAs) in Hawaii (Levine & Richmond, 2014; Steutermann-Rogers, 2015b). The CBSFAs were established through coordination between communities practicing subsistence or traditional fishing and state and local governments, an approach that recent studies have shown to be

effective at achieving the regulatory goals of sustaining the fishery (Ayers & Kittinger, 2014; Steutermann-Rogers, 2015a). As of 2024, there are three designated CBSFAs in the State of Hawaii: Haena, Milolii, and Kipahulu.

To aid in the preservation of subsistence and traditional fishing practices, the governor of Hawaii along with the Hawaii Department of Land and Natural Resources have signed into law specific fishing rules for the CBSFAs. The rules limit harvests and set bag limits for species; provide restrictions on the types of fishing gear and methods that may be used; and prohibit commercial fishing in the CBSFAs. These rules ultimately allow for communities to meet their consumptive needs and are reflective of traditional fishing management practices meant to preserve and maintain the sustainability of marine resources.

3.11.2.3.2 California Study Area

In California, many people fish off piers and in local bays, harbors, and waterways for subsistence rather than for recreation. High costs of living have produced food insecurity among low-income populations in California, and as a result subsistence fishing has become increasingly common, particularly among Asian, Hispanic, Hawaiian, Pacific Islander, and African American ethnicities (Cooper, 2023). Tribal and indigenous communities may also engage in subsistence fishing practices off the California coast. Pier fishing is especially popular throughout California because fishing is allowed on all public piers and does not require purchasing a fishing license. Based on 2015 Census data, almost all pier anglers in California were reported to fall under the 200 percent poverty level, with majority under the 100 percent poverty level (Cooper, 2023). Although the economic value of subsistence fisheries may often be low in California, they may be critical for the livelihoods of many communities.

In a 2012 survey conducted at four public piers in Los Angeles County, approximately 23 percent of pier-based anglers who eat the fish they catch reported that they are dependent on their catch for their diet and cost savings (Pitchon & Norman, 2012). Additionally, a 2017 fish consumption survey in the San Diego Bay indicates that approximately 46 percent of those surveyed eat the fish that they catch (Steinberg, 2017). Target species caught and often kept for consumption include the Pacific chub mackerel, California halibut, spotted sand bass, and the bonito and short fin corvina.

Subsistence fishing would be expected to occur at nearshore locations throughout the California Study Area, particularly near the amphibious approach lanes at PMSR and the southern portion of the NOCAL Range Complex, areas along the Southern California coastline from approximately Dana Point to Port Hueneme, and the San Diego harbor. It is assumed that subsistence fishing practices do not typically occur in the northern portion of the NOCAL Range Complex due to its distance from shore.

3.11.2.3.3 Transit Corridor

It is assumed that subsistence fishing practices do not typically occur within the transit corridor because of the great distance from shore.

3.11.2.4 Tourism and Recreational Use

Coastal tourism and recreation include the full range of tourism, leisure, and recreationally oriented activities that take place in the coastal zone and offshore coastal waters. These activities include coastal tourism development (e.g., hotels, resorts, restaurants, food industry, vacation homes, and second homes) and the infrastructure supporting coastal development (e.g., retail businesses, marinas, fishing tackle stores, dive shops, fishing piers, recreational boating harbors, beaches, and recreational fishing facilities). Also included are ecotourism and recreational activities such as recreational boating, beach

access, cruises, swimming, surfing, snorkeling, diving, and sightseeing (National Oceanic and Atmospheric Administration, 1998).

3.11.2.4.1 Hawaii Study Area

Tourism represents the largest influx of private capital into the Hawaii economy (Hawaii Tourism Authority, 2015). Tourism continues to be the biggest generator of jobs in Hawaii, supporting over 216,000 jobs (direct, indirect, and induced) in 2019 and 160,000 jobs in 2021 (Hawaii Tourism Authority, 2023). Although tourism declined in recent years due to the Covid-19 pandemic, the industry in Hawaii has started to recover. Visitor expenditures increased from $13 billion in 2021 to nearly $20 billion in 2022, an increase of over 50 percent (Hawaii Tourism Authority, 2023). With lifted domestic travel restrictions, over 9 million visitors arrived in Hawaii in 2022, and there was over 230,000 visitors in Hawaii on any given day in 2022 (Hawaii Tourism Authority, 2023).

Marine environments in Hawaii are popular locations for recreational activities such as sightseeing, whale watching, sport fishing, boating, diving, and surfing. The intensity of tourism and recreational activities generally declines with increasing distance from shore, although specific resources in the open-ocean area may result in a concentration of use. Recreational activities vary seasonally.

3.11.2.4.2 California Study Area

Travel and tourism are important to the California economy; however, tourism sharply declined in 2020 due to the Covid-19 pandemic. Tourism in California is gradually recovering, with visitor volume expected to recover to 100 percent of 2019 pre-pandemic visitation levels by 2024 (Visit California, 2023). In 2022, visitor spending contributed over $134 billion to California's economy. Over 1.09 million jobs in California were supported by travel and tourism in 2022 (Visit California, 2023).

Marine environments in California are popular locations for recreational activities such as sightseeing, whale watching, sport fishing, boating, diving, and surfing. Most recreation and tourist activities occur close to the mainland coast of California or between the mainland and the Channel Islands. Recreational activities may occur throughout the California Study Area, including waters off SCI. Recreational activities vary seasonally.

3.11.2.4.3 Transit Corridor

It is assumed that there is very minimal tourism and recreational activity within the transit corridor. It is highly unlikely that tourism activities would occur in the transit corridor because of the great distance from shore.

3.11.3 Environmental Consequences

None of the proposed military readiness activities would be conducted under the No Action Alternative. Therefore, baseline conditions of the existing environment for socioeconomic resources would either remain unchanged or would improve slightly after cessation of ongoing military readiness activities. As a result, the No Action Alternative is not analyzed further within this section.

This section evaluates how and to what degree the activities described in Chapter 2 could affect socioeconomic resources, including effects on the economy of the region of influence as well as social effects, of the HCTT Study Area. This analysis considers standard operating procedures and mitigation measures that would be implemented under Alternative 1 and Alternative 2 of the Proposed Action.

The evaluation addresses how the action may affect the way individuals live, work, play, relate to one another, and function as members of society. Because military readiness activities are predominantly

offshore, socioeconomic effects would be associated with economic activity, employment, income, and social conditions (e.g., livelihoods) of industries or operations that use the ocean resources within the Study Area. Although the typical socioeconomic considerations such as population, housing, and employment are not applicable, this section will analyze the potential for economic effects on marine-based activities and coastal communities. When considering effects on recreational activities such as fishing, boating, and tourism, both the economic effect associated with revenue from recreational tourism and public enjoyment of recreational activities are considered.

Military readiness activities were evaluated to identify specific components that could act as stressors by directly or indirectly affecting socioeconomic resources (e.g., commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, tourism and recreation). The stressors analyzed for socioeconomic resources include the following:

- **accessibility** (availability of access to ocean and airspace)
- **airborne acoustics** (weapons firing, in-air explosions, aircraft, pile driving, and vessel noise)
- **physical disturbance and strikes** (aircraft, vessels and in-water devices, MEM)

As stated in Section 3.0.2, a significance determination is made only for activities that may have reasonably foreseeable adverse effects on the human environment based on the significance factors in Table 3.0-2. All of the stressors analyzed in this section could have a reasonably foreseeable adverse effect, thus requiring a significance determination.

A stressor is considered to have a significant effect on the human environment based on an examination of the context of the action and the intensity of the effect. In the present instance, the effects related to accessibility, airborne acoustics, or physical disturbance and strike would be considered significant if the effects have short-term or long-term changes that would result in a direct loss of income, revenue, or employment.

Secondary stressors resulting in indirect effects on socioeconomic resources are discussed in Section 3.11.4.

3.11.3.1 Effects on Accessibility

Military readiness activities have the potential to temporarily limit access to areas of the ocean for a variety of activities associated with commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, and tourism and recreation in the HCTT Study Area. In 2015, the Navy completed the SOCAL and NOCAL Range Complexes Encroachment Action Plan to evaluate the use of offshore and nearshore waters by military and civilian stakeholders (U.S. Department of the Navy, 2015). The Navy does not possess exclusive rights to these waters. Based on freedom of the seas and open access rights to citizens and commercial organizations alike, these same waters are used by civilians for commercial and recreational activities.

Figure 3.11-8, Figure 3.11-9, Figure 3.11-10, and Figure 3.11-11 depict defensive and restricted areas in the Study Area. When military readiness activities are scheduled that require specific areas to be free of non-participating vessels and aircraft due to public safety concerns, the Action Proponents request that the USCG and FAA issue Local Notices to Mariners (LNMs) and Notices to Airmen (NOTAMs), respectively, to warn the public of upcoming activities and allow them to plan accordingly. These temporary clearance procedures are established and implemented for the safety of the public and have been employed regularly over time without substantial effects on socioeconomic resources.

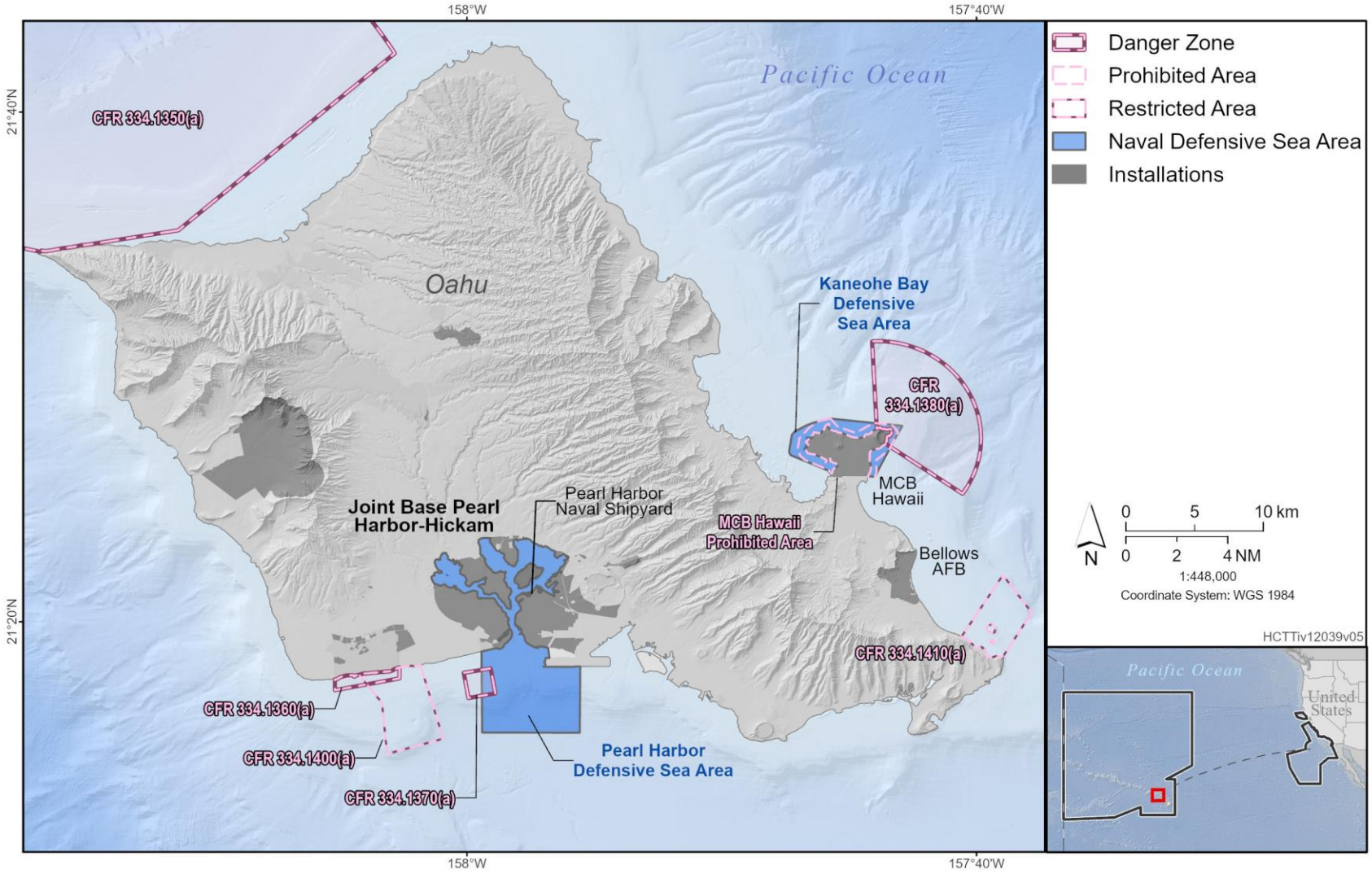
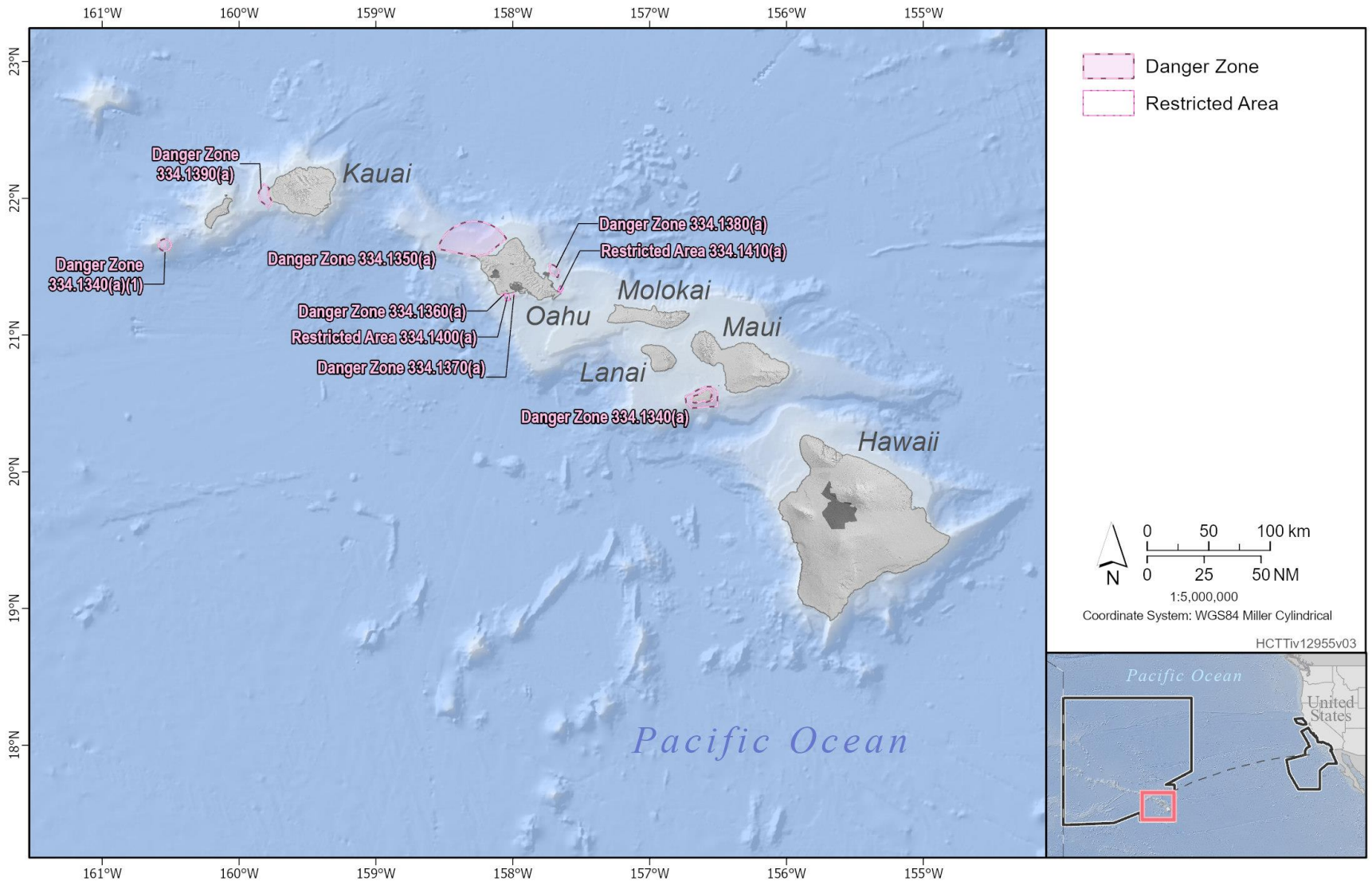


Figure 3.11-8: Danger Zones, Prohibited Areas, Restricted Areas, and Defensive Sea Areas around Oahu



Note: Refer to 33 CFR Part 334 for current regulations regarding danger zones and restricted areas within navigable waters of the United States.

Figure 3.11-9: Danger Zones and Restricted Sea Areas in the Hawaii Study Area

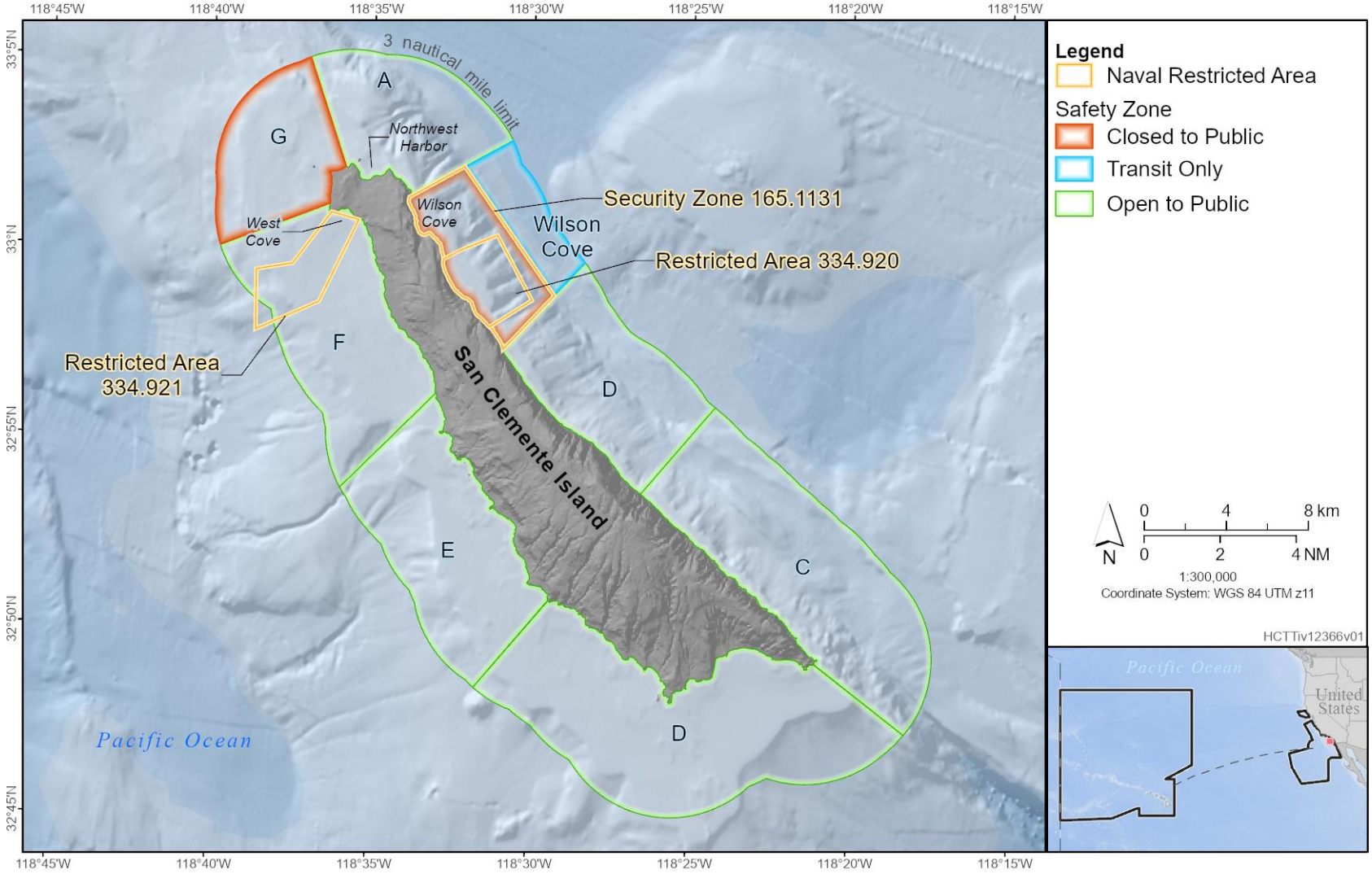


Figure 3.11-10: Restricted Sea Areas near San Clemente Island

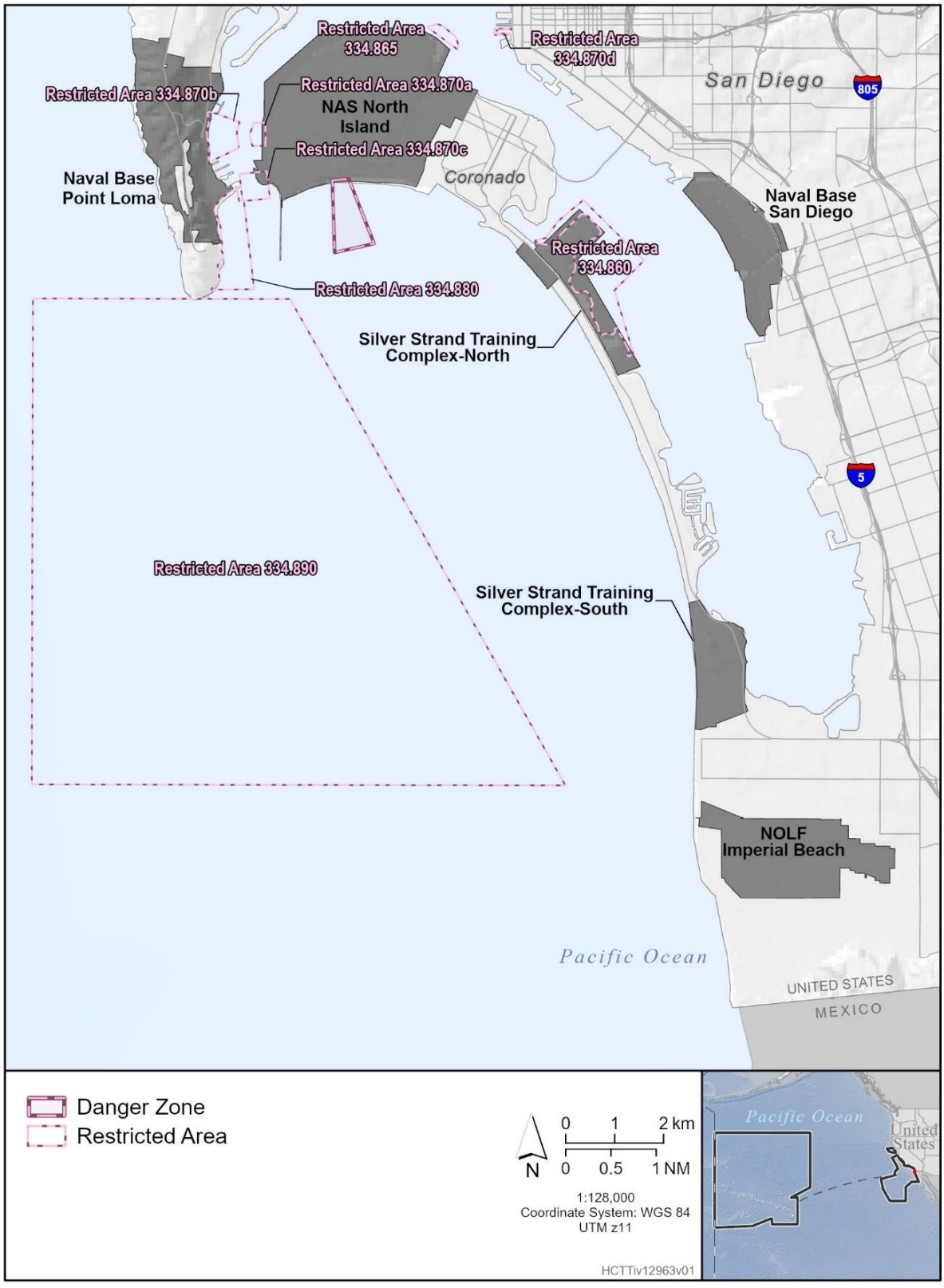


Figure 3.11-11: Restricted Areas in the Southern California Range Complex

Limits on accessibility in most areas of the HCTT Study Area due to military readiness activities would essentially remain unchanged from the current conditions, with the exception of the proposed special use airspace (W-293 and W-294), areas along the Southern California coastline from approximately Dana Point to Port Hueneme, and four amphibious approach lanes providing access between PMSR and the NOCAL Range Complex. Since these locations would be in proximity to publicly accessed areas, accessibility would be occasionally limited in these areas. However, accessibility, or restrictions to the availability of air and ocean space, throughout the HCTT Study Area, including the proposed airspace and amphibious approach lanes, would be a temporary condition. While mariners and pilots have a responsibility to be aware of conditions on the ocean and in the air, direct conflicts in accessibility would not be expected to occur. The locations of restricted areas are published and available to mariners and pilots, who typically review such information before boating or flying in any area.

Prior to initiating a military readiness activity, standard operating procedures would be followed to visually scan an area to ensure that nonparticipants are not present. If nonparticipants are present, the Action Proponents delay, move, or cancels the activity. Accessibility is no longer restricted once the activity concludes. Additional information on existing procedures for mitigating potential effects on accessibility are described in the SOCAL and NOCAL Range Complexes Navy Encroachment Action Plan (U.S. Department of the Navy, 2015).

3.11.3.1.1 Commercial Transportation and Shipping

Restricted areas, danger zones, and temporary closures of areas as a result of military readiness activities have the potential to disrupt accessibility to sea and airspace used for commercial transportation and shipping in the HCTT Study Area. However, commercial vessels entering areas within the HCTT Study Area, including established restricted areas and danger zones, operate under maritime regulations, and potential disruptions to commercial shipping would be limited or avoided by the use of LNMs (Section 3.0). Additionally, pilots are notified of upcoming temporary closures to special use airspace via NOTAMs.

3.11.3.1.2 Commercial and Recreational Fishing

The Action Proponents have performed military readiness activities within this region in the past with limited interruption to fishing or recreational activities. Knowledge and avoidance of popular fishing areas would minimize interactions between training and testing activities and fishing. Temporary closing of areas within the Study Area for security and safety would not limit public access to surrounding areas. Areas that would be temporarily closed are re-opened at the completion of the activity.

These range clearance procedures for safety purposes would not adversely affect commercial and recreational fishing activities because displacement is temporary, only lasting for the duration of the military readiness activity. Limited military readiness activities are expected to occur within 3 NM, where most commercial and recreational fishing is anticipated to occur. When a range clearance is required, the public is notified via LNMs issued by the USCG (Section 3.0).

SCI, located in the California Study Area, is an area subject to frequent military readiness activities that may require closures of the area. SCI is also a popular area for fishing and recreational activities due to the presence of highly productive and valuable fisheries. Closures affecting waters around San Clemente Island are posted at https://www.scisland.org/. Refer to the 2018 HSTT EIS/OEIS for information regarding methods implemented by the Navy to avoid conflicts between civilian and military activities during potentially hazardous events off of SCI.

SNI, 43 miles northwest from SCI in the California Study Area, is also subject to frequent closures due to military readiness activities. A naval restricted area extends from the shoreline to approximately 3 miles seaward; however, the restricted area is open to all vessels for activities such as recreational fishing and diving when there are no closures. There is a requirement that all non-military vessels and personnel always remain 300 yards from the shoreline when in the area.

Upon completion of a military readiness activities in the Study Area, the safety zone would be reopened, and fishers and boaters would be able to return to the previously closed area. To help manage competing demands and maintain public access in the Study Area, the Action Proponents conduct their offshore operations in a manner that minimizes restrictions to commercial fishers. Military ships, commercial fishers, and recreational users can operate within the area together while maintaining a safe separation distance. If necessary, the Action Proponents would relocate to avoid conflicts with civilians and maintain the safety of non-participants.

The Action Proponents may also temporarily establish an exclusion zone for the duration of a specific activity (e.g., an activity involving the detonation of explosives) to prevent non-participating vessels and aircraft from entering an unsafe area. Establishment of an exclusion zone would temporarily limit commercial and recreational fishing in that specific area; however, other areas in the HCTT Study Area would remain open to commercial and recreational fishing (U.S. Department of the Navy, 2015). The Action Proponents does not exclude fishing activities from occurring in areas of the HCTT Study Area that are not being used during military readiness activities.

To minimize potential military/civilian interactions, the Navy will continue to publish scheduled operation times and locations on publicly accessible Navy websites and through USCG issued LNMs up to six months in advance to ensure that commercial and recreational users are aware of the Navy's plans and allow users to plan their activities to avoid scheduled military readiness activities. Therefore, decreases in the frequency of fishing trips or in the availability of desirable fishing locations due to military readiness activities would not be expected. Should there be nonparticipants present in an exclusion zone, the Action Proponents would halt or delay (and reschedule, if necessary) all potentially hazardous activity until the nonparticipants have exited the exclusion zone.

3.11.3.1.3 Subsistence Fishing

The Action Proponents have performed military readiness activities within this region in the past with limited interruption to subsistence fishing activities. Knowledge and avoidance of popular fishing areas would minimize interactions between training and testing activities and fishing. Temporary closing of areas within the Study Area for security and safety would not limit public access to surrounding areas. Areas that would be temporarily closed are re-opened at the completion of the activity.

Range clearance procedures for safety purposes would not adversely affect subsistence fishing activities because displacement is temporary, only lasting for the duration of the military readiness activity. Subsistence fishing typically occurs from the shore or from small vessels within state waters (3 NM or closer to shore). Limited military readiness activities are expected to occur within 3 NM, where most subsistence fishing is anticipated to occur.

3.11.3.1.4 Tourism and Recreational Use

Temporary range clearance procedures in the Study Area, for safety purposes, would not adversely affect tourism and recreational activities because displacement is of short duration and are in areas where tourism activities are not as prevalent. Published notices (i.e., LNMs) would allow recreational

users to adjust their routes to avoid temporary restricted areas. If civilian vessels are within an activity area at the time of a scheduled operation, military personnel would continue operations only where and when it is safe and possible to avoid the civilian vessels. If avoidance is not safe or possible, the operation would be halted and may relocate or be delayed. Therefore, there would be no adverse effects on tourism and recreational activities from conducting military readiness activities in the HCTT Study Area.

As described in detail in Section 3.7, military readiness activities have been occurring in the same areas for decades, and there are no data or other information to indicate that populations of any marine mammals, including those popular with whale watchers, have been or would be affected for viewing. Therefore, no effects on wildlife viewing and other wildlife-dependent recreational activities and no economic effects on tourism (such as whale watching) and related businesses dependent on observing wildlife in their natural habitats are anticipated.

3.11.3.1.5 Effects on Accessibility Under Alternative 1

Training and Testing. Potential effects on accessibility associated with training and testing activities would be associated primarily with air warfare, surface warfare, anti-submarine warfare, mine warfare, amphibious warfare, and vessel evaluations. There would be minimal anticipated effects on commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, and tourism and recreational activities because inaccessibility to areas of co-use for training and testing would be temporary and of short duration. Most closures would occur in established ranges, warning areas, and danger zones located primarily beyond 3 NM. Popular fishing areas, including the CBSFAs and pierside locations throughout the Study Area, would not be subject to frequent closures. In addition, the Action Proponents have implemented standard operating procedures to improve communications between the military and fishers, both recreational and commercial, and reduce the number of instances when fishers must leave a temporarily closed area. Other areas not in use or temporarily restricted would remain accessible and available for use.

Modernization and Sustainment of Ranges. Potential effects on accessibility would be associated primarily with special use airspace modifications and the installation of training minefields, seafloor cables, and seafloor sensors. There would be minimal anticipated effects on commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, and tourism and recreational activities associated with modernization and sustainment of ranges because inaccessibility to areas of co-use would be temporary and of short duration, lasting until an activity (e.g., installation of cables) concludes. Other areas not in use or temporarily restricted would remain accessible and available for use. For proposed special use airspace W-293, a lower altitude ceiling of 17,000 ft. would apply to avoid affecting commercial air traffic that fly through the area.

Conclusion. The changes in accessibility as a result of military readiness activities under Alternative 1 are consistent with a less than significant determination since (1) standard operating procedures would be implemented so that there would be minimal anticipated effects on commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, and tourism and recreational activities; (2) closures are temporary, and the large expanse of the HCTT Study Area would remain available to the public for commercial and recreational use; and (3) effects on accessibility of areas within the Study Area would not result in a direct loss of income, revenue, or employment.

3.11.3.1.6 Effects on Accessibility Under Alternative 2

The locations and types of activities that have the potential to affect accessibility in the Study Area would be the same under Alternative 1 and 2. However, there would be a small increase in the number of activities conducted in the Study Area. The increases would not result in substantive changes to the potential for or types of socioeconomic effects associated with changes in accessibility. There would also be no changes to the standard operating procedures defining safety precautions and actions taken by the Action Proponents to protect the public during military readiness activities occurring at-sea. Therefore, changes to accessibility associated with military readiness activities under Alternative 2 would be less than significant.

3.11.3.2 Effects from Airborne Acoustics

As an environmental stressor, loud noises, sonic booms, and vibrations generated from military readiness activities such as weapons firing, in-air explosions, aircraft transiting, and pile driving have the potential to disrupt wildlife and humans in the HCTT Study Area. The public might intermittently hear noise from ships or aircraft overflights if they are in the general vicinity of the activities.

3.11.3.2.1 Commercial Transportation and Shipping

Airborne noise associated with military readiness activities would not be expected to affect commercial transportation and shipping in the Study Area.

3.11.3.2.2 Commercial and Recreational Fishing

Based on the analysis of effects from the Proposed Action, fishes would not experience substantial effects from airborne acoustics (Section 3.6). Marine invertebrates (Section 3.4), also important commercial fishery resources, would not be affected by airborne acoustics, because most marine invertebrates are limited in their ability to sense sound. Therefore, airborne noise from military readiness activities would not significantly affect the availability of target species for commercial or recreational fishing.

3.11.3.2.3 Subsistence Fishing

Based on the analysis of effects from the Proposed Action, fishes and marine invertebrates would not experience substantial effects from airborne acoustics (see Sections 3.4 and 3.6). Therefore, airborne noise from military readiness activities would not significantly affect the availability of target species for subsistence fishing.

3.11.3.2.4 Tourism and Recreational Use

Noise interference could decrease public enjoyment of tourism and recreational activities. These effects would occur on a temporary basis, only when weapons firing; in-air explosions; aircraft transiting and participating in military readiness activities; and pile driving occur. Military readiness activities involving weapons firing and in-air explosions would only occur when it is confirmed the area is clear of nonparticipants, reducing the likelihood these activities would be a disturbance. Although pile driving would occur inshore, noise would be temporary, intermittent, and would only last for the duration of the activity. The possibility of encountering some type of noise related to a military readiness activity is unlikely to deter a resident or tourist from participating in a recreational activity (e.g., a fishing trip) in nearshore or offshore areas.

3.11.3.2.5 Effects from Airborne Acoustics Under Alternative 1

Training and Testing. Potential airborne noise effects would be associated primarily with air warfare, surface warfare, anti-submarine warfare, mine warfare, and amphibious warfare. There would be minimal anticipated effects on commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, and tourism and recreational activities because most training and testing activities occur well out to sea, while most civilian activities, including tourism, fishing, and recreational activities, occur closer to shore. Although there is the potential for training and testing to generate noise that coastal residents and tourists on the water and land may be exposed to, noise would be infrequent, short term, and temporary. Additionally, standard operating procedures are already in place to avoid effects on civilian activities and would require that the area is clear of nonparticipants before initiating an activity.

Modernization and Sustainment of Ranges. Potential airborne acoustic effects would be associated primarily with the installation of training minefields, seafloor cables, and seafloor sensors. There would be minimal anticipated effects on commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, and tourism and recreation because activities would be of short duration and temporary, lasting until installation or maintenance is complete.

Conclusion. The analysis of effects of airborne acoustics from military readiness activities under Alternative 1 are consistent with a less than significant determination since (1) noise would be temporary, lasting for the duration of the activity; and (2) infrequent exposure to airborne noise would not result in a direct loss of income, revenue, employment, resource availability, or quality of experience.

3.11.3.2.6 Effects from Airborne Acoustics Under Alternative 2

The locations and types of activities associated with airborne acoustics would be the same under Alternative 1 and 2. However, there would be a small increase in the number of activities conducted in the Study Area. The increases would not result in substantive changes to the potential for or types of effects associated with airborne acoustics. Therefore, airborne acoustic effects during military readiness activities under Alternative 2 would be less than significant.

3.11.3.3 Effects from Physical Disturbance and Strike

Direct physical encounters or collisions with objects moving through the water or air (e.g., vessels, aircraft, unmanned devices, and towed devices), dropped or fired into the water (non-explosive practice munitions, other military expended materials, and seafloor devices), or resting on the ocean floor (anchors, mines, and targets) may damage or encounter civilian equipment. Physical disturbances that damage equipment and infrastructure could disrupt the collection and transport of products, which may affect industry revenue or operating costs.

Military readiness equipment and vessels moving through the water could collide with non-military vessels and equipment. Most of the military readiness activities involve vessel movement and use of towed devices. However, the likelihood that a military vessel would collide with a non-military vessel is remote, because of the use of navigational aids or buoys separating vessel traffic, shipboard lookouts, radar, and marine band radio communications by both the military and civilians. Therefore, the potential to affect commercial transportation and shipping by physical disturbance or strike is negligible and requires no further analysis.

Aircraft conducting military readiness activities in the HCTT Study Area operate in designated military special use airspace (e.g., Warning Areas and Restricted Areas). All aircraft, military and civilian, are subject to FAA regulations, which define permissible uses of designated airspace, and are implemented to control those uses. These regulations are intended to accommodate the various categories of aviation, whether military, commercial, or general aviation. By adhering to these regulations, the likelihood of civilian aircraft encountering military aircraft or munitions is remote. In addition, military aircraft follow procedures outlined in DoD air operations manuals, which are specific to a warning area or other special use airspace, and which describe procedures for operating safely when civilian aircraft are in the vicinity. The proposed airspace (W-291 and W-293) would follow existing standard operation procedures in place for special use airspace.

MEM can physically interact with civilian equipment and infrastructure. Many of the military readiness activities use military expended materials including chaff, flares, projectiles, casings, target fragments, missile fragments, rocket fragments, ballast weights, and mine shapes.

3.11.3.3.1 Commercial Transportation and Shipping

Military vessels and aircraft conducting military readiness activities generally conduct activities far from commercially used waterways and airways, although activities may occur throughout the HCTT Study Area. While physical disturbances or strikes could damage commercial marine vessels or aircraft, the Action Proponents implement standard operating procedures for clearing areas of all nonparticipants before initiating hazardous activities. Additionally, the Action Proponents recover many practice munitions (e.g., mines and mine shapes) for reuse following the activity. They also recover larger floating objects or materials, such as targets or target fragments, to avoid having them become hazards to navigation. Smaller objects that remain in the water column would be unlikely to pose a risk to commercial equipment.

3.11.3.3.2 Commercial and Recreational Fishing

Most recreational fishing would occur far from potential physical disturbances and strikes associated with military readiness activities. Some commercial fishing may occur beyond state waters in the HCTT Study Area and could be affected by the proposed activities if those activities were to alter fish population levels in those areas to such an extent that commercial fishers would no longer be able to find their target species.

Section 3.6 evaluated potential effects on fish habitat from physical disturbances, strikes (by small-medium-, and large-caliber projectiles), and the use of electromagnetic and towed devices. Physical disturbances and strikes would be concentrated within designated areas, resulting in localized disturbances of hard bottom areas, but could occur anywhere in the HCTT Study Area. Direct and indirect effects on the fishes using hard bottom habitat in the HCTT Study Area could occur. The use of towed devices may result in short-term and localized movement of fishes to avoid the device; however, long-term avoidance of an area is not anticipated. Effects on populations of fishes in the HCTT Study Area would not be expected, and, therefore, loss of revenue or employment by commercial fishers would not occur.

Commercial fishing activities have the potential to be affected by military equipment placed in the water column or on the seafloor for use during military readiness activities. This equipment could include ship anchors; moored or bottom-mounted targets, mines, and mine shapes; seafloor cables and sensors; bottom-mounted tripods; and the use of towed system and attachment cables. Many different types of commercial fishing gear are used in the HCTT Study Area, including gillnets, longline gear, troll gear,

trawls, seines, and traps or pots. Commercial bottom-fishing activities, such as dredging, bottom trawling, long lines, and pots and traps have the greatest potential to be affected by materials expended during military readiness activities that ultimately reside on the seafloor. For example, military expended materials, such as decelerators/parachutes, cables, and guidance wires, would ultimately sink to the seafloor and could inadvertently snag, entangle, and damage fishing equipment. Interaction with bottom-fishing gear could result in the loss of or damage to commercial fishing gear and military equipment. When these rare events occur, they could result in loss of income, revenue, and employment. Commercial fishers anticipate that fishing gear will be lost or damaged throughout the year and incorporate the economic loss into their business model.[1]

The Action Proponents recover many of the targets and target fragments used in military readiness activities and would continue to do so to minimize the potential for interaction with fishing gear and fishing vessels. Unrecoverable items are typically small, constructed of soft materials or are intentionally designed to sink to the bottom after serving their purpose, so that they would not represent a collision risk to vessels, including commercial fishing vessels. Although larger expended items may pose a risk to certain types of fishing gear used for bottom fishing, the probability of encountering such an item is remote given the large area over which expended materials would be distributed; the depth of the water where most activities using expended materials would occur; and the tendency for larger, heavier materials to become embedded in soft sediments, making them less likely to be snagged by fishing gear.

3.11.3.3.3 Subsistence Fishing

Subsistence fishing typically occurs from the shore or from small vessels within state waters (3 NM or closer to shore). Training and testing activities using expended materials would occur farther from shore in deep waters where subsistence fishing typically does not occur. Therefore, there would be no foreseeable physical disturbance or strike impacts on subsistence fishing from training and testing activities in the Study Area.

3.11.3.3.4 Tourism and Recreational Use

While military readiness activities can occur throughout the HCTT Study Area, most activities (especially hazardous) occur well out to sea. Most civilian recreational activities engaged in by both tourists and residents take place within a few miles of land or in many cases along the shoreline. As a result, conflicts between military readiness activities and tourist activities within the offshore areas, such as recreational diving and snorkeling, would not occur.

Other tourist and recreational activities occurring farther from shore would usually be conducted from larger boats that are typically well marked and visible to ships conducting military readiness activities. Vessel operators engaged in tourism activities are responsible for being aware of designated danger zones in surface waters and any LNMs that are in effect. Operators of recreational or commercial vessels are responsible for abiding by USCG maritime regulations. In conjunction with these responsibilities, standard operating procedures require military vessels to ensure that an area is clear of nonparticipants before conducting military readiness activities. Conflicts between military readiness activities in offshore areas and offshore recreational activities are not expected to occur. The Action Proponents would continue to recover larger pieces of targets used in certain activities so that target debris would not

[1] Should the gear lost be causally connected to military activity, the fisher could file a claim in Admiralty. (see https://www.jag.navy.mil/legal-services/code-15/admiralty/)

pose a collision risk to civilian vessels. Unrecoverable pieces of targets are typically small, constructed of soft materials such as cardboard, are pieces of tethered target balloons, or are designed to sink to the seafloor after use and would not damage civilian vessels if encountered.

Temporary range clearance procedures in the Study Area, for safety purposes, would not adversely affect tourism activities, because displacement is of short duration (typically less than 24 hours) and are in areas where tourism activities are not as prevalent. Action Proponents temporarily limit public access to areas where there is a risk of injury or property damage using LNMs. If civilian vessels are within a military readiness activity area at the time of a scheduled operation, military personnel could continue operations and avoid them if it is safe and possible to do so. If avoidance is not safe or possible, the operation may relocate or be delayed. In some instances where safety requires exclusive use of a specific area, nonparticipants in the area are asked to relocate to a safer area for the duration of the operation.

3.11.3.3.5 Effects from Physical Disturbance and Strike Stressors Under Alternative 1

Training and Testing. Potential physical disturbance and strike effects would be associated primarily with air warfare, surface warfare, anti-submarine warfare, mine warfare, and amphibious warfare. Military readiness activities in these warfare areas would continue at current levels within established ranges and locations. The Action Proponents recover many practice munitions (e.g., mines and mine shapes) for reuse following the activity. They also recover larger floating objects or materials, such as targets or target fragments, to avoid having them become hazards to navigation. Smaller objects that remain in the water column would be unlikely to pose a risk to fishing gear. In addition, the Navy provides advance notification of activities to the public through LNMs and postings on Navy websites. As a result, damage to or loss of commercial, recreational, or subsistence fishing gear from interaction with military vessels, equipment, or other expended materials is unlikely.

Furthermore, the Action Proponents will implement mitigation to avoid effects from explosives and physical disturbance and strike stressors on seafloor resources in areas with geographic mitigation throughout the HCTT Study Area (refer to Chapter 5). Geographic mitigation will help avoid potential effects on shallow-water coral reefs, biogenic habitat, artificial reefs, and shipwrecks, which are valuable components of the snorkeling, diving, and fishing industries.

Modernization and Sustainment of Ranges. Potential physical disturbance and strike effects would be associated primarily with the installation of training minefields, seafloor cables, and seafloor sensors. Prior to in-water installations, construction, or maintenance, the Navy would issue LNMs to alert boaters to the avoid areas of activity. Entanglement by cables associated with modernization and sustainment of ranges would not affect fish habitat and is unlikely to be encountered by commercial fishers. As a result, damage or encounters with civilian equipment used for commercial transportation and shipping, commercial and recreational fishing, subsistence fishing, and tourism and recreation would be unlikely to occur.

Conclusion. Physical disturbance and strike associated with military readiness activities under Alternative 1 are consistent with a less than significant determination since (1) standard operating procedures are implemented to avoid interactions with civilian vessels and equipment, (2) military expended materials are widely distributed throughout the expansive size of the HCTT Study Area, (3) many practice munitions are recovered after an activity concludes, and (4) LNMs are released prior to conducting activities to inform civilians to temporarily avoid areas.

3.11.3.3.6 Effects from Physical Disturbance and Strike Stressors Under Alternative 2

The locations and types of activities associated with physical disturbance and strike would be the same under Alternative 1 and 2. However, there would be a small increase in the number of activities conducted in the Study Area. The increases would not result in substantive changes to the potential for or types of effects associated with the probability of physical disturbance and strike. As a result, potential effects from physical disturbance and strike associated with military readiness activities under Alternative 2 would be less than significant.

3.11.4 Secondary Stressors

Socioeconomic resources could be indirectly affected by military readiness activities if changes to physical and biological resources were to alter the way commercial transportation, commercial or recreational fishing, subsistence fishing, and tourism and recreation were conducted.

Effects on sediment and water quality, fishes, invertebrates, and marine mammals were considered to be potential secondary stressors to socioeconomic resources. Effects on sediment and water quality have the potential to affect habitat for fishes and invertebrates that are of vital importance to the commercial fishing industry as well as recreational and subsistence fishers and the local industries that support those activities. A portion of the tourism industry is also dependent on coastal and marine-based activities in both California and Hawaii and could be affected by effects on fisheries. No indirect or secondary effects on commercial transportation and shipping are anticipated.

Commercial and recreational fishing, subsistence fishing, and tourism could be affected if military readiness activities altered fish or invertebrate populations to such an extent that species abundance was no longer sufficient to support these activities. Disturbances to marine mammal populations that result in abandonment of areas where whales are known to occur could affect the whale watching industry. However, no secondary effects would occur to these resources within the Study Area based on the results of analyses presented in Sections 3.4, 3.6, and 3.7. These sections concluded that there would be no population-level effects on marine species from military readiness activities, including from the use of explosives and sonar and other transducers. Therefore, indirect or secondary effects on commercial transportation, commercial or recreational fishing, tourism, and subsistence fishing would be less than significant.

3.11.5 Summary of Combined Potential Effects

3.11.5.1 Combined Effects of All Stressors Under Alternative 1

Military readiness activities would be widely dispersed throughout the HCTT Study Area, limiting the potential for co-occurrence of stressors from multiple military readiness activities being conducted at the same time but in a different location. Certain military readiness activities may return to a specific geographic location to use its unique physical characteristics. Repeatedly using the same area may limit accessibility to that area for commercial or recreational activities, relative to a less frequently used area. The Action Proponents typically use established ranges, warning areas, and danger zones for military readiness activities that are conducted repeatedly over time. Many commercial and recreational users in the region are familiar with the locations of military readiness activities, which allows for better planning and fewer instances of conflict. When an area needs to be temporarily closed to the public, the Navy notifies the public through LNMs and NOTAMs ahead of time to avoid potential conflicts with the public. If multiple, incompatible military readiness activities need to use a specific location, the activities would not be scheduled at the same time, and stressors associated with each activity would not occur at the

same time. Therefore, an increase in effects on socioeconomic resources resulting from a combination of stressors occurring simultaneously is not expected.

3.11.5.2 Combined Effects of All Stressors Under Alternative 2

The number and types of activities that would be conducted is similar to those described under Alternative 1 (see Chapter 2). Therefore, the combined effects of all stressors for socioeconomics would be similar to what is described under Alternative 1.

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