DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223, 224, and 226

[Docket No. 230627–0157]

RIN 0648–BL82

Endangered and Threatened Wildlife and Plants: Proposed Rule To Designate Marine Critical Habitat for Six Distinct Population Segments of Green Sea Turtles

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: We, the National Marine Fisheries Service (NMFS), propose to designate specific areas in the marine environment as critical habitat for six distinct population segments (DPSs) of the green sea turtle (*Chelonia mydas*) under the Endangered Species Act (ESA) of 1973, as amended. The DPSs that occur in waters under U.S. jurisdiction include the threatened North Atlantic, South Atlantic, East Pacific, and Central North Pacific DPSs and the endangered Central South Pacific and Central West Pacific DPSs. Proposed critical habitat includes nearshore areas from the mean high water line to 20 m depth located along the coasts of Florida, North Carolina, Texas, Puerto Rico, U.S. Virgin Islands, California (which also includes nearshore areas from the mean high water line to 10 km offshore), Hawai'i, American Samoa, Guam, and the Commonwealth of Northern Mariana Islands. It also includes *Sargassum* habitat, from 10 m depth to the outer boundary of the U.S. Exclusive Economic Zone, in the Gulf of Mexico and Atlantic Ocean. Based on consideration of economic impacts, we propose to exclude multiple areas from designation. We are soliciting comments on all aspects of the proposed critical habitat designations and will consider information received prior to making final designations. We are also announcing public informational meetings and public hearings.

DATES: Comments must be received by October 17, 2023.

Public informational meetings and public hearings: We will hold six public informational meetings followed by public hearings on:

(1) Central North Pacific DPS—Hawai'i: August 10, 2023, from 6 p.m. to 8 p.m., Hawai'i-Aleutian time,

(2) Central South Pacific DPS—Tutuila: August 16, 2023, from 6 p.m. to 8 p.m., Samoan time,

(3) Central West Pacific DPS—Guam: August 21, 2023, from 6 p.m. to 8 p.m., Chamorro time,

(4) Central West Pacific DPS—Saipan: August 23, 2023, from 6 p.m. to 8 p.m., Chamorro time,

(5) North and South Atlantic DPSs—Florida, Puerto Rico and U.S. Virgin Islands: August 29, 2023, from 6 p.m. to 8 p.m., Eastern time, and

(6) East Pacific DPS—California: August 30, 2023, from 6 p.m. to 8 p.m., Pacific time.

ADDRESSES: You may submit data, information, or comments on this document, identified by NOAA–NMFS–2023–0087, and on the supplemental documents by either of the following methods:

- *Electronic Submission:* Submit all electronic public comments via the Federal e-Rulemaking Portal. Go to *https://www.regulations.gov* and enter *NOAA–NMFS–2023–0087* in the Search box. Click on the ''Comment'' icon, complete the required fields, and enter or attach your comments.
- *Mail:* Submit written comments to Endangered Species Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway (SSMC3), Silver Spring, Maryland 20910, Attn: Green Turtle Critical Habitat Proposed Rule.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, might not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on *https://www.regulations.gov* without change. All personal identifying information (*e.g.,* name, address, *etc.*), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. We will accept anonymous comments (enter ''N/A'' in the required fields if you wish to remain anonymous).

Documents supporting this proposed rule, which include a Draft Biological Report (NMFS 2023a), a Draft Economic Analysis (NMFS 2023b), and a Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c), are available on the Federal e-Rulemaking Portal *https://www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2023-0087.*

FOR FURTHER INFORMATION CONTACT: Jennifer Schultz, NMFS, Office of Protected Resources, *Jennifer.Schultz@noaa.gov;* 301–427–8443.

SUPPLEMENTARY INFORMATION: Section 4 of the Endangered Species Act of 1973 (ESA) requires the designation of critical habitat for threatened and endangered species to the maximum extent prudent and determinable, based on the best scientific data available and after taking into consideration national security, economic, and other relevant impacts (16 U.S.C. 1533). Section 7 of the ESA, requires Federal agencies to insure that actions they authorize, fund, or carry out are not likely to destroy or adversely modify such habitat (16 U.S.C. 1536(a)(2)).

This rule proposes critical habitat designations for the six DPSs of green sea turtle (hereafter referred to as ''green turtle'') occurring in U.S. waters: North Atlantic (threatened), South Atlantic (threatened), East Pacific (threatened), Central North Pacific (threatened), Central South Pacific (endangered), and Central West Pacific (endangered). It summarizes the best available scientific information regarding marine habitat requirements of green turtles and the methods used to develop the proposed critical habitat designations. The following supporting documents provide the detailed information used to make our determinations and are referenced throughout this rule: Draft Biological Report (NMFS 2023a), Draft Economic Impact Analysis (NMFS 2023b), and Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c).

Background

The National Marine Fisheries Service (NMFS, we) and the U.S. Fish and Wildlife Service (USFWS) jointly administer the ESA regarding sea turtles. NMFS has jurisdiction in the marine environment, and USFWS has jurisdiction in the terrestrial environment (*i.e.,* on beaches; Memorandum of Understanding Defining the Roles of USFWS and NMFS in Joint Administration of the ESA as to Sea Turtles 2015). In 1978, NMFS and USFWS listed the green turtle as a threatened species, except for the Florida and Mexican Pacific coast breeding populations that were listed as endangered, under the ESA (43 FR 32800, July 28, 1978). In 1998, NMFS designated critical habitat for the species in waters surrounding Culebra Island, Commonwealth of Puerto Rico, and its outlying keys (63 FR 46693, September 2, 1998). On February 16, 2012, NMFS and USFWS received a petition from the Association of Hawaiian Civic Clubs to identify the Hawaiian green turtle population as a

DPS and to delist it. In response, NMFS and USFWS performed a status review of the entire species (Seminoff *et al.* 2015). On April 6, 2016, NMFS and USFWS published a final rule to list 11 green turtle DPSs as threatened or endangered (81 FR 20057). That action replaced the original listing for the species and concluded that previously designated critical habitat remained in effect for the North Atlantic DPS.

The listing of green turtle DPSs under the ESA in 2016 triggered the requirement to designate critical habitat to the maximum extent prudent and determinable (16 U.S.C. 1533(a)(3)(A)). Critical habitat cannot be designated within foreign countries or in areas outside the jurisdiction of the United States (50 CFR 424.12(g)). Therefore, we are required to designate critical habitat for those DPSs occurring in areas under U.S. jurisdiction, specifically the North Atlantic, South Atlantic, East Pacific, Central North Pacific, Central South Pacific, and Central West Pacific DPSs.

In the proposed listing rule, NMFS and USFWS requested information related to the identification of critical habitat, essential physical or biological features for green turtle DPSs within U.S. jurisdiction, and other relevant impacts of a critical habitat designation (80 FR 15271, March 23, 2015); however, we did not receive information related to the designation of critical habitat at that time. Therefore, we found that critical habitat was not determinable at the time of listing and announced our intention to designate critical habitat in a future rulemaking.

On January 8, 2020, the Center for Biological Diversity, Sea Turtle Oversight Protection, and Turtle Island Restoration Network filed a complaint, alleging failure to designate critical habitat by the statutory deadline (*Center for Biological Diversity et al.* v. *Bernhardt et al.,* No. 1:20–cv–00036–EGS (D.D.C.)). On August 21, 2020, the parties entered into a settlement agreement that stipulates that NMFS and USFWS shall submit proposed determinations concerning the designation of critical habitat to the **Federal Register** on or before June 30, 2023 (*Center for Biological Diversity et al.* v. *Bernhardt et al.,* 1:20–cv–00036–EGS (D.D.C.)).

To meet the court-ordered deadline and fulfill our obligation to designate critical habitat for green turtle DPSs in U.S. waters, we followed a four-step process described in the following sections: (1) identification of areas that meet the definition of critical habitat; (2) review of Department of Defense Integrated Natural Resources Management Plans (INRMPs) under ESA section 4(a)(3); (3) weighing economic, national security, and other impacts against the benefits of designation under ESA section 4(b)(2); and (4) proposing areas for critical habitat designation based on the previous three steps. We applied this process to each DPS, as summarized in the DPS-specific sections.

Identification of Areas That Meet the Definition of Critical Habitat

To identify areas that meet the definition of critical habitat, we convened a critical habitat review team (the Team) to gather and evaluate the best available scientific information on green turtle habitat use within U.S. waters. The Team consisted of NMFS' Regional Sea Turtle Recovery Coordinators and sea turtle researchers from NMFS' Science Centers. For each DPS, the Team evaluated the best available scientific information on green turtles, which is described in detail in the Draft Biological Report (NMFS 2023a) and summarized here. In addition to reviewing published information, the Team solicited data and input from Federal, State, and Territory agency sea turtle programs and non-governmental researchers studying green turtles and their habitats. The Team followed the process described below to identify areas that meet the definition of critical habitat and to qualitatively rate the conservation value (which reflects the benefit to the DPS) of each area.

Section 3(5)(A) of the ESA defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species (16 U.S.C. 1532(5)(A)). As defined in the ESA, a species includes any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature (16 U.S.C. 1532(16)). Conservation is defined as the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary (16 U.S.C. 1532(3)).

The Team was asked to identify the areas within the geographical areas occupied by each DPS that contain features essential to its conservation that may require special management considerations or protection. The Team was also asked to provide a qualitative rating of conservation value (*e.g.,* high, moderate, or low) for each area meeting the definition of critical habitat. This process is summarized in the sections below and described in detail in the Draft Biological Report (NMFS 2023a).

Geographical Area Occupied

For each DPS, the Team summarized information regarding the geographical area occupied, which is defined by regulation as an area that may generally be delineated around species' occurrences, as determined by the Secretary (*i.e.,* range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (*e.g.,* migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals) (50 CFR 424.02). As defined in the ESA, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species, except in those circumstances determined by the Secretary (16 U.S.C. 1532(5)(C)). Furthermore, for green turtles, the range of each DPS includes areas outside of U.S. jurisdiction, which cannot be designated as critical habitat (50 CFR 424.12(g)). Therefore, for each DPS, we identified the geographic area occupied within the U.S. Exclusive Economic Zone (EEZ), which extends 200 nautical miles from the coast of the United States and its Territories.

The ESA allows designation of unoccupied areas that are essential for the conservation of the species (16 U.S.C. 1532(5)(A)). However, we have concluded that there are no unoccupied areas that are essential for the conservation of the species and do not propose to designate unoccupied areas as critical habitat.

Physical and Biological Features Essential to Conservation

Physical or biological features essential to the conservation of the species (hereafter referred to as essential features) are defined as the features that occur in specific areas and that are essential to support the life-history needs of the species, including but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral

or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity (50 CFR 424.02).

As detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the life cycle of a green turtle requires survival, growth, development, and reproduction. Reproduction requires courtship, mating, ovulation, and nesting, and results in the production of the next generation of green turtles. Generally, green turtle life history also requires migration from reproductive areas to foraging and resting areas (hereafter referred to as foraging/resting areas or refugia). Food resources include seagrass, macroalgae, and invertebrates and are required to provide energy for survival, growth, development, and reproduction. Resting areas or refugia are underwater areas of reduced disturbance, which allow turtles to rest, digest, thermoregulate, and avoid predation. While foraging and resting are inextricably linked (turtles cannot forage without resting and vice versa), food resources and refugia are often located in different areas. Therefore, turtles must move between these areas. These life history needs dictate the habitat requirements (*i.e.,* essential features) for each DPS. Based on the life history needs of each DPS and the best available scientific information, the Team identified essential features. Those detailed essential features (and the information used to identify them) are described in the DPS-specific sections below. The following generalized features are essential to the conservation of at least one DPS:

- *Reproductive essential feature:* From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164), to allow for the transit, mating, and internesting of reproductive individuals and the transit of post-hatchlings. (We were unable to identify this feature for the East Pacific DPS because no nesting occurs within U.S. jurisdiction.)
- *Migratory essential feature:* From the mean high water line to a particular depth or distance from shore (as dictated by the best available data for that DPS), sufficiently unobstructed corridors that allow for unrestricted transit of reproductive individuals between benthic foraging/resting areas and reproductive areas. (We identified this feature for the North Atlantic and East Pacific DPSs only because other DPSs do not use a narrow, constricted migratory corridor.)
- *Benthic foraging/resting essential features:* From the mean high water line to 20 m depth, underwater refugia and food resources (*i.e.,* seagrasses, macroalgae, and/or invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction. (We identified these features for all DPSs.)
- *Surface-pelagic foraging/resting essential features:* Convergence zones, frontal zones, surface-water downwelling areas, the margins of major boundary currents, and other areas that result in concentrated components of the *Sargassum*-dominated drift community, as well as the currents which carry turtles to *Sargassum*-dominated drift communities, which provide sufficient food resources and refugia to support the survival, growth, and development of post-hatchlings and surface-pelagic juveniles, and which are located in sufficient water depth (at least 10 m) to ensure offshore transport via ocean currents to areas which meet forage and refugia requirements. (We identified these features for the North Atlantic DPS only because there is insufficient data to identify these features for other DPSs)

As described in the Draft Biological Report and summarized in the following paragraphs, these generalized features are essential to the conservation of at least one DPS. The Team also considered other physical and biological features, but none were essential to the conservation of a DPS. In the DPS-specific sections below, more detailed information is provided, including the data used to identify and define the essential features for each DPS.

The reproductive essential feature is essential to the conservation of green turtle DPSs because it is required for mating, females' access to and from nesting beaches (*i.e.,* where egg clutches are deposited) and internesting areas (*i.e.,* for rest and egg production), and post-hatchlings' swim frenzy and early dispersal. Without successful mating, nesting, and recruitment, the DPSs cannot recover. Because the East Pacific DPS does not nest within U.S. jurisdiction, this essential feature does not apply to that DPS. Reproductive individuals return to their natal beaches to nest and to waters off those beaches to mate (Bowen *et al.* 1992; Karl *et al.* 1992), even if such habitats are adversely modified over time. Therefore, it is essential to the conservation of green turtle DPSs to minimize such adverse modifications and maintain in-water access to known nesting beaches. During mating, turtles may remain mounted for hours at the surface (Witherington *et al.* 2006), rendering them vulnerable to in-water obstructions and disturbances. Therefore, it is essential to the conservation of green turtle DPSs that such areas remain free from obstructions and disturbances that would harm or interrupt mating turtles.

Females lay up to nine clutches separated by approximately 2-week internesting intervals (Witherington *et al.* 2006; Hart *et al.* 2013; Balazs *et al.* 2015). During internesting intervals, females use underwater refugia off nesting beaches to reovulate (*i.e.,* produce eggs for subsequent nestings; Pearse and Avise 2001), rest (Carr *et al.* 1974), and avoid harassment from courting males (Booth and Peters 1972). Adult females are the most valuable individuals in the population (*i.e.,* those most directly contributing to the next generation). Therefore, it is essential to the conservation of green turtle DPSs that such underwater areas remain free from obstructions and disturbances that would prevent them from resting, reovulating, and returning to nesting beaches to lay additional clutches. Dark unobstructed waters off nesting beaches are also essential to post-hatchlings' swim frenzy and early dispersal. Post-hatchlings use this essential feature in a manner similar to post-nesting females: they move away from nesting beaches to foraging/resting areas. Hatchlings emerge from their nests en masse almost exclusively at night (Bustard 1967) and crawl to the surf, where they begin a swim frenzy, moving quickly away from land and toward oceanic surface currents. Even after entering the ocean, post-hatchlings are attracted to artificial lighting, which can cause them to linger in nearshore habitats and increase their risk of predation (Thums *et al.* 2016). Although this life stage is generally the most abundant and requires many years and stages of development before contributing to the next generation, it is essential to the recovery of the species because systemic reductions in post-hatchling survival are likely to lead to future reductions in abundance and productivity. A modeling study indicates that fluctuations in the survival of early life stages drive variation in abundance and suggests protecting early life stages from hostile environments (Halley *et al.* 2018). Therefore, conservation of green turtle DPSs requires that such areas remain free from obstructions and lighting that would concentrate predators, reduce the

survival of post-hatchlings, or prevent post-hatchlings from reaching developmental habitats.

The migratory essential feature is essential to the conservation of the North Atlantic and East Pacific DPSs because it is required for connectivity between areas used by adults for foraging/resting and areas used for reproduction. Without successful migration, individuals could not survive and reproduce, which are both essential for recovery. The migration of reproductive individuals may occur over hundreds to thousands of kilometers (Witherington *et al.* 2006) or a few kilometers (Hart *et al.* 2013; Hart *et al.* 2017). The North Atlantic and East Pacific DPSs use relatively narrow paths (*i.e.,* constricted migratory corridors) in coastal waters to move between foraging/resting and reproductive areas. In such instances, reproductive individuals that are otherwise spread out over many, often distant, foraging/resting sites become concentrated into a relatively small area (*e.g.,* Foley *et al.* 2013), increasing the DPS's vulnerability to anthropogenic threats. Thwarted or delayed (*i.e.,* arriving late for the mating/nesting season) migration is likely to interfere with successful reproduction. Therefore, conservation of green turtle DPSs that use narrow migratory corridors requires that such areas remain free from obstructions or other activities that would restrict transit of reproductive individuals between reproductive and benthic foraging/resting areas.

At all life stages, benthic and surface pelagic foraging/resting essential features are essential for the conservation of green turtle DPSs. Surface-pelagic foraging/resting essential features provide the energy required for post-hatchlings and juveniles to develop, grow, and transition into the next life stage. Benthic foraging/resting essential features provide the energy required for juveniles to mature and for adults to migrate and reproduce. Foraging includes locating and consuming food resources (*e.g.,* seagrasses, macroalgae, and/or invertebrates). Resting includes the use of underwater refugia for digestion, protection from predators, thermoregulation, and recuperation. Food resources and refugia are often located in adjacent areas, and turtles must move between these areas. Without successful foraging/resting, the DPSs cannot recover.

Green turtles use different habitats at different life stages. Generally, the earliest marine life stages (post-hatchling and surface-pelagic juvenile, often called the ''lost years'') have been the most difficult to study, and sufficient data are available only for the North Atlantic DPS. After their swim frenzy and early dispersal, post-hatchlings swim and are carried by currents to pelagic habitats where surface waters converge to form local downwellings that result in linear accumulations of floating material, especially macroalgae (*e.g., Sargassum* spp.) (Carr 1987a; Witherington *et al.* 2006; Witherington *et al.* 2012b; Mansfield *et al.* 2021). They remain at or near the sea surface, where thermal benefits promote the growth and survival of young turtles (Mansfield *et al.* 2021). These surface-pelagic habitats provide a place to rest and hide from predators as well as abundant food resources, including hydroids, bryozoans, polychaetes, gastropods, cnidarians, fish eggs, and organic debris associated with the Sargassum community (Witherington *et al.* 2006; Boyle and Limpus 2008; Jones and Seminoff 2013). Therefore, the conservation of green turtle DPSs requires surface-pelagic foraging/resting essential features because they provide the food, shelter, and thermal benefits required for survival, growth, and development of this early life stage.

Recruitment refers to the process through which juveniles are added to the adult population; it is essential to the continued existence of a DPS. As they grow and develop, green turtles recruit to benthic habitats (Bolten 2003), which also provide foraging/resting essential features. Benthic foraging green turtles consume seagrasses, macroalgae, and invertebrates (Estaban *et al.* 2020), exhibiting different foraging preferences among sites and varying degrees of omnivory (Jones and Seminoff 2013; Long *et al.* 2021). Primarily or partially herbivorous diets result in slow growth rates, with green turtles maturing at 12 to 50 years and 60 to 100 cm straight carapace length (SCL; Seminoff *et al.* 2002; Bell *et al.* 2005; Zurita *et al.* 2012; Avens and Snover 2013; Van Houtan *et al.* 2014a). These diets must support survival, development, and growth for juveniles, and energy-expensive migration and reproduction for adults. Thus, multiple and/or large foraging areas are needed. In addition, nearby refugia areas are used for underwater rest, digestion, thermoregulation, and protection from predators. Therefore, conservation of green turtle DPSs requires that benthic foraging/resting resources remain available in sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

Special Management Considerations or Protection

A specific area within the geographic area occupied by a species meets the definition of critical habitat if the area contains one or more physical or biological features that are essential to the conservation of the species and that ''may require special management considerations or protection'' (16 U.S.C. 1532(5)(A)(i)(II)). The phrase, ''special management considerations or protection,'' is defined as the methods or procedures useful in protecting the physical or biological features essential to the conservation of listed species (50 CFR 424.02). Courts have made clear that the ''may require'' standard requires that we determine that special management considerations or protection of the features might be required either now or in the future, but such considerations or protection need not be immediately required. See *Cape Hatteras Access Pres. Alliance* v. *U.S. Dept. of Interior,* 344 F. Supp. 2d 108, 123–24 (D.D.C. 2004)*; Home Builders Ass'n of N. California* v. *U.S. Fish and Wildlife Serv.,* 268 F. Supp. 2d 1197, 1218 (E.D. Cal. 2003). The relevant management need may be ''in the future based on possibility.'' See *Bear Valley Mut. Water Co.* v. *Salazar,* No. SACV 11–01263–JVS, 2012 WL 5353353, at 25 (C.D. Cal. Oct. 17, 2012). See also *Center for Biological Diversity* v. *Norton,* 240 F. Supp. 2d 1090, 1098–99 (D. Ariz. 2003) (noting that the ''may require'' phrase can be rephrased and understood as ''can require'' or ''possibly requires'').

The reproductive essential feature may require special management considerations or protection because anthropogenic threats may interrupt, delay, or prevent mating, internesting, and post-hatching swim frenzy and early dispersal. Examples of threats to the reproductive essential feature include inwater structures and construction, dredging, beach nourishment, oil and gas activities, alternative energy development and generation, vessel activities (including the establishment of shipping lanes), fishing and aquaculture activities, recreational activities, and pollution (*e.g.,* run-off and contaminants).

The migratory essential feature may require special management considerations or protection for DPSs that use narrow or constricted coastal corridors. In narrow corridors, migration could be blocked or impeded by in-water structures and construction, dredging, oil and gas activities (including oil spills and their cleanup),

energy development and generation, vessel activities (including the establishment of shipping lanes), and fishing and aquaculture activities.

The benthic and surface-pelagic foraging/resting essential features may require special management considerations or protection for activities that reduce access to or availability of food resources and refugia. For benthic features, these activities include construction, dredging, oil and gas activities (including oil spills and their cleanup), vessel activities (*e.g.,* grounding, anchoring, and propeller scarring), fishing and aquaculture activities (*i.e.,* those that disturb or destroy submerged aquatic vegetation or substrates used for refugia), recreational activities, and pollution (*e.g.,* run-off and contaminants). For surface-pelagic features, these activities include any that damage or degrade this habitat, including oil and gas activities (including oil spills and their cleanup), pollution (*e.g.,* marine debris/plastics and their removal, ocean dumping, and vessel discharges), and commercial harvest of *Sargassum* spp.

Specific Areas Containing the Essential Feature(s)

We are required to determine the ''specific areas'' within the geographical area occupied by the species that contain the physical or biological features essential to the conservation of the species (16 U.S.C. 1532(5)(A)(i)). Specific areas are identified ''at a scale determined by the Secretary [of Commerce] to be appropriate'' (50 CFR 424.12(b)(1)). Furthermore, when several habitats, each satisfying the requirements for designation as critical habitat, are located in proximity to one another, the Secretary may designate an inclusive area as critical habitat (50 CFR 424.12(d)).

The Team relied on the best available data on green turtle occurrence and use of essential features to determine the appropriate scale and boundaries of specific areas considered for designation. Many areas contain multiple essential features. Some elements of essential features (*e.g.,* macroalgae, invertebrates, and refugia in the benthic and surface-pelagic essential features) are not adequately mapped, and some areas containing the essential features are not used by green turtles. Therefore, we used the presence of green turtles to identify which specific areas contain essential features. For example, we considered an area where green turtles forage and rest (as indicated by data or expert observation) to contain a benthic or surface-pelagic foraging/resting essential features. Areas that did not contain an essential feature or the presence of green turtles were not considered further; this includes data deficient areas without documented use of essential features by green turtles (as indicated by data or expert observation). Data considered, analyses conducted, and conclusions reached by the Team are discussed in detail in the Draft Biological Report (NMFS 2023a) and summarized herein. The Team considered the best available information to be published and unpublished data from scientific studies and surveys. The Team also gave great weight to observations made by sea turtle biologists working with a particular DPS. Although not as robust as data from scientific studies and surveys, stranding data were also used to confirm the presence and relative abundance of green turtles in an area. When evaluating stranding data, which include data on dead, sick, injured, and cold-stunned turtles, the Team considered the following caveats. Live stranded turtles may have reduced mobility, and their movements (and by extension, the places they strand) can be influenced by surface winds, water temperatures, and water currents. Dead stranded turtles may have died in an area other than where they were found due to transport by wind or water currents. Strandings are more likely to be observed and reported in areas with higher human populations (Cook *et al.* 2021).

The Team identified specific areas containing the reproductive essential feature as waters adjacent to nesting beaches proposed as terrestrial critical habitat by USFWS (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164). To determine the offshore extent of these specific areas, the Team reviewed and evaluated published and unpublished data on mating, internesting, and post-hatchling swim frenzy and early dispersal.

To identify specific areas containing the migratory essential feature, the Team reviewed and evaluated satellite telemetry (*i.e.,* tracking) data collected from adults using migratory corridors between waters adjacent to nesting beaches and benthic foraging/resting areas.

To identify specific areas containing the benthic and surface-pelagic foraging/resting essential features, the Team reviewed and evaluated the best available data on food resources and refugia in surface-pelagic and benthic habitats. Because food resources and refugia occur in many locations at varying degrees of abundance, we relied on the occurrence of foraging/resting green turtles to determine which areas provide such resources in sufficient condition, distribution, diversity, abundance, and density necessary to support the survival, development, and growth of post-hatchlings and juveniles, or the survival, reproduction, and migration of adults.

Conservation Value

Under section 4(b)(2) of the ESA, specific areas may be excluded from designation if we determine that the benefits of such exclusion outweigh the benefits of inclusion, unless the failure to designate that area will result in extinction of the species (16 U.S.C. 1533(b)(2)). NMFS and USFWS have adopted a joint policy providing non-binding guidance on how to implement section 4(b)(2). See Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act (''4(b)(2) Policy;'' 81 FR 7226, February 11, 2016). The benefits of designating specific areas include the protection afforded under section 7(a)(2) of the ESA, which requires all Federal agencies to insure that their actions are not likely to destroy or adversely modify critical habitat. The designation of critical habitat also provides benefits to the species, such as improved education and awareness by informing the public about the species' habitat needs. The 4(b)(2) Policy identifies the benefits of inclusion as primarily the conservation value of designating the area. Thus, the conservation value represents the benefits of designation for a specific area. For this designation, the conservation value of a specific area is the biological importance of that area to the DPS.

The Team was asked to evaluate the conservation value of each specific area containing essential features that may require special management considerations or protection. The Team could not identify quantitative measures and therefore provided a qualitative assessment (*e.g.,* high, moderate, or low conservation value), based on the best available scientific information. High conservation value areas are highly important to the conservation of the DPS. Moderate conservation value areas are moderately important to the conservation of the DPS. Low conservation value areas, while important, are less important to the conservation of the DPS than high or moderate conservation value areas.

For specific areas under consideration for exclusion, the Team was also asked to review whether such an exclusion would result in extinction to the DPS. They did not find that any excluded

area, or all excluded areas together, would result in extinction to a DPS.

The Team determined that all areas containing reproductive and/or migratory essential features are of high conservation value because they allow adults (and often a large proportion of the adults within a DPS) to reproduce, and reproduction is directly linked to population growth (Wallace *et al.* 2008). Conservation efforts focused on these areas are the most likely to lead to population recovery (Heppell 1998). Furthermore, without the essential reproductive and migratory features, green turtles could not transit to and access the nesting beaches proposed as critical habitat by USFWS. The Team concluded, and we agree, that any area containing essential reproductive or migratory features is of high conservation value to the DPS.

The Team determined that the conservation value of an area containing benthic and/or surface-pelagic foraging/resting essential features depends on the relative abundance or density of turtles within a DPS using that area. An area that supports a relatively high number or density of foraging/resting individuals would provide high conservation value, whereas an area that supports a relatively low number or density of foraging/resting individuals would provide low conservation value. Low conservation value does not mean that the area does not contain foraging/resting essential features or is not suitable habitat for green turtles. An area of low conservation value simply supports fewer foraging/resting green turtles than areas of moderate or high conservation value.

Often areas contain multiple essential features. As stated above, any area containing reproductive and/or migratory essential features would provide high conservation value to the DPS, and the presence of foraging/resting features would increase the conservation value of that area.

The relative conservation value provided by foraging/resting areas is evaluated for each DPS and is not comparable across DPSs. As stated in the ESA, the term ''species'' includes any DPS of any species of vertebrate fish or wildlife which interbreeds when mature (16 U.S.C. 1532(16)). Therefore, each DPS is a ''species'' or separate listed entity under the ESA. The identification of DPSs under the ESA reflected the discreteness or marked separation among green turtle populations as a consequence of ecological, behavioral, and oceanographic factors, and was based on genetic and morphological evidence (Seminoff *et al.* 2015; 81 FR 20057, April 6, 2016). Because there is little gene flow and co-occurrence among green turtle DPSs, high abundance or density within one DPS would not benefit another DPS. Furthermore, green turtle DPSs differ in their abundance, trend (*i.e.,* increasing or decreasing population size), demographics, and threats, resulting in different conservation needs. Therefore, we did not compare turtle abundance or densities in foraging/resting areas among DPSs. Instead, we independently evaluated the conservation value provided by foraging/resting areas within each DPSs.

Within a DPS, the Team relied on standardized data, where available, to compare the relative abundance or density of green turtles in areas containing only foraging/resting essential features. Where standardized data were not available, the Team used the best available green turtle occurrence and habitat use data (*e.g.,* observations, tracking, or bycatch data) to determine whether an area is of high, moderate, or low conservation value. When comparing these data, the Team considered data type. For example, because satellite tracking is still relatively expensive compared to flipper tagging, fewer individuals are satellite tracked. However, if a large proportion of tracked individuals used the same area for foraging and/or resting, the Team concluded, and we agree, that the area is of high conservation value.

The Team found wide variance in the amount and specificity of scientific data available for the six green turtle DPSs occurring in U.S. waters. For the North Atlantic DPS, the Team relied on an abundance of published and unpublished data, as well as input from green turtle experts from academia and State agencies to differentiate between high, moderate, and low conservation values of specific areas. There is less published or unpublished data for the South Atlantic DPS, so the Team relied heavily on input from green turtle experts from the Territory, academia, and non-profit organizations to evaluate specific areas for high, moderate, and low conservation values. For the Central North, South, and West Pacific DPSs, the Team was unable to identify specific areas of moderate conservation value because, although Team members were involved in research in some areas, they were not familiar with all specific areas and, based on the best available data (which includes input from the State and Territory agencies), could only distinguish between high and low conservation value. For the East Pacific DPS, the Team provided additional resolution for the conservation value of each specific area (moderate-high and moderate-low) because of their high level of familiarity with these areas: a Team member was involved in all published and unpublished research on this DPS. For the purposes of this designation, we combined high and moderate-high conservation values because both were based on relatively high abundances of foraging/resting turtles. We combined low and moderate-low conservation values because both were based on relatively low abundances of foraging/resting turtles.

Review of INRMPs Under Section 4(a)(3)

Section 4(a)(3)(B)(i) of the ESA precludes designating as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DoD) or designated for its use, that are subject to an INRMP prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such a plan provides a conservation benefit to the species for which critical habitat is proposed for designation (16 U.S.C. 1533(a)(3)(B)(i)). Our implementing regulations direct us to consider the following to determine whether such a benefit is provided (50 CFR 424.12(h)): (1) the extent of the area and features present; (2) the type and frequency of use of the area by the species; (3) the relevant elements of the INRMP in terms of management objectives, activities covered, and best management practices, and the certainty that the relevant elements will be implemented; and (4) the degree to which the relevant elements of the INRMP will protect the habitat from the types of effects that would be addressed through a destruction-or-adverse-modification analysis. If we determine that a conservation benefit is provided by the INRMP, the relevant area is ineligible for consideration as potential critical habitat.

After identifying specific areas that potentially meet the definition of critical habitat for green turtles, we contacted DoD representatives and requested information regarding relevant INRMPs. Their responses are available in the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c). We evaluated INRMPs and responses in terms of the criteria outlined in our implementing regulations to determine whether an INRMP provides a conservation benefit to the DPS. At this time, no areas are ineligible for consideration as potential critical habitat. We continue to work with DoD to review additional information (*e.g.,* spatial data on areas owned, controlled,

or designated for use by DoD and new, relevant elements). We will consider any additional information prior to publication of the final rule to designate critical habitat.

Analysis of Impacts Under Section 4(b)(2)

Section 4(b)(2) of the ESA requires the Secretary to designate critical habitat on the basis of the best scientific data available after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude a particular area if she determines that the benefits of exclusion outweigh the benefits of designation, unless that exclusion will result in the extinction of the species, based on the best available scientific and commercial information (16 U.S.C. 1533(b)(2)). The 4(b)(2) Policy provides non-binding guidance on how to implement section 4(b)(2). Below, we summarize the process for considering economic, national security, and other relevant impacts of designating specific areas meeting the definition of critical habitat for green turtle DPSs. Additional detail is provided in the Draft Economic Analysis (NMFS 2023b) and the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c).

Economic Impacts

The Secretary has discretion to exclude any particular area from the critical habitat designation upon a determination that the benefits of such exclusion outweigh the benefits of specifying the particular area as part of the critical habitat (16 U.S.C. 1533(b)(2); 50 CFR 424.19(c)). Exercising the delegated authority of the Secretary, we weighed the economic impacts against the benefits of designating critical habitat for each of the specific areas meeting the definition of critical habitat. Specifically, we compared the incremental economic costs of designating critical habitat in a specific area against the benefits of designating critical habitat, as represented by the conservation value of that specific area to the DPS.

The 4(b)(2) Policy states that when considering the probable incremental economic impacts of designating a particular area, it is the nature of those impacts, not necessarily a particular threshold level, that is relevant to our determination (81 FR 7226, February 11, 2016). Incremental impacts refer to those that are solely attributable to the critical habitat designation (*i.e.,* relative to a baseline that reflects existing regulatory impacts in the absence of critical habitat).

The detailed methods used to estimate incremental economic impacts are described in the Draft Economic Analysis (NMFS 2023b). We followed these general steps to quantify the economic impacts associated with designating critical habitat:

(1) Identified the baseline of economic activity and the relevant statutes and regulations that constrain that activity in the absence of the critical habitat designation;

(2) Identified the types of activities that are likely to be affected by critical habitat designation;

(3) Estimated the costs of administrative effort and, where applicable, conservation efforts recommended for the activity to comply with the ESA's critical habitat provisions;

(4) Projected over space and time the occurrence of the activities and the likelihood they will need to be modified; and

(5) Aggregated the costs to the particular area and provide economic impacts as present value impacts and annualized impacts.

As discussed in the Draft Economic Report (NMFS 2023b), the costs quantified in the economic analysis mainly include the additional administrative effort associated with consideration of potential impacts to critical habitat as part of future section 7 consultations. Few additional conservation measures were identified as likely to result from the projected consultations, largely due to baseline protections in place. Depending on the specific area and Federal action, relevant baseline protections include protections and designated critical habitat for other co-occurring species under the ESA.

The Draft Economic Report indicates that, if designated as proposed, all critical habitat (for all six DPSs) may increase administrative costs of consultations involving green turtles by an estimated $6.4 million over the next 10 years, assuming a 7 percent discount rate (NMFS 2023b). This equates to an estimated annualized cost of approximately $900,000 (rounded total) over the next 10 years (NMFS 2023b).

These economic impacts are largely associated with the administrative costs borne by NMFS and other Federal agencies and not by private entities or small governmental jurisdictions. However, some consultations may include third parties (*e.g.,* permittees, applicants, grantees) that may be small entities. These third parties may bear some portion of the administrative consultation costs. Ultimately, the analysis found that consultations on in-water and coastal construction, including dredging and beach nourishment activities, may generate costs borne by small entities. All other activities are either not expected to involve small entities or are associated with two or fewer consultations annually spread across all critical habitats.

National Security Impacts

After identifying specific areas that potentially meet the definition of critical habitat for green turtles, we contacted representatives from DoD and the Department of Homeland Security (DHS) to request specific information regarding potential impacts on national security. As outlined in our 4(b)(2) Policy, we cannot automatically exclude areas as requested, and the requesting agency must provide a reasonably specific justification for asserting that an incremental impact on national security would result from the designation of that specific area as critical habitat (81 FR 7226, February 11, 2016). If an agency provides a reasonably specific justification for their request, we defer to their expert judgment as to: (1) whether activities on its lands or waters, or its activities on other lands or waters, have national security or homeland-security implications; (2) the importance of those implications; and (3) the degree to which the cited implications would be adversely affected by the critical habitat designation.

Initial requests for exclusion due to national security impacts were received from DoD and are available in the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c). To date, the requests have not been reasonably specific to weigh national and homeland security impacts against the benefits of designating particular areas as critical habitat. We continue to work with DoD and DHS regarding requests for exclusions based on national security impacts and will give great weight to the national security and homeland security concerns in our final designation (81 FR 7226, February 11, 2016).

Other Relevant Impacts

Section 4(b)(2) of the ESA also allows for the consideration of other relevant impacts associated with the designation of critical habitat. One other potentially relevant impact we identified for designation of green turtle critical habitat was Tribal impacts. In developing this proposed rule, we reviewed maps and engaged NMFS' Tribal coordinators; however, we did

not find any overlap between Indian lands and the specific areas meeting the definition of critical habitat. Indian lands are those defined in Secretarial Order 3206, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997), and include: (1) lands held in trust by the United States for the benefit of any Indian Tribe; (2) land held in trust by the United States for any Indian Tribe or individual subject to restrictions by the United States against alienation; (3) fee lands, either within or outside the reservation boundaries, owned by the Tribal government; and (4) fee lands within the reservation boundaries owned by individual Indians. Therefore, we preliminarily find that there were no Indian lands subject to consideration for possible exclusion. However, we will coordinate and consult with potentially affected Tribes and Native corporations if such impacts are identified during the rulemaking and public comment process. We did not identify any other relevant impacts.

Areas Proposed for Critical Habitat Designation

For each of the six green turtle DPSs, we propose to designate specific marine areas that meet the definition of critical habitat and exclude specific marine areas where the impacts outweigh the benefits of designation. The following sections provide detailed information about each of the six proposed critical habitat designations and exclusions. After the public comment period, we will review all comments and the best available information before designating critical habitat in a final rule.

North Atlantic DPS

The North Atlantic DPS is defined as green turtles originating from the North Atlantic Ocean, bounded by the following lines and coordinates: 48° N Lat. in the north, along the western coasts of Europe and Africa (west of 5.5° W Long.); north of 19° N Lat. in the east; 19° N, 65.1° W to 14° N, 65.1° W then 14° N, 77° W in the south and west; and along the eastern coasts of the Americas (north of 7.5° N, 77° W). The geographical area occupied by this DPS includes waters outside of U.S. jurisdiction. Within the U.S. EEZ, the range of the DPS includes waters up to 200 nautical miles offshore of the U.S. East and Gulf of Mexico Coasts and Puerto Rico. See the Draft Biological Report for a map of this area.

The Recovery Plan for the U.S. Population of the Atlantic Green Turtle (NMFS and USFWS 1991) indicates that recovery requires protection of nesting and marine habitat, specifically: the identification and restoration of important foraging habitats, improvement of water quality, and prevention from degradation and destruction from contamination, fishing gears, vessel anchoring, oil and gas activities, and dredging. To identify relevant scientific information, the Team worked with biologists from the National Park Service (NPS), U.S. Geological Survey (USGS), Florida Fish and Wildlife Conservation Commission (FWC), Texas Parks and Wildlife Department, North Carolina Wildlife Resources Commission (NCWRC), Puerto Rico Department of Natural and Environmental Resources (PRDRNA), and several academic institutions and research organizations, including but not limited to University of Central Florida, Florida State University, Mote Marine Laboratory, and Inwater Research Group.

Specific Areas Containing the Reproductive Essential Feature and Their Conservation Value to the North Atlantic DPS

The recovery of the North Atlantic DPS is dependent on successful reproduction. While nesting occurs on beaches, the marine areas adjacent to nesting beaches are essential for mating, movement of reproductive females on and off nesting beaches, internesting, and the swim frenzy and early dispersal (*i.e.,* transit) of post-hatchlings. Therefore, the following reproductive feature is essential to the conservation of the North Atlantic DPS: From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals and the transit of post-hatchlings.

The Team used the following information to identify this reproductive essential feature. Upon reaching sexual maturity, male and female green turtles return to the waters adjacent to their natal nesting beaches to mate (FitzSimmons *et al.* 1997a; FitzSimmons *et al.* 1997b). Mating and internesting occur in waters adjacent to nesting beaches. Mating occurs prior to and during the nesting season, generally from May to September (Witherington *et al.* 2006). During this time, males and females occupy a similar nearshore area adjacent to nesting beaches (D. Bagley, University of Central Florida unpublished data 2016; K. Hart, USGS unpublished data 2016). USFWS reviewed nesting data to identify beaches considered for terrestrial critical habitat, which begins at the mean high water line. Therefore, in-water areas considered for marine critical habitat also begin at the mean high water line (*i.e.,* waters adjacent to nesting beaches). To determine the offshore boundary of the reproductive essential feature, the Team reviewed published and unpublished satellite tracking data on internesting females and males in waters adjacent to nesting beaches. These data are described in detail in the Draft Biological Report (NMFS 2023a). The Team found that males (n = 10) and females (n = 56) spent the majority of their time in waters of depths of 20 m or less during mating and internesting periods (Hart *et al.* 2013; Sloan *et al.* 2022; B. Schroeder, NMFS unpublished data 2016; D. Bagley, University of Central Florida unpublished data 2022; M. Lamont, USGS unpublished data 2022). The Team also reviewed data on post-hatchlings' swim frenzy, directional movement, and early dispersal transport. Within 20 m depth, post-hatchlings are likely to encounter the currents needed to carry them to distant offshore pelagic habitats, where they will forage and rest in *Sargassum* habitats (Mansfield *et al.* 2021). The Team concluded, and we agree, that the reproductive essential feature occurs from the mean high water line to 20 m depth in waters adjacent to nesting beaches proposed as critical habitat by USFWS.

The reproductive essential feature may require special management considerations or protection to maintain unobstructed access to and from nesting beaches and disturbance-free nearshore areas for mating, internesting, and post-hatchling transit. The reproductive season is a time of increased vulnerability for sea turtles because a large proportion of adults congregate within relatively small areas adjacent to nesting beaches (Meylan 1982). Copulating turtles may remain mounted for hours at the surface (Witherington *et al.* 2006), limiting their mobility, vigilance, and ability to avoid in-water obstructions or operations. Internesting females require underwater areas near nesting beaches to reovulate, rest, and escape courting males (Booth and Peters 1972). Females and post-hatchlings need unobstructed waters to move to (females only) and from (females and post-hatchlings) nesting beaches. Darkness is another important feature because artificial lighting can cause post-hatchlings to linger in nearshore habitats, which increases their risk of predation (Thums *et al.* 2016). Their early transit is considered to be a critical

period because it plays an overriding role in population dynamics (Putman *et al.* 2020). Threats at this important stage include predation, obstructions, and artificial lighting. These threats are most likely to occur in shallow water (Gyuris 1994), where post-hatchlings and predators are concentrated, most submerged or emergent structures occur, and land-based lighting effects are strongest. The Recovery Plan (NMFS and USFWS 1991) indicates that protection is needed to prevent the destruction of habitats from oil and gas, dredging, fishing, and vessel activities. The reproductive essential feature may also require special management considerations for other activities. Nearshore structures or operations have the potential of blocking the passage of nesting females and post-hatchlings. They may constrain post-hatchlings' movement through several mechanisms, including: disorientation due to lighting, concentration of predators, disruption of wave patterns necessary for orientation, and creation of excessive longshore currents. Alternative energy facilities (such as wind farms and underwater turbines), dredging (for beach nourishment, as mentioned above, and in support of navigation), and fishing and aquaculture activities, when located adjacent to nesting beaches, may also block passage of females and post-hatchlings. Oil spills pose a considerable threat by obstructing or contaminating access to and from nesting beaches (Meylan 1982; Shigenaka *et al.* 2021). Construction (on land and in water), vessel traffic, military activities, and seismic surveys may also act as deterrents (visual or auditory) to reproductive individuals, preventing their use of preferred areas. Finally, climate change may result in the shift or loss of nesting beach habitat, which would alter the location or value of adjacent marine reproductive areas.

To identify specific areas containing the reproductive feature essential to the conservation of the DPS, we relied on USFWS' identification of nesting beaches. USFWS proposed Florida and Puerto Rico nesting beaches as terrestrial critical habitat elsewhere in today's **Federal Register** (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164). Tyndall Air Force Base and Eglin Air Force Base host nesting beaches that were considered by USFWS but found to be ineligible for terrestrial critical habitat pursuant to section 4(a)(3)(B)(i) of the ESA; however, waters off these beaches contain the reproductive essential feature and are thus considered for marine critical habitat.

For each of these areas, we identified the adjacent marine area, from the mean high water line to 20 m depth, as containing the reproductive feature essential to the conservation of the North Atlantic DPS and which may require special management consideration or protection. These areas provide high conservation value to the DPS because they are required for successful reproduction, which is directly linked to population growth and recovery. Females must use these reproductive areas to reach the nesting beaches proposed as critical habitat by USFWS and for internesting. These areas are also essential to mating and post-hatchling swim frenzy and early dispersal.

Specific Areas Containing the Migratory Essential Feature and Their Conservation Value to the North Atlantic DPS

The recovery of the DPS requires that adult turtles forage and reproduce; when foraging and reproductive areas are geographically separated, recovery requires that adults successfully migrate between these areas. Therefore, the following migratory feature is essential to the conservation of the North Atlantic DPS: From the mean high water line to 20 m depth, sufficiently unobstructed corridors that allow for unrestricted transit between foraging and nesting areas for reproductive individuals.

To identify this migratory essential feature, the Team reviewed published and unpublished satellite tracking data of post-nesting females (n = 58) and post-mating males (n = 10), described in detail in the Draft Biological Report (NMFS 2023a). The Team found that adults generally migrate to foraging areas in southern Florida using nearshore waters of 20 m depth or less (Schroeder *et al.* 2008; Sloan *et al.* 2022; B. Schroeder, NMFS unpublished data 2022; D. Bagley, University of Central Florida unpublished data 2022; K. Mazzarella, Mote Marine Laboratory unpublished data 2022).

This narrow, constricted migratory corridor may require special management considerations or protection to ensure that the passage of reproductive individuals is not obstructed, deterred, or disturbed. During migration, sea turtles that are otherwise spread out over many, and often distant, foraging sites become concentrated into relatively narrow corridors, making them particularly vulnerable to anthropogenic threats (Foley *et al.* 2013). The Recovery Plan (NMFS and USFWS 1991) indicates that protection is needed to prevent the degradation of habitats due to offshore structures, dredging, oil and gas activities (including oil spills and their cleanup), fishing, aquaculture, and vessel activities (including the establishment of shipping lanes). In addition, energy generation activities may block passage or generate anomalous magnetic fields, altering cues used by green turtles for navigation (Lohmann *et al.* 2004) and causing turtles to deviate from their course. Large structures or excessive noise from seismic surveys (Nelms *et al.* 2016), military activities, or vessel activities may force turtles off the most direct route, requiring longer migrations and more energy.

To identify specific areas containing the migratory essential feature, the Team reviewed available published and unpublished satellite tracking data. The Team reviewed migratory data included in scientific publications (Hart *et al.* 2013; Chabot *et al.* 2018; Sloan *et al.* 2022). The Team also analyzed unpublished telemetry data (*i.e.,* tracking data from 58 post-nesting females and 10 males, mapped in the Draft Biological Report (NMFS 2023a)). The data show that green turtles use constricted migratory corridors (*i.e.,* generally waters of 20 m or less) along the eastern and western coasts of Florida. These constricted migratory corridors begin at the nesting beaches where the turtles are tagged and end at foraging/resting areas in southeastern Florida, Florida Bay, Cape Sable, Everglades, Florida Keys, Marquesas Keys, and Dry Tortugas. The Team determined, and we agree, that the entire Florida coast, in depths up to 20 m, contains the migratory essential feature, connecting reproductive areas along the east and west coast of Florida to foraging areas in Monroe County, Florida. This area is of high conservation value because adult males and females use it to migrate between reproductive and benthic foraging/resting areas. This migration is directly linked to population growth, and if the narrow corridor was obstructed, the DPS would not recover.

Unlike adult green turtles in Florida, adults originating in Puerto Rico do not appear to use constricted or narrow migratory corridors to move between nesting and benthic foraging/resting areas. Instead, they move offshore into oceanic waters, deeper than 20 m. Long-distance captures of adults tagged at Culebra reveal the use of multiple pathways. Therefore, the Team was unable to identify any specific areas outside of Florida (*e.g.,* Puerto Rico) containing the migratory essential feature.

Specific Areas Containing the Surface-Pelagic Foraging/Resting Essential Features and Their Conservation Value to the North Atlantic DPS

The recovery of the DPS requires foraging and resting to provide energy for post-hatchling and juvenile survival, growth, and development. After their swim frenzy and early dispersal, post-hatchlings of the North Atlantic DPS are transported via ocean currents to habitats that provide adequate food resources and cover, such as *Sargassum*-dominated drift communities. Green turtles likely remain in such habitats throughout their surface-pelagic juvenile stage. Therefore, the following surface-pelagic foraging/resting features are essential to the conservation of the North Atlantic DPS: Convergence zones, frontal zones, surface-water downwelling areas, the margins of major boundary currents, and other areas that result in concentrated components of the *Sargassum*-dominated drift community, as well as the currents which carry turtles to *Sargassum*-dominated drift communities, which provide sufficient food resources and refugia to support the survival, growth, and development of post-hatchlings and surface-pelagic juveniles, and which are located in sufficient water depth (at least 10 m) to ensure offshore transport via ocean currents to areas which meet forage and refugia requirements.

To identify the surface-pelagic foraging/resting essential features, the Team gathered information on green turtles' use of *Sargassum* habitats. Surface-pelagic foraging/resting essential features are associated with *Sargassum* habitats, which provide structured habitat, rich food supply, refugia for rest and predator protection, and thermal benefits promoting growth for green turtles (Mansfield *et al.* 2021). *Sargassum* occurring in the surf zone or close to shore may not provide the essential features; whereas *Sargassum*-dominated drift communities occurring in depths of 10 m and greater provide sufficient food resources and refugia and aid in offshore transport. Such depths overlap with benthic foraging areas to facilitate the developmental transition from surface-pelagic to benthic foraging. A growing number of studies provide information on the location, diet, and behavior of post-hatchlings and surface-pelagic juveniles of the North Atlantic DPS (Putman and Mansfield 2015; Hardy *et al.* 2018; Mansfield *et al.* 2021). Post-hatchling and surface-pelagic green turtles forage primarily on animals within the *Sargassum*-dominated drift communities, including invertebrates, fish eggs, and insects (Witherington *et al.* 2012a). Turtles appeared to use *Sargassum* principally as habitat (*i.e.,* although they consume *Sargassum,* this may be incidental to their foraging on animals located within the plant material; Witherington *et al.* 2012a). In addition to providing a food supply and structured habitat, *Sargassum* provides predator protection and thermal benefits that promote growth, *i.e.,* exposure to direct sunlight and/or localized warming that facilitates temperature-dependent processes including digestion and growth (Mansfield *et al.* 2021). Post-hatchling green turtles selectively use and burrow into *Sargassum* for these purposes (Smith and Salmon 2009).

The surface-pelagic foraging/resting essential features may require special management considerations or protection to maintain the food resources and refugia provided by *Sargassum* habitat. The surface convergence zones that aggregate *Sargassum*-dominated drift communities also aggregate pollutants (Wallace *et al.* 2020; Shigenaka *et al.* 2021); this includes plastics, which can cause blockage in the gut, diminish nutrition, and/or increase the risk of entanglement (Witherington *et al.* 2012a; Rice *et al.* 2021). The frequent co-occurrence of *Sargassum* and marine debris within the pelagic environment may require special consideration when planning marine debris removal activities. Oil exploration, production, and associated spills are major concerns because post-hatchling and surface-pelagic juvenile sea turtles within *Sargassum*-dominated drift communities become fouled in oil or exposed to oil through inhalation or ingestion (McDonald *et al.* 2017; Wallace *et al.* 2020; Shigenaka *et al.* 2021). The cleanup of oil spills may also introduce toxic chemicals (Ylitalo *et al.* 2017). Powers *et al.* (2013) described direct and indirect effects of the *Deepwater Horizon* oil spill on the *Sargassum*-dominated drift communities as follows: (1) *Sargassum* accumulated oil on the surface exposing animals to high concentrations of contaminants; (2) application of a dispersant sank the *Sargassum,* thus removing the habitat and potentially transporting oil and dispersant vertically; and (3) low oxygen surrounded the habitat potentially stressing animals that reside in the algae. This oil spill was estimated to impact 148,000 surface-pelagic turtles (McDonald *et al.* 2017). Other sources of pollution include ocean dumping, vessel discharges, and dredging (*e.g.,* from disruption of contaminated sediment and release of contaminants).

To identify specific areas containing the surface-pelagic foraging/resting essential features, the Team reviewed data on post-hatchling and surface-pelagic juveniles and their habitats. *Sargassum*-dominated drift communities occur where surface waters converge to form local downwelling (Wallace *et al.* 2020; Shigenaka *et al.* 2021) in the Gulf of Mexico and the northwest Atlantic Ocean. As post-hatchlings and surface-pelagic juveniles, green turtles occupy the same *Sargassum* habitat as other sea turtle species, including the loggerhead sea turtle, *Caretta caretta* (Witherington *et al.* 2012). Therefore, areas containing surface-pelagic foraging/resting essential features for green turtles overlap with those designated as critical habitat for the loggerhead sea turtle (79 FR 39855, July 10, 2014): the Atlantic Ocean from the Gulf of Mexico along the northern/western boundary of the Gulf Stream and east to the outer edge of the U.S. EEZ; and the western Gulf of Mexico to the eastern edge of the Loop Current. At the time that loggerhead critical habitat was designated, limited data were available on essential features in the eastern Gulf of Mexico. Data available since then indicate that surface-pelagic foraging/resting essential features occur throughout the Gulf, including waters of the eastern Gulf of Mexico (McDonald *et al.* 2017; Hardy *et al.* 2018), and in particular along the West Florida Shelf (Putman and Mansfield 2015). Data also indicate that juvenile green turtles forage and rest in *Sargassum* habitat of the eastern Gulf of Mexico (Witherington *et al.* 2012a; Putman and Mansfield 2015; McDonald *et al.* 2017; Hardy *et al.* 2018). In 2010, McDonald *et al.* (2017) captured 220 surface-pelagic green turtles in the eastern Gulf of Mexico during rescue operations within the Deepwater Horizon spill area. Witherington *et al.* (2012a; unpublished data 2019) observed 195 surface-pelagic juvenile green turtles associated with *Sargassum*-dominated drift communities in the eastern Gulf of Mexico, 18 of which were tracked via satellite transmitters. A majority of those tracked individuals remained within the northeastern Gulf of Mexico, while five individuals departed the Gulf of Mexico and followed the Gulf Stream System into North Atlantic waters (FWC, unpublished data 2019). Putman and Mansfield (2015) captured 24 surface-pelagic juvenile green turtles in offshore areas of the northern and eastern Gulf of Mexico: Cortez, Sarasota, Panama City, and Pensacola, Florida;

Orange Beach, Alabama; and Venice, Louisiana. Other studies have identified increasing numbers of surface-pelagic juvenile green turtles throughout the northern and eastern Gulf of Mexico and Atlantic Ocean (Hardy *et al.* 2018; Mansfield and Phillips in review); some of these juveniles are carried via the Loop Current, Straits of Florida, and Gulf Stream into the North Atlantic (Mansfield and Phillips in review).

Green turtles are also found in *Sargassum*-dominated drift communities of the northwest Atlantic Ocean, where Witherington *et al.* (2012a; Witherington and FWC unpublished data 2019) observed 17 post-hatchlings. Mansfield *et al.* (2021) satellite tracked 21 surface-pelagic green turtles (3 to 9 months old) from Boca Raton, Florida to waters associated with the Sargasso Sea, via the Gulf Stream. Prior to exiting the U.S. EEZ, most green turtles remained in oceanic waters, off the Continental Shelf (greater than 200 m depth; Mansfield *et al.* 2021), within the *Sargassum* critical habitat designated for loggerheads. Therefore, the *Sargassum* habitat in the Atlantic, designated for loggerhead turtles (79 FR 39855, July 10, 2014), also contains the surface-pelagic foraging/resting features essential to the conservation of green turtles.

Based on the best available scientific information, the Team concluded, and we agree, that the Atlantic and Gulf of Mexico *Sargassum*-dominated drift communities in waters greater than 10 m depth to the outer boundary of the U.S. EEZ contain surface-pelagic foraging/resting features essential to the conservation of the North Atlantic DPS that may require special management considerations or protection. These areas include the *Sargassum* habitat designated for loggerhead turtles (79 FR 39855, July 10, 2014) and *Sargassum* habitat in the eastern Gulf of Mexico. These areas are of high conservation value because they contain high densities of foraging/resting post-hatchlings and surface-pelagic juveniles (Witherington *et al.* 2012; Hardy *et al.* 2018; Mansfield *et al.* 2021). These are the only areas that provide the essential features required for the survival, growth, and development of this important early life stage for the North Atlantic DPS. A modeling study indicates that fluctuations in the survival of early life stages drive variation in abundance and suggests protecting early life stages from hostile environments (Halley *et al.* 2018). Therefore, these areas are essential to the recovery of the DPS.

Specific Areas Containing the Benthic Foraging/Resting Essential Features and Their Conservation Value to the North Atlantic DPS

The recovery of the DPS requires benthic foraging/resting resources to support juveniles, subadults, and adults. After their surface-pelagic juvenile stage, green turtles recruit to benthic foraging/resting habitats that provide adequate food resources and cover from predators to allow successful survival, growth and development to maturity. Adults require adequate long-term residence areas, which include food resources and adjacent refugia, to provide the energy needed to survive, migrate to nesting beaches, and reproduce. Therefore, the following benthic foraging/resting features are essential to the conservation of the North Atlantic DPS: From the mean high water line to 20 m depth, underwater refugia (*e.g.,* sandy troughs, hard-bottom substrates, and Sabellariid worm reefs) and food resources (*i.e.,* seagrass, marine algae, and/or invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction. The Team considered other potentially essential features because green turtles of the North Atlantic DPS may pass through multiple developmental habitats in coastal waters during their maturation from benthic foraging juveniles to adults (Bolten 2003; Witherington *et al.* 2006; Bresette *et al.* 2010; Meylan and Meylan 2011). Juveniles appear to use deeper waters as they mature (M. Lamont, USGS, and M. Bresette, In-water Research Group pers. comm. 2022). However, the Team accounted for these movements during the identification of benthic foraging/resting essential features as waters up to 20 m depth, which includes the waters used to move from shallow to deeper depths. Furthermore, when gathering data on green turtles, the Team focused on the occurrence of green turtles within this DPS because it is difficult to distinguish between foraging/resting turtles and those moving to other foraging/resting areas. For these reasons, the Team concluded, and we agree, that developmental migratory behavior is addressed under the benthic foraging/resting essential feature and does not warrant the identification of a separate essential feature.

To identify the benthic foraging/resting essential features, the Team gathered data on the DPS's use of benthic foraging/resting habitats, including coral and nearshore reefs, seagrass beds, inshore bays, estuaries (Ehrhart 1983; Guseman and Ehrhart 1990; Wershoven and Wershoven 1992; Bresette *et al.* 1998; Ehrhart *et al.* 2007; Meylan and Meylan 2011), man-made embayments (Redfoot and Ehrhart 2000), and passes (Shaver 1994). Benthic foraging juveniles may use shallower foraging/resting areas than adults (Witherington *et al.* 2006; Meylan and Meylan 2011) and move to deeper habitats as they mature (Bagley *et al.* 2008; Reich *et al.* 2008; Vander Zanden *et al.* 2013). During this stage of development, juveniles feed primarily on seagrass (*e.g., Thalassia testudinum, Syringodium filiforme, Halodule wrightii,* and *Zostera marina;* Mendonça 1983), benthic macroalgae (*e.g., Gracilaria mammillaris, Bryothamnion seaforthii, Laurencia poiteau, Ulva* spp., and *Hypnea* spp.; Bjorndal 1980; Mortimer 1981; Bellmund *et al.* 1987; Coyne 1994; Shaver 1994; Redfoot 1997; Makowski *et al.* 2006; Kubis *et al.* 2009; Vander Zanden *et al.* 2013), and/or invertebrates (Mendonça 1983; Bjorndal 1990; Makowski *et al.* 2006; Stringell *et al.* 2016; Holloway-Adkins *et al.* 2017). Holloway-Adkins and Hanisak (2017) found that juveniles commonly foraged on benthic invertebrates, including polychaetes, hydrozoa, and gastropods. In a study of 90 green turtles, 28 percent ingested 8 different species of sponges that are found in relatively small proportions (*i.e.,* biomass) in the foraging habitat, and 3 percent ingested cnidarians and ''other invertebrates'' (Stringell *et al.* 2016). Turtles generally occur where there are sufficient food resources (Witherington *et al.* 2006); however, there is a complex relationship between food availability and juvenile abundance and growth rates (Long *et al.* 2021). Juvenile green turtles occupy small, stable home ranges, where they forage and rest in one or two exclusive sites (Mendonça 1983; Makowski *et al.* 2006). The depths at which juveniles forage and rest differ throughout their range and are dependent on the depths of available food resources. Seagrasses, for example, need light and are generally limited to depths where at least 20 percent of surface irradiance reaches the seafloor; this depth varies among sites as a function of water clarity (Dixon 1999; P. Carlson, FWC pers. comm. 2016). As juveniles mature, they forage in deeper waters (3 to 27.3 m; In-water Research Group 2008; Bresette *et al.* 2010; FWC and NMFS unpublished data 2016) and may occupy a more narrow range in southern Florida, including the Florida Keys, Marquesas Keys, and Dry Tortugas (Witherington *et al.* 2006; Bresette *et al.* 2010). Adult and subadult turtles may

forage in herds to provide increased vigilance of large predators, such as sharks that also forage at these depths, or to increase grazing maintenance of seagrasses, which provide food resources that are higher in nutrition and easier to digest (Bjorndal 1980; Moran and Bjorndal 2007; Bresette *et al.* 2010). Juvenile and adult green turtles forage on algae or seagrass growing on manmade structures, such as docks, seawalls, piers, pipelines, boat ramps, platforms, ramparts, pilings, and jetties. This includes algae in the Florida Trident Submarine Basin (Kubis *et al.* 2009; Holloway-Adkins and Hanisak 2017) and on jetties in southeast Texas (Shaver 1994; Metz and Landry 2013; Shaver *et al.* 2013). In addition to these data, the Team mapped unpublished data on foraging/resting green turtles. They found that the majority of turtles were found in waters up to 20 m (see Draft Biological Report NMFS 2023a).

In addition to productive benthic foraging areas, green turtles need access to protective resting areas. Because they are vulnerable to predation and tidal exposure, they seek refugia in Sabellariid worm reefs (Stadler *et al.* 2015), nearshore reef ledges (Wershoven and Wershoven 1988; Guseman and Ehrhart 1990; Ehrhart 1992), or other shallow-water areas that are less accessible to sharks (Bresette *et al.* 2010). When resting, turtles often wedge their head and body under ledges along the reef (Makowski *et al.* 2006; Mott and Salmon 2011; Stadler *et al.* 2015). Hart *et al.* (2016) found that 6 of 11 juvenile turtles equipped with tri-axial acceleration data loggers near the Dry Tortugas made excursions to deep waters (4 to 27 m) for rest, often at night. Makowski *et al.* (2006) found that turtles rested only during nocturnal hours, avoiding marine predators and sleeping underneath the same patch reefs upon which they actively foraged. Renaud *et al.* (1995) also reported daytime foraging and nocturnal resting. However, Mendonça (1983) observed juvenile green turtles within Mosquito Lagoon, Florida, actively feeding on shallow (0.5 to 1.0 m) seagrass flats in mid-morning and mid-afternoon, with resting occurring in deeper waters (2.0 to 2.5 m) during the mid-day hours. Mott and Salmon (2011) suggest that turtles use solar cues to move offshore toward deep water reefs to escape threats; they return to shallow foraging areas after several hours. The Team concluded, and we agree, that depths up to 20 m contain the majority of refugia used by green turtles.

The benthic foraging/resting essential features may require special management considerations or protection to maintain the quality and quantity of food resources and refugia in nearshore waters. The Recovery Plan (NMFS and USFWS 1991) indicates that protection is needed to prevent the degradation of habitats due to dredging, pollution, oil and gas, fishing, and vessel activities. The Recovery Plan specifically highlights the need to restore and limit further development in important foraging habitats (*e.g.,* seagrass beds, which are relatively fragile habitats requiring low energy and low turbidity waters; NMFS and USFWS 1991). Seagrass habitats are among the most threatened ecosystems on Earth (Waycott *et al.* 2009). Since 1980, seagrass beds have disappeared at a rate of 110 km^2/year (Waycott *et al.* 2009). The reductions are mainly due to declines in water quality and other human impacts (Orth *et al.* 2006). Dredging activities (including channelization, sand mining, and dredge/trawl fisheries) may remove, bury, or inhibit the growth of important food resources and destroy or disrupt resting areas (Hopkins and Murphy 1980). In Texas, turtles using jetties and channel entrances are likely to be affected by dredging activities that remove foraging resources and alter refugia (Renaud *et al.* 1995). Landry *et al.* (1992) indicate that maintenance dredging around South Padre Island, Texas poses a direct threat to green turtles through destruction of their benthic foraging/resting areas. Beach nourishment may reduce the availability of food resources (especially seagrass) and destroy underwater refugia (especially Sabellariid worm rock reefs) by covering these nearshore areas in sand (NMFS 2008). For example, sand placement projects along parts of the Florida coastline bury the reef habitat and food resources required by green turtles (Lindeman and Snyder 1999). These alterations may have lasting effects because turtle abundance is linked to reef stability: benthic foraging/resting turtles are most abundant on nearshore worm rock reefs with little change in reef area (and rarely covered by sand) over a decade (Stadler *et al.* 2015). Vessel activities may also reduce or interfere with the availability of food resources. For example, propellers scar seagrass beds throughout the coastal waters of Florida. The most severe scarring occurs in areas where green turtles are known to forage, such as the Florida Keys and northern Indian River Lagoon (Sargent *et al.* 1995). Oil and gas activities may reduce the quality and quantity of food resources, especially if an oil spill occurs. Pollution (including runoff and contaminants) diminishes water clarity and light availability, which may reduce the growth and availability of seagrass and algae and reduce turtles' visibility, which impacts their ability to forage and avoid predators (Long *et al.* 2021). In coastal lagoons in Florida, such as the Indian River Lagoon, agricultural and residential runoff may expose green turtles to high levels of pollutants (Hirama and Ehrhart 2007). Increased nutrient load in coastal waters causes eutrophication, which is linked to harmful algal blooms that result in the loss of seagrass beds and macroalgae cover (Milton and Lutz 2003; Long 2021), resulting in changes to green turtle foraging ecology that last beyond the harmful algal bloom event (Long 2021). Such environmental degradation is also linked to increased incidence of fibropapillomatosis (Borrowman 2008), which was one of the factors identified in the listing of the North Atlantic DPS (81 FR 20057, April 6, 2016).

To identify specific areas containing the benthic foraging/resting essential features, the Team considered the best available data, including maps of seagrass coverage. Because many areas within the range of the North Atlantic DPS contain seagrass, the Team relied on the occurrence of benthic foraging/resting green turtles to determine which of these areas contain resources sufficient to support juvenile green turtles' survival, development, and growth, and adults' survival, migration, and reproduction. The Team considered published and unpublished studies on green turtles to be the best available data; these included satellite tracking, tagging, and in-water observation data. The Team also considered data derived from fisheries bycatch, incidental capture in power plants, and dredging relocation projects. The Team also evaluated available stranding data from 2010 to 2020. Stranding data include cold-stunned turtles; however, cold-stunned turtles are likely healthy turtles that were foraging in an area when temperatures dropped, resulting in cold stunning; whereas, other strandings are more likely to involve injured or sick turtles. There are many caveats to using stranding data (including data on cold-stunned turtles): (1) Data collection and effort is not standardized throughout the region; (2) Reporting is dependent on observation, creating a bias toward areas of greater human density or greater accessibility (*e.g.,* beach areas vs. marshy shorelines); and (3) Stranded turtles may be carried by currents such that reported locations may not accurately represent the area originally occupied by the turtle (Santos *et al.*

2018a; Santos *et al.* 2018b). Given these caveats, the Team only used stranding data to support areas identified as containing the benthic foraging/resting essential features based on other data sources (such as research studies). Nevertheless, stranding data corroborate research data that indicate high abundances of green turtles foraging/resting in Florida, Texas, and North Carolina, where the number of strandings (and thus resident population) is at least an order of magnitude higher than in other States (NMFS 2023a).

Texas

In Texas, juvenile and subadult turtles forage in depths of up to 20 m on macroalgae, seagrass, and invertebrates (Howell *et al.* 2016; Howell and Shaver 2021; P. Plotkin and N. Wilderman, Texas A&M University unpublished data 2022). Texas waters provide one of the most important developmental and foraging habitats for juvenile green turtles in the western Gulf of Mexico (Shaver *et al.* 2017). The majority of these turtles originate from Mexico nesting beaches (Shamblin *et al.* 2017). Turtles forage on seagrass and macroalgae in natural habitats and on jetty rocks and other artificial structures (fishing piers, docks, oil and gas platforms, and bridge support structures) that occur in the bays and passes of nearshore Gulf of Mexico waters (Shaver *et al.* 2017). They also consume animal matter and are best described as omnivores (Howell and Shaver 2021). These jettied passes also provide refugia for resting turtles and quick access to deeper, warmer waters to avoid cold-stunning (Shaver 1994; Shaver *et al.* 2013; Shaver *et al.* 2017). In recent years, cold stunning has become a frequent occurrence in Texas. The February 2021 cold stunning event in Texas was the largest on record, with approximately 13,300 turtles documented. Approximately 6,600 green turtles were found in the inshore waters of the Upper Laguna Madre, 5,700 in the Lower Laguna Madre, and 1,200 along the Upper Texas Coast.

Green turtles forage and rest throughout the bays, passes, and nearshore waters of Texas from Galveston Bay to the Mexico border, as demonstrated by numerous published studies and incidental capture of turtles from 2010 to 2020 (D. Shaver, NPS unpublished data 2022). The abundance of juveniles in these areas appears to be increasing over time (Shaver 1994; Metz and Landry 2013). Juveniles establish residency in the bays but also southward into Mexican waters (Metz *et al.* 2020; Shaver *et al.* 2013). Most use jettied passes to travel between the bays and the Gulf of Mexico (Shaver *et al.* 2013), with the exception of Galveston Bay. Galveston Bay supports a resident green turtle population that feeds on seagrass beds and algae (Shaver *et al.* 2019; L. Howell, NMFS pers. comm. 2015). The other bays are connected via an intercoastal waterway, which turtles use to move up and down the coast from Lavaca-Matagorda Bay through Laguna Madre and into Mexico.

Lavaca-Matagorda and Aransas Bays are hotspots for benthic foraging/resting juvenile green turtles, especially in May and June (Metz *et al.* 2020). Recent satellite tracking of 18 green turtles demonstrated use of most coastal areas within Lavaca-Matagorda Bay; some turtles moved south to Corpus Christi Bay, Laguna Madre, and into Mexico (P. Plotkin and N. Wilderman, Texas A&M University unpublished data 2022). Green turtles use waters less than 20 m depth for benthic foraging/resting but may use waters of greater depths for southern migration (P. Plotkin and N. Wilderman, Texas A&M University unpublished data 2022). Tracking of 15 juveniles demonstrated that turtles' use of Lavaca-Matagorda and Aransas Bays depends on the season (Metz *et al.* 2020). Two radio-tracked turtles increased their movements during November and December, moving south to warmer waters (Renaud and Williams 1994). Their home range encompassed 19.5 km^2 of Lavaca-Matagorda Bay (Renaud and Williams 1994). In 2006 and 2007, 11 juveniles were captured in Lavaca-Matagorda Bay in areas with patchy shoal grass (*Halodule wrightii*), and 11 juveniles were captured in Aransas Bay, which hosts turtle grass, *Thalassia testudinum* (Metz and Landry 2013). These bays appear to be important juvenile developmental areas (Metz *et al.* 2020).

The most important juvenile developmental area in Texas is Laguna Madre, which hosts the greatest amount of seagrass coverage (81 percent) and the greatest abundance of green turtles in Texas (Shaver *et al.* 2013; Howell and Shaver 2021; D. Shaver, NPS unpublished data 2022). Juveniles are concentrated near the Mansfield Channel and appear to use it for foraging, resting, and for passage between Laguna Madre and the Gulf of Mexico (Shaver 1994; Shaver 2000; Shaver *et al.* 2013; Shaver *et al.* 2019). Shaver (2000) netted 258 green turtles in the Mansfield Channel from 1989 to 1997 (3.63 turtles/km-h). Juveniles also forage on macroalgae at the Brazos Santiago Pass near South Padre Island (Renaud *et al.* 1995). Core and home range analyses show foraging/resting hotpots year round in this area (Metz and Landry 2013; Metz *et al.* 2020). Metz *et al.* (2013) tagged 247 juveniles between 1991 and 2010; they found significant increases in abundance during that time and a significantly higher catch per unit effort in Laguna Madre compared to Matagorda and Aransas Bays. Larger green turtles forage on the seagrass beds at South Bay, Mexiquita Flats, and Laguna Madre (Landry *et al.* 1992; Coyne 1994). Females nesting at Padre Island travel south to Mexico to forage and rest (D. Shaver, NPS unpublished data 2022). Green turtles also overwinter in Laguna Madre (Arms 1996), which has the highest prevalence of cold stunning in Texas (Shaver *et al.* 2017).

Based on the best available information detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Texas, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. The Team concluded, and we agree, that the area between the Mexico border and Lavaca-Matagorda Bay (including Laguna Madre and Lavaca-Matagorda Bay) provides high conservation value because it supports high density benthic foraging/resting (Shaver *et al.* 2013; Metz *et al.* 2013; Metz *et al.* 2020; Howell and Shaver 2021; P. Plotkin and N. Wilderman, Texas A&M University unpublished data 2022; D. Shaver and S. Walker, NPS unpublished data 2022). The area between Lavaca-Matagorda Bay and Galveston Bay (including Galveston Bay) provides moderate conservation value because it supports moderate density benthic foraging/resting (Shaver *et al.* 2019; D. Shaver and S. Walker, NPS unpublished data 2022). All other areas in Texas provide low conservation value to the DPS because of relatively lower density benthic foraging/resting in these areas.

Louisiana, Mississippi, and Alabama

Seagrass cover and other submerged vegetation occur in nearshore areas of Alabama, Mississippi, and Louisiana (Commission for Environmental Cooperation (CEC) 2021), including throughout the Chandeleur Islands. Benthic macroalgae grows in abundance on and around jetties at Belle Pass (USGS and Louisiana Department of Wildlife and Fisheries (LDWF), unpublished data 2016).

In Louisiana, K. Hart (USGS unpublished data 2022) has documented the occurrence of green turtles at Belle Pass, Ship Shoal, and the

Chandeleur Islands. Since 2014, 131 juvenile green turtles (25.6 to 44.2 cm SCL) have been tagged while foraging on algae on and around jetties at Belle Pass (K. Hart, USGS and LDWF unpublished data 2022). These turtles appear to be year-round residents, as demonstrated by 31 recaptures (K. Hart, USGS and LDWF unpublished data 2022). Individuals tracked from Belle Pass (n = 6) generally remained within 40 km of Belle Pass, but one visited Ship Shoal (K. Hart, USGS and LDWF unpublished data 2022). Juvenile green turtles were also observed foraging at seagrass beds of the Chandeleur Islands during a scientific rapid assessment conducted by the USGS and LDWF in April 2015 (K. Hart, USGS pers. comm. 2015). In both areas, juveniles were observed foraging/resting close to the jetties and islands, although these observations may reflect sampling bias (*i.e.,* small boat surveys conducted close to shore and jetties). Inwater Research Group (IRG 2014) conducted vessel-based sea turtle surveys in nearshore coastal waters (out to 3 nautical miles offshore) of Terrebonne, Lafourche, Jefferson, Plaquemines, St. Bernard, and Orleans Parishes in eastern Louisiana; IRG observed one juvenile green turtle at the surface near the Chandeleur Islands, in Plaquemines Parish (IRG 2014). Although aerial survey sightings are sparse (possibly because turbid water in these areas is not optimal for visual sightings), stranding data indicate use of nearshore waters along Louisiana, Mississippi, and Alabama. Bycatch data are also available for the region. For example, the Gulf of Mexico shrimp otter trawl fishery captured 6 green turtles in try nets and 14 green turtles in standard nets between 2007 and 2017, with total bycatch mortality estimated at 22 to 81 green turtles (Babcock *et al.* 2018).

Based on the best available information detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Louisiana, Mississippi, and Alabama, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. However, the Team concluded, and we agree, that nearshore waters of Louisiana, Mississippi, and Alabama provide low conservation value because they support relatively low density benthic foraging/resting, compared to other areas within the range of the DPS. We support this conclusion despite a concentration of foraging turtles at Belle Pass and to a lesser degree at Chandeleur Islands and Ship Shoals (K. Hart, USGS unpublished data 2022), because these areas still support far fewer foraging turtles than other areas within the range of the North Atlantic DPS (*e.g.,* Texas, Florida, and North Carolina).

Florida

Seagrass habitat is ubiquitous throughout much of the Florida coastline (CEC 2021). Both continuous and patchy seagrass beds provide food resources and shelter (Dawes *et al.* 2004). Seagrass beds are especially abundant in the shallow marine waters surrounding the southern tip of the peninsula from Biscayne Bay, through Florida Bay and the Florida Keys, and north to Cape Romano (Fourqurean *et al.* 2001). Sabellariid (polychaete) worm reefs stretch from Indian River County to Key Biscayne and appear to be important developmental habitats for juvenile green turtles (Guseman and Ehrhart 1990; Ehrhart 1992; FWC 2022).

The benthic foraging/resting essential features are found throughout nearshore waters of Florida, where studies on green turtles demonstrate their widespread occurrence. The Team provided a non-exhaustive list, map, and summary of data on foraging/resting green turtles throughout Florida waters. In addition to these scientific studies, stranding data (including thousands of records of cold-stunned turtles) demonstrate green turtle use of foraging and refugia areas throughout Florida estuarine and marine habitats (FWC unpublished data 2022). See the Draft Biological Report (NMFS 2023a) for figures.

In the Florida panhandle, a ''reasonable high density'' of juvenile green turtles forage in nearshore habitats (artificial reefs, piers, and jetties) from Escambia to South Walton Counties, as demonstrated by video footage of 23 turtles (Siegfried *et al.* 2021). Rock jetties serve as important foraging and refugia areas for small juveniles as they recruit to nearshore areas. Juvenile green turtles were observed year-round at these areas, indicating site fidelity, residency, and overwintering (Lamont *et al.* 2018; Siegfield *et al.* 2021). Numerous juveniles forage in St. Joseph Bay, St. Andrew Bay (including Crooked Island Sound), and in nearshore waters off Eglin Air Force Base and Santa Rosa Island, where they exhibit strong site fidelity and small home ranges (Lamont *et al.* 2015; Lamont and Iverson 2018; Lamont and Johnson 2021b; Lamont and Johnson 2021a). St. Joseph Bay is an especially important benthic foraging/resting area for juvenile turtles because of the quality and density of seagrass habitat and its proximity to deep, sandy-bottom channels for turtles to rest (Lamont *et al.* 2015; Rodriguez and Heck Jr 2020; Lamont and Johnson 2021b). Between 2011 and 2019, 175 juvenile green turtles were captured in shallow waters (less than 4 m depth) of St. Joseph Bay (Lamont and Johnson 2021). Satellite tracking of seven juvenile green turtles in St. Andrew and St. Joseph Bays indicates shallow (mean 4.3 m depth), near-shore (mean 0.9 km) core use areas and home ranges of 4.2 ±5.2 and 15.8 ±19.4 km^2 respectively (Lamont and Iverson 2018). In response to seasonally cooler temperatures, juveniles remained inside St. Andrew and St. Joseph Bays to forage on gelatinous prey (*e.g.,* tunicates); however, some moved to deeper waters within the Bays for winter residency (Lamont *et al.* 2015; Lamont and Iverson 2018). Between 2014 and 2019, 91 juvenile green turtles were net-captured in shallow waters (less than 4 m depth) off Santa Rosa Island (Lamont and Johnson 2021); during that time, another 12 juvenile green turtles were incidentally caught in hook and line gear off a fishing pier on Santa Rosa Island (Lamont *et al.* 2021). Long-term recaptures (*i.e.,* the maximum number of days between capture was 388 days) off Santa Rosa Island may demonstrate multi-year fidelity in this sand-bottom habitat (where turtles appear to forage on algae), or juveniles may move between this area and seagrass habitat in Choctawhatchee Bay (Lamont and Johnson 2021). Thus, Florida's Panhandle supports moderate density foraging/resting (Lamont *et al.* 2015; Lamont and Iverson 2018; Lamont *et al.* 2018; Siegfried et al. 2022; Lamont and Johnson 2021a/b; A. Foley, FWC unpublished data 2022). However, the Team concluded, and we agree, that the area provides high conservation value because it also contains the reproductive essential feature and comprises a portion of the west coast migratory corridor.

Coastal waters of Florida's Big Bend once supported one of the largest sea turtle fisheries in the United States and continue to be a hotspot for foraging green turtles (Chabot *et al.* 2021). Chabot *et al.* (2021) recorded 624 green turtles near the St. Martins Marsh Aquatic Preserve between 2012 and 2018; juvenile densities ranged from 57 to 221 turtles/km^2; larger turtles (>60 cm SCL) were primarily limited to the southern section of their study area. This area provides benthic foraging/resting features to numerous turtles of diverse origins: mtDNA analyses indicated that turtles foraging in this

area originated from the western Gulf of Mexico, Mexican Caribbean, and Costa Rica (Chabot *et al.* 2021). Another important area for benthic foraging/resting turtles is the Crystal River Region, including St. Martins Marsh and Chassahowitzka Bay (Wildermann *et al.* 2019; Wildermann *et al.* 2020). Based on turtle fishery landings data from the late 1800s, Homosassa appears to have hosted one of two of ''the most abundant in-water populations of green turtles in the entire Gulf of Mexico'' (Valverde and Holzwart 2017). Florida's Big Bend provides shallow seagrass habitats and other resources critical to the growth and survival of juvenile and subadult green turtles (IRG 2013). During vessel surveys conducted between 2012 and 2014, one subadult and 27 juvenile green turtles (up to 0.93 turtles/km) were observed in the Big Bend Seagrasses Aquatic Preserve, and 14 juvenile green turtles (up to 1.33 turtles/km) were observed in the St. Martins Marsh Aquatic Preserve (IRG 2013). Green turtles have also been observed and captured around Pepperfish Keys (C. Campbell, University of Florida pers. comm. 2016). They also occur from Yankeetown to Tarpon Springs (Carr 1967). Unpublished data from scientific studies provide evidence for additional juvenile benthic foraging/resting areas. In 2021, IRG (unpublished data 2022) observed 164 juvenile green turtles during exploratory vessel surveys (90.3 km) of Pasco County. Although current, systematic survey data are not available for the Homosassa region, incidental sightings near Chassahowitzka National Wildlife Refuge (NWR) indicate high levels of green turtle abundance. For example, sightings from a vessel traveling at 5 knots documented 65 green turtles over 20 minutes of observation (C. Sasso, NMFS Southeast Fisheries Science Center (SEFSC) pers. comm. 2022). Juvenile green turtles of multiple size classes were present, with small juveniles (approximately 20–30 cm carapace length) sighted in shallow water (to approximately 3 m depth) and large juveniles and sub-adults found in deeper water (C. Sasso, SEFSC pers. comm. 2022). Numerous sub-adult (Chabot *et al.* 2021) and possibly adult-sized green turtles have also been sighted in the Homosassa Shipping Channel, where the water depth is approximately 4 m (M. Bresette, In-water Research Group pers. comm. 2022). The Gulf Specimen Marine Laboratory has tagged and released several green turtles; one turtle caught and tagged off Piney Island near Panacea, Florida was caught in the same seagrass bed several years later (J. Rudloe, Gulf Specimen Marine Laboratory pers. comm. 2016). Between 1995 and 1997, 11 green turtles were captured in nets set in narrow channels or over shallow seagrass beds in Apalachee Bay (FWC 2022). Thus, Florida's Big Bend supports high density juvenile foraging/resting (Wildermann *et al.* 2019; Wildermann *et al.* 2020; Chabot *et al.* 2021; A. Foley, FWC unpublished data 2022; M. Fuentes, Florida State University unpublished data 2022). It also comprises a portion of the west coast migratory corridor. Therefore, the Team concluded, and we agree, that the area provides high conservation value.

In Southwest Florida, 1 to 12 green turtles have been sighted in waters of Charlotte Harbor, or captured in waters off Collier County, Siesta Key, Longboat Key, and Tampa Bay during dredging relocation projects (FWC 2022). In a pier study, over 1,000 fishers were interviewed over 3 years; 7.7 percent reported catching sea turtles within the past 12 months, and 4.4 percent reported catching sea turtles within Tampa Bay (M. Flint, University of Florida and Florida Aquarium, unpublished data 2016). As demonstrated by directed research capture and bycatch data (see Draft Biological Report, NMFS 2023a), this area appears to host a moderate density of benthic foraging/resting green turtles (A. Foley, FWC unpublished data 2022). However, the Team concluded, and we agree, that the area provides high conservation value because it also contains the reproductive essential feature and comprises a portion of the west coast migratory corridor.

Many green turtles forage on seagrass beds found in waters of Monroe County, which includes Florida Bay, Florida Keys, Marquesas Keys, Dry Tortugas, Everglades, and Cape Sable. These areas appear to be especially important benthic foraging/resting areas for subadults and adults, who migrate to these areas after mating and nesting (Bagley and Welsh 2022). Analyzing transect survey data (*i.e.,* 187 green turtles observed over 364 km), Bagley and Welsh (2022) found increasing green turtle density as they surveyed further south and west through the Florida and Marquesas Keys, with an estimated 15,957 adults and subadults and 4,655 juvenile green turtles in the 1,500 km^2 area surveyed. Eastern Quicksands, located west of Marquesas Keys, hosts one of the densest aggregations of foraging adults (47.3 turtles/km^2) and subadults (72.5 turtles/km^2) in Florida and worldwide (Welsh and Mansfield 2022). At eastern Quicksands and other locations around Marquesas Keys, 1,087 green turtles were sighted foraging on seagrass beds (*Thalissia testudinum, S. filiforme,* and *H. wrighti*): adults and subadults were found in depths of 3 to 5 m, and smaller turtles foraged in shallower waters of less than 3 m (Herren *et al.* 2018). Bresette *et al.* (2010) describe juvenile green turtles foraging in shallow seagrass habitat (*i.e.,* less than 2 m) in Mooney Harbor of the Marquesas Keys. Large juvenile and adult green turtles exhibited extended site fidelity to foraging sites in Dry Tortugas National Park, primarily in areas with submerged rooted vascular plants (Fujisaki *et al.* 2016), where turtles primarily consume seagrass and macroalgae, with some incidence of omnivory (Roche 2016). Hart (USGS unpublished data 2015) identified 205 juveniles foraging in the Dry Tortugas from 2008 to 2015. In the Lower Florida Keys (from Big Pine Key to Boca Chica Key just east of Key West), IRG (unpublished data 2022) observed 108 green turtles (up to 1.86 turtles/km) over 268 km of vessel-based visual transects; IRG also captured 64 of these turtles, ranging in size from 29.7–91.9 cm SCL. Approximately 30 km off Cape Sable is another important adult resident benthic foraging/resting area, as demonstrated by tracking data of 10 post-nesting females in southwestern Florida (Sloan *et al.* 2022). Their 50 percent core use resident areas ranged from 8 to 904 km^2, with a mean of 296 ±309.3 km^2 (Sloan *et al.* 2022). The Everglades National Park also provides important developmental habitat and benthic foraging/resting resources in shallow waters to 10 m depth (Hart and Fujisaki 2010). Schroeder (NMFS unpublished data 2022) documented 595 sightings of juvenile green turtles over a 19-year period (2000 to 2018) in a relatively small area of the western portion of Florida Bay (within the boundaries of Everglades National Park), in waters generally less than 3 m depth. Additionally, green turtles forage near Ten Thousand Islands, western Everglades (Witzell and Schmid 2004). Hart *et al.* (2013) and Hart *et al.* (2021) tracked 22 females from their nesting beaches in the Dry Tortugas to benthic foraging/resting areas in the Florida Keys National Marine Sanctuary, the Dry Tortugas, the Marquesas Keys, Biscayne National Park (southeastern Florida), and Everglades National Park. FWC and NMFS (unpublished data 2016) tracked 12 post-reproductive individuals to these same locations, where they foraged in depths of 4.1 to 27.3 m (with an average of 12.8 m and a standard deviation of 6.9 m) near

patchy or continuous seagrass habitat. Post-nesting females (n = 19) tracked from Archie Carr NWR and two males tracked from St. Lucie County, Florida (Schroeder *et al.* 2008; B. Schroeder, NMFS unpublished data 2022) foraged in Florida Bay and the Florida Keys. Similarly, of 15 turtles satellite tracked from the Archie Carr NWR between 2013 and 2015, 14 migrated to foraging areas in the Florida Keys/Florida Bay region (Chabot 2018; D. Bagley, University of Central Florida unpublished data 2016). The other turtle was tracked to a foraging area in southeastern Florida. Thus, Monroe County Florida supports high density juvenile and adult foraging/resting (Bresette *et al.* 2010; Fujisaki *et al.* 2016; Hart *et al.* 2020; Hart *et al.* 2021; Welsh and Mansfield 2022). In addition, the area contains the reproductive essential feature and serves as the destination for east and west coast migratory corridors (Hart *et al.* 2013; K. Hart, USGS unpublished data 2014 and 2015; M. Lopez, ProNatura unpublished data 2022). Therefore, the Team concluded, and we agree, that the area provides high conservation value.

Southeast Florida is another important benthic foraging/resting area for green turtles (Redfoot and Ehrhart 2000; Hirama and Ehrhart 2007; Kubis *et al.* 2009; Long *et al.* 2021; Kelley *et al.* 2022). As summarized by Witherington *et al.* (2006), green turtles forage/rest throughout the year in Mosquito Lagoon and the Indian River Lagoon Complex (Ehrhart 1983; Bresette *et al.* 2002; Ehrhart *et al.* 2007; Long *et al.* 2021; Kelley *et al.* 2022); within Port Canaveral (Redfoot and Ehrhart 2000); on nearshore Atlantic reefs from Brevard to Broward counties (Guseman and Ehrhart 1990; Wershoven and Wershoven 1992; Bresette *et al.* 1998); and in nearshore, hard-bottom habitats in St. Lucie County (Bresette *et al.* 1998; Foley 2005). During the 19th century, a large green turtle fishery flourished in the Indian River (Ehrhart 1983), which continues to be an important benthic foraging/resting area for green turtles. From 2000 to 2018, juvenile green turtle abundance in the Indian River Lagoon Complex has declined, concurrent with declines in seagrass and, since 2011, declines in macroalgae (Long 2021), stressing the importance of protecting the essential features in this area. Green turtles also forage in Banana River and adjacent Mosquito Lagoon, off Brevard and Volusia Counties on the east central coast of Florida, where shallow depths (*i.e.,* 1.5 m average depth) support extensive seagrass beds, including *S. filiforme* (manatee grass) and *H. wrightii* (shoal grass) (Ehrhart 1983; Mendonça 1983). Juveniles forage on algae along the rock riprap-lined embayment of the Trident Submarine Basin (*i.e.,* Turning Basin) at Port Canaveral (Redfoot and Ehrhart 2013) and the Cape Canaveral Shipping Channel (Henwood 1987; Holloway-Adkins and Hanisak 2017), indicating that man-made environments also contain benthic foraging/resting essential features. Juveniles forage in water depths of 2 to 6 m at a hard-bottom, nearshore reef segment in Broward and Palm Beach Counties. This is an especially important benthic foraging/resting area because of the worm rock reef that provides refugia habitat (Guseman and Ehrhart 1990) and supports macroalgae species, including *G. mammillaris* (Makowski *et al.* 2006). In 2021, IRG conducted 23 5-km surveys between West Palm Inlet and approximately 20 km north of Sebastian Inlet, in Palm Beach, Martin, St. Lucie, Indian River, and Brevard Counties; they captured 95 green turtles: 24 adult females, 21 adult males, 42 sex unidentified adults, and 8 juveniles (IRG unpublished data 2022). From 1994 to 2018, 4,215 green turtles were drawn into the intake canal of the St. Lucie Power Plant (Bentley *et al.* 2021). Between September 1998 and January 2000, 73 green turtles were captured at Jennings Cove, also in St. Lucie County (Bresette *et al.* 2002; Perrault *et al.* 2021). From 2017 to 2022, IRG captured 50 juvenile green turtles foraging on sandy seagrass beds in Jupiter Inlet and the Intracoastal Waterway in Palm Beach County Florida (IRG unpublished data 2022). Between 2010 and 2012, Stadler *et al.* (2015) observed 351 juvenile green turtles (including resightings) swimming, breathing at the surface, or resting on the bottom of nearshore reef habitat in Palm Beach County (Breakers = 29 turtles/km and Boca Raton reefs = 44 turtles/km) and Broward County (Broward North, Middle, and South reefs = 77 turtles/km); the greatest abundance occurred at the Boca Raton reef (n = 85). From 2005 to 2013, Gorham *et al.* (2016) observed 719 juvenile green turtles (0.80 turtles/km) foraging on seagrass in the urbanized Lake Worth Lagoon, Palm Beach. K. Hart (USGS pers. comm. 2022) captured 16 adult green turtles in Biscayne Bay National Park. Biscayne Bay historically hosted green turtles in sufficient abundance to support a fishery (Smith 1896). Although the salinity of the Bay increased over the 20th century due to decreased freshwater input, Biscayne Bay currently contains extensive seagrass beds, and sightings and captures indicate the presence of numerous green turtles (C. Sasso, SEFSC pers. comm. 2022). Thus, Southeast Florida (from Cape Canaveral to Monroe County) supports high density foraging/resting especially at worm rock reefs (Ehrhart 1983; Guseman and Ehrhart 1990; Wershoven and Wershoven 1992; Bresette *et al.* 1998; Redfoot and Ehrhart 2000; Bresette *et al.* 2002; Makowski *et al.* 2006; Stadler *et al.* 2015; Gorham *et al.* 2016; Holloway-Adkins and Hanisak 2017; Long *et al.* 2021). It also contains the reproductive essential feature and comprises a portion of the east coast migratory corridor (Schroeder *et al.* 2008; D. Bagley, University of Central Florida unpublished data 2016; B. Schroeder, NMFS unpublished data 2022). Therefore, the Team concluded, and we agree, that the area provides high conservation value to the North Atlantic DPS.

In Northeast Florida, from Cape Canaveral to Georgia, NMFS (SEFSC unpublished data 2022) captured 41 juvenile green turtles in trawls between 1986 and 1991. As demonstrated by directed research capture and bycatch data (See Draft Biological Report, NMFS 2023a), this area appears to host a moderate density of benthic foraging/resting green turtles (A. Foley, FWC pers. comm. 2022). However, the Team concluded, and we agree, that the area provides high conservation value because it also contains the reproductive essential feature and comprises a portion of the east coast migratory corridor.

South Carolina and Georgia

Seagrass cover is low in Georgia and South Carolina and relatively few studies have focused on green turtle presence and habitat use in this region. In Georgia, juveniles are anecdotally reported to forage on macroalgae (*e.g., Ulva* spp.) on docks and rock pilings, and necropsies of stranded turtles indicate that they also consume invasive red algae (*Graciliaria vermiculophylla*) and *Spartina alterniflora* (M. Dodd, Georgia Department of Natural Resources (DNR) pers. comm. 2022). A study of live-bottom reefs within Grays' Reef National Marine Sanctuary found that three green turtles wedged themselves into sandstone ledges for rest (Auster *et al.* 2020).

In South Carolina, green turtles were historically reported as being present at low population levels. During the late 1800s, small juvenile green turtles were infrequently captured incidental to other fisheries and sold commercially, with maximum annual take estimated at approximately 150 individuals (True 1884). Since 2019, South Carolina (SC)

DNR satellite tracked eight turtles (for a total of 625 standardized observation days), all of which remained in waters off southern Georgia and northeastern Florida (M. Arendt, SCDNR; C. Eastman, University of Florida Whitney Sea Turtle Hospital; D. Evans, Sea Turtle Conservancy; T. Norton, Jekyll Island Georgia Sea Turtle Center; unpublished data 2022). Fisheries bycatch data provide additional information about sea turtle occurrence in South Carolina waters. Between 1992 and 2014, a total of 330 turtles were incidentally captured by inshore fisheries in Port Royal Sound, St. Helena Sound, Charleston Harbor, Cape Romain, and Winyah Bay (M. Pate, SCDNR unpublished data 2016). The majority of these captures comprise bycatch in trammel net fisheries (n >300 from 1992 to 2012; M. Arendt, SCDNR pers. comm. 2015). SCDNR captured 21 green turtles in trawl surveys between 2000 and 2021 (SCDNR unpublished data 2022).

Based on the best available information detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of South Carolina and Georgia, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. However, the Team concluded, and we agree, that the area between and including Georgia and South Carolina provides low conservation value because it supports relatively low density benthic foraging/resting compared to other areas within the range of the DPS.

North Carolina

Seagrass and other submerged aquatic vegetation are found throughout nearshore waters of North Carolina. Juvenile green turtles forage on seagrass beds in the waters of Core, Pamlico, Bogue, and Albemarle Sounds (Epperly *et al.* 1995; Bass *et al.* 2006; Epperly *et al.* 2007; McClellan *et al.* 2009). Juveniles also forage in Back Sound and the Cape Fear, New, and White Oak River estuaries from April through November (Avens *et al.* 2003; Avens and Lohmann 2004; Snoddy *et al.* 2009; Snoddy and Southwood Williard 2010) or December (Williard *et al.* 2017). Within the Albemarle-Pamlico Estuarine System, a comprehensive survey conducted during 2006 and 2007 documented 100,843 acres (408 km^2) of seagrass beds. A subsequent survey during 2013 demonstrated an overall decrease of 5.6 percent in the Albemarle-Pamlico Estuarine System, with a decrease in continuous seagrass extent of 34.2 percent, but an increase in patchy seagrass extent of 18.4 percent (Field *et al.* 2021).

Green turtles were documented to commonly occur in North Carolina's inshore waters as early as 1884, prior to which the population had been sufficient to support a small-scale fishery both for individual fisher consumption and commercial sale (True 1884). These green turtles were reported to be small, suggesting that the majority of green turtles inhabiting these waters were juveniles. At the peak of the fishery, up to 100 green turtles were caught at one time, and turtles were ''shipped by the barrel'' for sale (Coker 1906). By the early 1920s, green turtles were rarely encountered; their scarcity was attributed to overfishing and egg collection from southern nesting beaches (Coker 1906).

Since then, direct capture for research studies, bycatch data, and satellite telemetry show that there is a large population of benthic foraging/resting green turtles in waters off North Carolina. From 1988 to 1992, commercial fishers in Core and Pamlico Sounds reported that juvenile green turtles comprised 4 to 16 percent of annual sea turtle bycatch (total n = 21; Epperly *et al.* 1995). Subsequent standardized fishery-dependent sampling conducted in Core and Pamlico Sounds from 1997 to 2009 demonstrated a significant increase in green turtle catch per unit effort (CPUE) of 4,250 percent and an increased proportion of green turtles in the species distribution from 19 to 42 percent (Epperly *et al.* 2007; Braun McNeill *et al.* 2018). This increase in the number of green turtles captured corresponded with a significant decrease in size distribution, with the predominant SCL size class shifting from 30–35 cm to 25–30 cm (Braun McNeill *et al.* 2018). Analysis of green turtle bycatch in the North Carolina inshore gillnet fishery also indicated an increase in CPUE of more than 650 percent between 2001 and 2016 (Putman *et al.* 2020). The presence of foraging/resting green turtles in North Carolina is also supported by data on incidental captures collected by the North Carolina Division of Marine Fisheries and the NMFS Beaufort Laboratory (n = 1,485), stranding records (n = 2,969), and necropsy data indicating that at least 43.5 percent of necropsied turtles (n = 485) had seagrass or other vegetation in their gut (NCWRC unpublished data 2015). Analyzing a subset of incidental captures (n = 757) indicates that most individuals are juveniles, with an average SCL of 32.4 cm, a minimum SCL of 20.6 cm, and a maximum SCL of 94.5 cm (SEFSC unpublished data 2022). Incidental captures confirm that the benthic foraging/resting essential features extend westward into the Pamlico and Albemarle Sound estuaries and northward into the Cape Fear, New, and White Oak Rivers (Epperly *et al.* 2007; SEFSC unpublished data 2015). Seven juveniles that survived capture in gillnets in the lower Cape Fear River remained there (within a 3 km radius of the capture site) after release for up to 42 days (Snoddy and Williard 2010). Similarly, 10 juveniles (27.9 to 42.5 cm SCL) captured in Core, Back, and Pamlico Sounds inhabited areas from Bogue Sound to Pamlico Sound. These turtles were strongly associated with seagrass habitat (most frequently at the edge of seagrass beds) and retreated into the beds when disturbed by natural and anthropogenic activities, including vessel and fishing activities (McClellan and Read 2009). In general, each turtle used a restricted area and showed little movement during the summer, followed by an increase in movement during the fall, consistent with an onset of migratory behavior (McClellan and Read 2009). Generally, turtles occupied mean temperatures between 26 and 28 °C in water depths of generally less than one meter (but up to depths of four meters) and in areas close to the shoreline, near seagrass meadows (McClellan and Read 2009). During winter months, when water temperatures fall below habitable levels, juveniles typically move out of shallow estuarine waters to deeper waters on the North Carolina shelf south of Cape Hatteras, migrate south along the continental shelf to waters off the coast of Florida, or migrate east to oceanic waters in the North Atlantic (Epperly *et al.* 1995; Read *et al.* 2004; Southwood Williard *et al.* 2017). Barden Inlet and the Cape Lookout Bight appear to be important transit routes, although other nearby inlets are also used by green turtles to move in and out of estuarine waters (McClellan and Read 2009; Southwood Williard *et al.* 2017). During rapid drops in water temperatures in fall and winter months, juvenile green turtles may be susceptible to cold-stunning (Niemuth *et al.* 2020). In early 2016, more than 1,800 hypothermic green turtles were found in eastern Pamlico and southern Core Sounds in a 4-week period, documenting the importance of these benthic foraging/resting areas (NCWRC unpublished data 2016).

Based on the best available information detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters

of North Carolina, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. The Team also concluded, and we agree, that the area including Pamlico, Core, and Back Sound (*i.e.,* up to but not including Currituck and Albemarle Sounds) provides high conservation value to the DPS. This area supports a high density of green turtles (predominantly small juveniles) inhabiting extensive seagrass habitat during the majority of the year, as documented by numerous records of satellite tracking, directed captures for research, fishery bycatch, cold stuns, and strandings (McClellan and Read 2009; Braun McNeill *et al.* 2018; Putman *et al.* 2020; NCWRC unpublished data 2022). The area from Cape Fear River to Bogue Sound (including Cape Fear, New, and White Oak Rivers and Bogue Sound) provides moderate conservation value because the area supports a moderate density of green turtles (predominantly small juveniles) inhabiting areas of extensive submerged aquatic vegetation, as documented by fishery bycatch and stranding data (NCWRC unpublished data 2022). The area from Albemarle Sound to the Virginia border provides low conservation value because it supports a relatively low density of green turtles (predominantly small juveniles) compared to other areas and as documented by few records of satellite tracking, relocation trawling, fishery bycatch, and stranding observations (Southwood Williard *et al.* 2017, NCWRC unpublished data 2022).

Virginia Through Massachusetts

Seagrass beds are found throughout inshore and nearshore waters from Virginia through Massachusetts. Green turtles occur in this area, but there are relatively few published studies. Aerial survey data indicate the presence of green turtles in nearshore waters from Virginia to New York (S. Barco, Virginia Aquarium unpublished data 2022; Atlantic Marine Assessment Program for Protected Species unpublished data 2022). Stranding, cold stun, and incidental capture data also demonstrate the presence of green turtles from Virginia to Massachusetts. Schwartz (1960) published the first record of a green turtle in Maryland's Chincoteague Bay, along the Atlantic coast. Green turtles occur in the Chesapeake Bay (Hardy 1972; Barnard *et al.* 1989) and in parts of the Potomac River, where they graze on underwater grasses (Carter and Rybicki 1985). Analyses of stomach contents of turtles stranded in Virginia and Maryland suggest that these turtles are foraging on eelgrass and macroalgae, including *Ulva* spp. (Bellmund *et al.* 1987; Barco *et al.* 2015). From 2004 through 2006, four green turtles were captured alive in pound nets set in Chesapeake Bay (around Fishing Bay, Maryland), one of which was a recapture (Kimmel 2006; Kimmel 2007). These occurrence data are corroborated by S. Barco (Virginia Aquarium & Marine Science Center unpublished data 2022), who acoustically tagged and monitored seven green turtles using a Navy acoustic receiver array in the Virginia Chesapeake Bay, James River tributary, and coastal waters. Stranding, cold stun, and incidental capture data also demonstrate the presence of green turtles from Virginia to Massachusetts. Twelve cold stunned green turtles were rehabilitated and released off Massachusetts with satellite tags by the New England Aquarium; most exhibited normal migratory behaviors, moving south or offshore as water temperatures dropped; however, one remained in Long Island Sound (Robinson *et al.* 2020). In New York, juvenile green turtles forage on seagrass and algae throughout the eastern Peconic Bay Estuary system, Long Island Sound, and in Shinnecock Bay on Long Island's southern shore (Montello *et al.* 2022). In these areas, 35 green turtles were incidentally captured in pound nets between 2002 and 2004 (Morreale *et al.* 2005). Further, between 1988 and 1992, 30 green turtles were captured and tagged in New York waters. Seven individuals were recaptured, indicating residency, with one 38 cm SCL green turtle recaptured approximately 1 year after initial encounter, 13 km from its original tagging site in Gardiners Bay (Morreale and Standora 1998). Based on the annual timing of encounters, green turtles appear to reside in these New York waters seasonally, arriving in early July and departing in October. Evaluation of gut contents from 11 green turtles demonstrated that green turtles in this area were foraging on algae and eelgrass (*Zostera marina*) (Burke *et al.* 1992). Growth rates calculated for the seven recaptures (ranging from 20 to 40 cm SCL) demonstrated significant growth, and rates of growth were comparable to those observed in other regions (Morreale and Standora 1998). Two green turtles were recovered in North Carolina within 180 days after originally being tagged during the foraging season in New York, indicating capacity for seasonal migration to avoid lethally cold water temperatures. Since 2019, five green turtles have been rehabilitated, satellite tagged, and released by the New York Marine Rescue Center (M. Montello, New York Marine Rescue Center unpublished data 2021). Several turtles remained in New York waters before transmissions ceased, two migrated south along the coast, and one moved south in more offshore waters.

Based on the best available information detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters from Virginia to Massachusetts, from the mean high water line to 20 m depth, contain the benthic foraging/resting essential features that may require special management considerations or protections. However, the Team concluded, and we agree, that this area provides low conservation value because it supports relatively low density benthic foraging/resting, compared to other areas within the range of the DPS.

Puerto Rico

In Puerto Rico, green turtles forage on seagrasses, macroalgae, and invertebrates and rest on coral reefs. Seagrass is especially abundant around Culebra and Vieques Islands. Juveniles forage throughout shallow, nearshore areas of Culebra Island, in inshore bays around Mona Island, and on the northern coast of the main island of Puerto Rico. From 1985 to 2021, 840 green turtles, mainly juveniles, have stranded in Puerto Rico (C. Diez, PRDRNA, unpublished data 2022). The existing critical habitat designation (63 FR 46693, September 2, 1998) identifies the marine areas around Culebra Island, from the mean high water line extending seaward 5.6 km (3 nautical miles), as essential to the conservation of the species. These waters include Culebra's outlying Keys including Cayo Norte, Cayo Ballena, Cayos Geniquí, Isla Culebrita, Arrecife Culebrita, Cayo de Luis Peña, Las Hermanas, El Mono, Cayo Lobo, Cayo Lobito, Cayo Botijuela, Alcarraza, Los Gemelos, and Piedra Steven.

Seagrass beds surrounding Culebra provide important foraging resources for juvenile, subadult and adult green turtles. Additionally, coral reefs surrounding the island provide refugia for rest, shelter, and protection from predators. The 1998 critical habitat designation was based largely on 165 green turtles captured at Culebra between 1987 and 1989 in depths of 9.1 m or less (Collazo *et al.* 1992). Collazo *et al.* (1992) found that juveniles foraged on seagrass beds at Culebrita Island, Mosquito Bay, Puerto Manglar, and Tamarindo Grande. Diez *et al.* (2010),

Patrício *et al.* (2014), and Patrício *et al.* (2017) confirmed that Culebra areas continue to contain the benthic foraging/resting essential features and serve as an important developmental habitat for juvenile green turtles. Griffin *et al.* (2017) recommended continued protection of this critical habitat unit to ensure recruitment into the adult life stage. An mtDNA mixed stock analysis of 103 juvenile green turtles foraging around Culebra Island indicates origin from four locations: Costa Rica, Mexico, Florida, and Suriname (Patrício *et al.* 2017). Capture data (n = 665) over 13 years of surveys at Culebra Island indicate that juvenile turtles reside in Tortuga Bay (n = 122 turtles; Patrício *et al.* 2014) and Manglar Bay (n = 187 turtles; Patrício *et al.* 2014), where juveniles forage on the seagrasses, *S. filiforme* and *H. wrightii,* and the algae *T. testudinum.* There is little movement between the two areas, and each bay appears to represent a distinct foraging ground with a unique aggregation of juveniles (Patrício *et al.* 2011). Acoustic tracking of 21 green turtles (38 to 70 cm SCL) confirmed high site fidelity within each bay, with little connectivity between the bays (Griffin *et al.* 2019). Green turtles were also captured in Mosquito Bay, where there are abundant seagrass beds (Patricio *et al.* 2014).

These data support the designation of waters around Culebra as specific areas containing the benthic foraging/resting essential features; however, we are not aware of any data to support the designation to 5.6 km (3 nautical miles). The original designation was based largely on the data presented by Collazo *et al.* (1992), but these data described turtles foraging and resting in 9.1 m or less (Collazo *et al.* 1992). Studies of green turtles conducted over the past 20 years at Culebra further support the presence of the benthic foraging/resting essential features in depths of 20 m or less (C. Diez, PRDRNA pers. comm. 2022).

Recent rapid assessments identified high density foraging/resting areas off the main island of Puerto Rico, where juvenile turtles aggregate at Punta Salinas, Escambron-Normandy, and Arrecifes Isla Verde (C. Diez, PRDRNA unpublished data 2022). While Culebra supports a greater overall abundance of green turtles, these small areas host high densities of green turtles (C. Diez, PRDRNA pers. comm. 2022). For example, 30 green turtles were captured off Punta Salinas in 2 days, and another 10 green turtles were sighted in 2 hours (C. Diez, PRDRNA unpublished data 2022). Additional rapid assessment surveys have identified green turtles in seagrass and coral reef habitats throughout the northern coast of the main island of Puerto Rico (Diez 2022). Green turtles were observed foraging and resting in urban sites, including: Escambron (San Juan; n = 45), Rompeolas (n = 33), Tres Palmas (Rincon; n = 25), Isla Verde (Carolina; n = 40), and Pt. Salinas (n = 26) in the municipality of Toa Baja (Diez 2022). The presence of green turtles during these rapid assessments indicates that the area contains the benthic foraging/resting essential features in sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, and growth of green turtles.

Around Mona Island, turtles are most commonly observed off the southern coast, in Sectors 1 and 5 (C. Diez and R. vanDam, PRDRNA unpublished data 2021). All size classes have been observed, but most are juveniles and sub-adults (30 to 50 cm), especially in Sector 5 (C. Diez and R. vanDam, PRDRNA unpublished data 2021). In Sector 1, which is adjacent to one of the higher density green turtle nesting beaches, more adults (males and females) have been observed in recent years (C. Diez and R. vanDam, PRDRNA unpublished data 2021). There are several areas where turtles forage on *Thalassia* and *Halodule* seagrass beds (C. Diez, PRDRNA pers. comm. 2016). These areas include waters off Pajargos, Brava, Coco, and Caigo no Caigo beaches.

In addition, green turtles were identified foraging on the north central beach on Vieques Island (*i.e.,* Mosquito Cay). To evaluate possible important foraging areas for sea turtles, PRDRNA evaluated coastal marine habitats around Vieques (Diez 2003). They surveyed from Mosquito Cay through Bahia Esperanza to the southwest; turtles were observed along the north coast at Mosquito Cay and between Isable and Punta Goleta, at Pocito Reef in the Federal Reserve, and in lagoons in the south (including Puerto Mosquito; Diez 2003).

Based on the best available information detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Puerto Rico, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. The Team concluded, and we agree, that the area surrounding Culebra Island provides high conservation value. It has been designated as critical habitat since 1998. The area between the mean high water line and 20 m depth contour (which is different from the original designation but better reflects the best available data) hosts a high abundance (highest in Puerto Rico) of benthic foraging/resting green turtles as demonstrated by tagging (*i.e.,* 700 turtles in 20 years; C. Diez, PRDRNA unpublished data 2022) and numerous studies (Collazo *et al.* 1992; Diez *et al.* 2010; Patrício *et al.* 2014; Patrício *et al.* 2017; Griffin *et al.* 2019). The northern coast of Puerto Rico Island (including Punta Salinas, Escambron, and Arrecifes Isla Verde Natural Reserve) is also of high conservation value because it hosts a high density of benthic foraging/resting green turtles (C. Diez, PRDRNA unpublished data 2022). All other areas in Puerto Rico are of low conservation value because they support a relatively low or unknown density of foraging/resting turtles. However, some areas (Maunabo, Guayama, eastern and southern Vieques Island and southern Mona Island) contain the reproductive essential feature and are thus of high conservation value to the DPS.

Review of INRMPs for the North Atlantic DPS

DoD provided, and we reviewed, INRMPs for 29 installations (NMFS 2023c). Of these, 3 do not overlap with areas under consideration as critical habitat for the North Atlantic DPS (Naval Submarine Base New London, Naval Support Facility Dahlgren, and Naval Research Laboratory Chesapeake Bay Detachment), and 15 occur in areas that, as discussed in the following section, we propose to exclude based on economic impacts. The remaining 11 INRMPs include: Naval Station Mayport, Naval Air Station Key West, Naval Support Activity Panama City, Naval Air Station Pensacola, Naval Air Station Corpus Christi, Eglin Air Force Base, Tyndall Air Force Base, Patrick Space Force Base and Cape Canaveral Space Force Station, Hurlburt Field, MacDill Air Force Base, and Muñiz Air National Guard Base Punta Salinas. We are working with DoD to identify relevant elements to protect the habitat from the types of effects that would be addressed through a destruction-or-adverse-modification analysis (50 CFR 424.12(h)). We will consider this and other information to determine whether a benefit is provided prior to publication of the final rule to designate critical habitat.

Economic Impacts for the North Atlantic DPS

For each of the specific areas meeting the definition of critical habitat, we weighed the economic impact of designation against the benefits of

designation, as represented by its conservation value to the North Atlantic DPS (see Table 1). Specific areas providing high conservation value are associated with a combined total annualized impact of $615,000. Specific areas providing moderate conservation value are associated with a combined total annualized impact of $24,000. Specific areas providing low conservation value are associated with a combined total annualized impact of $375,000. Moderate and high conservation value areas are moderately and highly important (respectively) to supporting the overall life history and recovery of the DPS, and the benefits of designating these areas are not outweighed by the low economic impacts. We conclude, however, that the economic impacts outweigh the benefits of designating specific areas of low conservation value. Based on the Team's criteria and best available data, low conservation value areas do not contain essential reproductive and/or migratory features. Furthermore, these areas host a lower abundance and/or density of foraging/resting green turtles, suggesting that they provide less conservation value to the DPS relative to areas hosting moderate or high abundances or densities. Although the estimated annualized costs across all of the low conservation value areas for the DPS were low ($375,000), we concluded that these impacts outweighed the benefits of designating these areas. Therefore, we propose to exclude the following areas from the critical habitat designation: northern Texas, Louisiana through Alabama, Georgia and South Carolina, northern North Carolina, Virginia through Massachusetts, and several areas in Puerto Rico. As discussed in the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c), we conclude that exclusion of these low conservation value areas from the critical habitat designation will not result in extinction of the DPS.

TABLE 1—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE NORTH ATLANTIC DPS

Area	Conservation value	Annualized impacts
Sargassum	High	$55,000
Texas: Mexico border to Lavaca-Matagorda Bay	High	14,000
Texas: Lavaca-Matagorda Bay to Galveston Bay	Moderate	9,800
Texas: all other areas	Low	14,000
Louisiana	Low	15,000
Mississippi	Low	15,000
Alabama	Low	16,000
Florida	High	510,000
Georgia	Low	18,000
South Carolina	Low	18,000
North Carolina: Pamlico, Core, and Back Sounds	High	10,000
North Carolina: Bogue Sound, White Oak River, New River, and Cape Fear River	Moderate	14,000
North Carolina: all other areas	Low	7,600
Virginia to Massachusetts	Low	246,000
Puerto Rico: Culebra	High	5,600
Puerto Rico: Vieques (South and East)	High	4,000
Puerto Rico: South Mona Island	High	800
Puerto Rico: North Puerto Rico Island	High	12,000
Puerto Rico: Maunabo	High	1,200
Puerto Rico: Guayama	High	2,100
Puerto Rico: all other areas	Low	25,700

National Security Impacts for the North Atlantic DPS

We received 36 requests for exclusions due to national security impacts of specific areas under consideration for proposed critical habitat of the North Atlantic DPS (NMFS 2023c). Of these, 15 occur in areas that were excluded based on economic impacts that outweighed the benefits of designating critical habitat. The remaining 21 requests are not yet reasonably specific to weigh national and homeland security impacts against the benefits of a potential critical habitat designation. We are working with DoD and DHS to gather the specific information and will consider it prior to publication of the final rule to designate critical habitat.

Specific Areas Proposed for Critical Habitat Designation for the North Atlantic DPS

For the threatened North Atlantic DPS of green turtles, we propose to designate occupied critical habitat, encompassing 1,047,564 km^2 of *Sargassum* habitat and 96,349 km^2 of nearshore waters (from the mean high water line to 20 m depth) in Florida, Texas (from the Mexico border to and including Galveston Bay), North Carolina (from the South Carolina border to but not including Albemarle Sound), and Puerto Rico (Culebra Island, Maunabo, Guayama, and northern Puerto Rico Island, southern Mona Island, eastern and southern Vieques Island). *Sargassum* habitat contains the surface-pelagic foraging/resting essential features. Florida's nearshore waters contain reproductive, migratory, and benthic foraging/resting essential features. Texas' (from the Mexico border to and including Galveston Bay) and North Carolina's (from the South Carolina border to but not including Albemarle Sound) nearshore waters contain benthic foraging/resting essential features. Puerto Rico's nearshore waters contain benthic foraging/resting essential features, and nearshore waters off Maunabo, Guayama, southern Mona Island, eastern and southern Vieques Island also contain the reproductive essential feature. All areas proposed for designation are of moderate or high conservation value to the DPS. A total area of 107,682 km^2 is proposed for exclusion because the benefits of exclusion outweigh the benefits of inclusion of these low conservation value areas. The Team found, and we agree, that exclusion of these areas from

the critical habitat designation would not result in extinction of this DPS (NMFS 2023a). At this time, we have not received reasonably specific information with which to propose exclusions based on national security impacts. At this time, no areas are ineligible for designation as critical habitat under section 4(a)(3)(B)(i) of the ESA. We have not identified any unoccupied areas that are essential to the conservation of this DPS; thus we are not proposing to designate any unoccupied areas.

South Atlantic DPS

The South Atlantic DPS is defined as green turtles originating from the South Atlantic Ocean, including those hatching from nests on the beaches of the U.S. Virgin Islands (USVI). The DPS is bounded by the following lines and coordinates: along the northern and eastern coasts of South America (east of 7.5° N, 77° W); 14° N, 77° W to 14° N, 65.1° W to 19° N, 65.1° W in the north and west; 19° N Lat. in the northeast; 40° S 19° E in the southeast; and 40° S Lat. in the south. The geographical area occupied by this DPS includes waters outside of U.S. jurisdiction. Within the U.S. EEZ, the range of the DPS includes waters up to 200 nautical miles offshore of the USVI (St. Croix, St. Thomas, St. John, Great St. James, and Little St. James). See the Draft Biological Report for a map of this area. Individuals of this DPS may also forage and rest in areas used by the North Atlantic DPS (described above).

The Recovery Plan for the U.S. Population of the Atlantic Green Turtle (NMFS and USFWS 1991) indicates that recovery requires protection of nesting and marine habitat, specifically: the identification and restoration of important foraging habitats, improvement of water quality, and prevention from degradation and destruction from contamination, fishing gears, vessel anchoring, oil and gas activities, and dredging.

Specific Areas Containing the Reproductive Essential Feature and Their Conservation Value to the South Atlantic DPS

The recovery of the South Atlantic DPS is dependent on successful reproduction. While nesting occurs on beaches, the marine areas adjacent to nesting beaches are essential for mating, movement of reproductive females on and off nesting beaches, internesting, and the swim frenzy and early dispersal (*i.e.,* transit) of post-hatchlings. Therefore, the following reproductive feature is essential to the conservation of the South Atlantic DPS: From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals and the transit of post-hatchlings.

The Team used the following information to identify this reproductive essential feature. USFWS reviewed nesting data to identify beaches considered for terrestrial critical habitat, which begins at the mean high water line. Therefore, in-water areas considered for marine critical habitat also begin at the mean high water line (*i.e.,* waters adjacent to nesting beaches). To determine the offshore boundary of the reproductive essential feature, the Team reviewed satellite tracking data for 10 females nesting at Buck Island, USVI; during the internesting period, the females remained in nearshore (<1.5 km), shallow waters (<20 m depth), and within approximately 10 km of their nesting beaches (Hart *et al.* 2017). The Team concluded, and we agree, that the reproductive essential feature occurs from the mean high water line to 20 m depth in waters adjacent to nesting beaches proposed as critical habitat by USFWS.

The reproductive essential feature may require special management considerations or protection to maintain unobstructed access to and from nesting beaches and disturbance-free nearshore areas for mating, internesting, and post-hatchling transit. The Recovery Plan (NMFS and USFWS 1991) indicates that protection is needed to prevent the destruction of habitats from oil and gas, dredging, fishing, and vessel activities. In addition, the reproductive essential feature may require special management considerations regarding nearshore and offshore structures, construction, aquaculture, and seismic surveys. Nearshore structures or operations have the potential to block passage of nesting females and post-hatchlings. Nearshore or offshore structures may also affect post-hatchlings' movement through the following mechanisms: disorientation due to lighting, concentration of predators, disruption of wave patterns necessary for orientation, and/or creation of excessive longshore currents, which run parallel to the beach, rather than carrying post-hatchlings to their offshore habitats. Oil and gas activities may impact the reproductive essential feature. Oil spills pose a considerable threat by obstructing or contaminating access to and from nesting beaches (Meylan 1982). Alternative energy facilities (such as wind farms and underwater turbines) and large-scale fishing, dredging, and aquaculture activities may block passage of reproductive individuals or post-hatchlings. Construction (on land and in water), vessel traffic, and seismic surveys may also act as deterrents (visual or auditory) to reproductive individuals, preventing their use of preferred areas. Finally, climate change may result in the shift or loss of nesting beach habitat, which would alter the location or value of adjacent marine reproductive areas.

To identify specific areas containing the reproductive feature essential to the conservation of the DPS, we relied on USFWS' identification of nesting beaches. USFWS proposed St. Croix nesting beaches as terrestrial critical habitat elsewhere in today's **Federal Register** (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164).

For each of these areas, we identified the adjacent marine area, from the mean high water line to 20 m depth, as containing the reproductive feature essential to the conservation of the South Atlantic DPS and which may require special management consideration or protection. Because some of these areas are located in proximity to one another, and females move between them, we identified an inclusive area as allowed in 50 CFR 424.12(d). All of these areas are of high conservation value to the DPS because they are required for successful reproduction, which is directly linked to population growth and recovery. Females must use these reproductive areas to reach the nesting beaches proposed as critical habitat by USFWS and for internesting. These areas are also essential for post-hatchling swim frenzy and early dispersal.

No Migratory Essential Feature for the South Atlantic DPS

The recovery of the South Atlantic DPS requires that adult turtles reproduce and forage/rest. When reproduction and benthic foraging/resting areas are geographically separated, turtles must successfully migrate between these areas; however, reproductive individuals of the South Atlantic DPS generally do not migrate from nesting beaches to distant foraging areas. Instead, the majority (7 of 10 tracked post-nesting females) remain resident in USVI waters for both reproduction/nesting and benthic foraging/resting (Hart *et al.* 2017). When they migrate to distant areas, they do not use narrow, constricted migratory corridors: long-distance captures of adults tagged at Buck Island (n = 3) reveal the use of multiple pathways,

over oceanic waters (Hart *et al.* 2017). We were unable to identify a particular depth or distance from shore used by adult green turtles to migrate between reproductive and benthic foraging/resting areas. We were also unable to identify any other physical or biological feature used by migrating turtles because the best available data demonstrate variation among movement patterns of individuals in oceanic habitats. That is to say that migration is not constricted or confined by a continental shelf, current, or other feature, but rather occurs over a large, oceanic environment without defining features (such as depth or distance from shore). Therefore, we were unable to identify or define a migratory essential feature for the South Atlantic DPS.

Specific Areas Containing the Benthic Foraging/Resting Essential Features and Their Conservation Value to the South Atlantic DPS

The recovery of the South Atlantic DPS requires successful survival, growth and development of juveniles and the successful survival and reproduction of adults. The Team was unable to identify surface-pelagic foraging/resting essential features for post-hatchlings and juveniles due to insufficient data on this developmental life stage and its habitat requirements. For benthic juveniles and adults, benthic habitats provide the food resources and refugia necessary to survive, develop, grow, and reproduce. The following foraging/resting features are essential to the conservation of the South Atlantic DPS: From the mean high water line to 20 m depth, underwater refugia (*e.g.,* rocks, reefs, and troughs) and food resources (*i.e.,* seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

To identify the benthic foraging/resting essential features, the Team gathered data on foraging and resting green turtles in USVI. Post-nesting females that did not migrate to distant benthic foraging/resting areas (7 of 10) foraged within 50 km of nesting beaches and up to 23 m in depth (Hart *et al.* 2017). The Team further analyzed these data (Hart *et al.* 2017) and found that the turtles spent 94 percent of their time in depths under 20 m. Green turtles forage and rest in nearshore waters (within 1 mile (1.6 km) of land), where they are significantly more abundant than in offshore waters of USVI (Boulon and Olsen 1982). Green turtles forage on the abundance of seagrass beds within USVI (Boulon 1983). Acoustic tracking of five juvenile green turtles demonstrated the use of larger core habitats for foraging on seagrass during the day and smaller core habitats for resting within nearby coral reefs and artificial reefs at night (Ogden *et al.* 1983; Gehrke 2017; P. Jobsis, University of the Virgin Islands pers. comm. 2022). The Team concluded, and we agree, that green turtles of this DPS forage and rest primarily in waters up to 20 m deep.

The benthic foraging/resting essential features may require special management considerations or protection to maintain the quality and quantity of food resources and refugia in nearshore waters. The Recovery Plan (NMFS and USFWS 1991) indicates that protection is needed to prevent the degradation of habitats due to dredging, pollution, oil and gas, fishing, and vessel activities. The Recovery Plan specifically highlights the following activities needed to protect marine habitat: restore and limit further development in important foraging habitats (*e.g.,* seagrass beds, which are relatively fragile habitats requiring low energy and low turbidity waters; NMFS and USFWS 1991). The St. Croix and St. Thomas East End Marine Park Management Plans identify sea turtles, seagrass, and coral reefs (which serve as green turtle refugia) as natural resources requiring conservation and protection from threats, which include: land-based sources of pollution, fishing practices that impact seagrass, oil spills, and climate change. There has been a historical decline in the seagrass beds in Maho and Francis Bays, St. John, U.S. Virgin Islands, due to heavy boat usage (Williams 1988). Anchor scars caused a loss of seagrass beds up to 6.5 m^2/day or 1.8 percent per year, and there was minimal regrowth within 7 months (Williams 1988). Anchors destroy the regenerative capacity of seagrass roots and rhizomes and disrupt critical nutrient remineralization processes in the sediments; such losses are expected to reduce the carrying capacity for green turtles (Williams 1998). In St. Croix, sediment contamination from coastal and upstream industrial sites has the potential to impact foraging habitat (Ross and DeLorenzo 1997).

Within the range of the South Atlantic DPS, many areas contain food resources and underwater refugia. Specifically, green turtles forage on seagrass beds and rest in reefs throughout USVI (Boulon 1983). The Team relied on the occurrence of benthic foraging/resting green turtles to determine which of these areas contain resources sufficient to support survival, development, growth, and/or reproduction. The major sources of data for this DPS include rapid assessments and personal observations by sea turtle biologists in USVI: N. Angeli and Sean Kelly, USVI Department of Planning and Natural Resources (DPNR); K. Stewart, Ocean Foundation; P. Jobsis University of the Virgin Islands; and A. Anderson and W. Melamet, Friends of Virgin Islands National Park. As with other DPSs, the presence of green turtles during these rapid assessments or observations indicates that the area supports the benthic foraging/resting essential features in sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction. The Team relied on these scientists' expertise to compare the relative abundance or densities of green turtles in each specific area to determine its conservation value to the DPS. Some turtles of the South Atlantic DPS may forage in distant areas identified as containing the benthic foraging/resting essential features for the North Atlantic DPS; genetic analyses are underway to evaluate the extent of shared foraging areas.

St. Croix

Green turtles forage within seagrass beds and rest in coral reefs throughout the nearshore areas of St. Croix as demonstrated by foraging studies, aerial surveys, and expert opinion (K. Stewart, Ocean Foundation; N. Angelia and Sean Kelly, USVI DPNR pers. comm. 2022). Aerial surveys documented 108 green turtles during 25 flights over 7 months in 1979 and 173 green turtles during 29 flights over 2 months in 1980 (Boulon and Olsen 1982). The highest densities were observed near Buck Island, but turtles were observed throughout the waters of St. Croix, ranging from 0.14 to 0.44 turtles per nautical mile (Boulon and Olsen 1982). In waters off Buck Island Reef National Monument, Pollock (2013) observed 132 green turtles, mainly juveniles and subadults. Adult sightings are positively correlated to seagrass cover (Pollock 2013), where they have small (on average, less than 3 km^2), specific home ranges (Griffin *et al.* 2020). K. Hart (USGS unpublished data 2022) captured 205 green turtles (mainly juveniles) around Buck Island. Near this area (in Teague Bay, St. Croix), Ogden *et al.* (1983) reported that green turtles forage on seagrass (*T. testudinum*) during the day and use coral reef resting sites (separated from the feeding areas by 0.2 to 0.5 km) at night. Additional high density foraging areas in St. Croix include East End Marine Park and the southwest portion of the island (Hart *et al.* in review). Green turtles also occur

in large numbers along the south shore, such as south of the airport and off the refinery (K. Stewart, Ocean Foundation and Claudia Lombard, USFWS pers. comm. 2022), and all along the leeward side of the island, near Frederiksted and the pier (K. Stewart, Ocean Foundation pers. comm. 2022).

Based on these data, and the input from sea turtle researchers working in St. Croix, the Team concluded, and we agree, that the east, west, and south areas of St. Croix are of high conservation value because they host a large abundance of foraging/resting green turtles (K. Stewart, Ocean Foundation, N. Angelia and Sean Kelly, USVI DPNR pers. comm. 2022) and also contain the reproductive essential feature. The Team concluded, and we agree, that all other areas of St. Croix are of moderate conservation value because of the moderate abundance of foraging/resting green turtles.

St. Thomas

Green turtles forage within seagrass beds and rest in coral reefs throughout the waters of St. Thomas (P. Jobsis University of the Virgin Islands pers. comm 2022). Michael (2020) observed 167 green turtles in 13 bays around St. Thomas and St. John, with the highest densities of turtles (at least 1 turtle per hectare) found in Druif, Brewers, Bolongo, Magens, and Sapphire Bays in St. Thomas. Earlier studies also identified juvenile benthic foraging areas in waters surrounding St. Thomas (Boulon and Frazer 1990). Between 1981 and 1983, resident foraging subadults and juveniles were captured in relatively large numbers at Little St. James and in the following areas of St. Thomas: Smith Bay, Magens Bay, Red Hook Point, and Thatch Cay (Boulon 1983). Aerial surveys documented green turtles in nearshore waters off St. Thomas and St. John, where 266 green turtles were observed during 27 flights over 7 months in 1979, and 260 green turtles were observed during 21 flights over 2 months in 1980 (Boulon and Olsen 1982). The greatest densities of green turtles were observed in Magens Bay (Boulon and Olsen 1982). Additional studies also demonstrated green turtles in large numbers in Smith Bay and Red Hook (near Sapphire Bay) and Magens Bay (Boulon 1983). Recapture data indicate that most turtles remained in the bay where they were tagged (Boulon 1983). Gehrke (2017) found a high residency rate: five acoustically tracked sea turtles stayed within Brewers Bay 98 percent of the time showing a relatively small average home range of 63.3 hectares.

Based on these data, and the input from sea turtle researchers working in St. Thomas, the Team concluded, and we agree, that the Druif, Brewers, Bolongo, Magens, and Sapphire Bays provide high conservation value because they host a high abundance of foraging/resting green turtles (P. Jobsis, University of the Virgin Island pers. comm. 2022). The Team concluded, and we agree, that all other areas of St. Thomas provide moderate conservation value because of the moderate abundance of foraging/resting green turtles.

St. John

Green turtles forage within seagrass beds and rest in coral reefs throughout the waters of St. John (A. Anderson and W. Melamet, Friends of Virgin Islands National Park pers. comm. 2022). On St. John Island, Michael (2020) observed the highest densities of green turtles (at least one turtle per hectare) in Great Lameshur, Salt Pond, and Watermelon Bays. Earlier studies also identified juvenile benthic foraging areas in waters surrounding St. John (Boulon and Frazer 1990). Aerial surveys identified high densities of green turtles in nearshore waters off St. John (Boulon and Olsen 1982). In 1986, Williams (1998) observed 50 to 78 green turtles foraging on seagrass in Maho and Francis Bays, moving in and out of the bays to forage and rest (Williams 1998). A. Anderson and W. Melamet (Friends of Virgin Islands National Park pers. comm. 2022) identified several bays that have a high probability of green turtle detection: Maho, Francis, Leinster, Great and Little Lameshur, Honeymoon, Chocolate Hole, Caneel/Scott, Salt Pond, Bjork Creek/Hurricane Hole, Round Bay, Hawksnest, and Coral Bay.

Based on these data, and the input from sea turtle researchers working in St. John, the Team concluded, and we agree, that the following bays provide high conservation value because they host a high abundance of foraging/resting green turtles: Maho, Francis, Leinster, Great and Little Lameshur, Honeymoon, Chocolate Hole, Caneel/Scott, Salt Pond, Bjork Creek/Hurricane Hole, Round Bay, Hawksnest, and Coral Bay (A. Anderson and W. Melamet, Friends of Virgin Islands National Park pers. comm. 2022). The Team concluded, and we agree, that all other areas of St. John provide moderate conservation value because of the moderate abundance of foraging/resting green turtles.

Review of INRMPs Within the Range of the South Atlantic DPS

We are not aware of any INRMPs for DoD installations that overlap with areas under consideration as critical habitat for the South Atlantic DPS.

Economic Impacts Within the Range of the South Atlantic DPS

For each of the specific areas meeting the definition of critical habitat, we weighed the economic impact of designation against the benefits of designation, as represented by its conservation value to the South Atlantic DPS (see Table 2). Specific areas providing high conservation value are associated with a combined total annualized economic impact of $12,000. Specific areas providing moderate conservation value are associated with a combined total annualized impact of $13,000. These moderate and high conservation value areas are moderately and highly important (respectively) to supporting the overall life history and recovery of the DPS, and the benefits of designating these areas are not outweighed by the low economic impacts of designation. No areas were of low conservation value. Therefore, we do not propose to exclude any areas from the critical habitat designation on the basis of economic impacts.

TABLE 2—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE SOUTH ATLANTIC DPS

Area	Conservation value	Annualized impacts
St. Croix: east, south and west	High	$5,500
St. Croix (all other areas)	Moderate	1,000
St. Thomas: Druif, Brewers, Bolongo, Magens, and Sapphire Bays	High	4,800
St. Thomas (all other areas)	Moderate	9,120

TABLE 2—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE SOUTH ATLANTIC DPS—Continued

Area	Conservation value	Annualized impacts
St. John: Maho, Francis, Leinster, Great and Little Lameshur, Honeymoon, Chocolate Hole, Caneel/Scott, Salt Pond, Bjork Creek/Hurricane Hole, Round Bay, Hawksnest, and Coral Bay.	High	1,700
St. John (all other areas)	Moderate	3,000

National Security Impacts Within the Range of the South Atlantic DPS

We have not received any requests for exclusions based on national security impacts of specific areas proposed as critical habitat for the South Atlantic DPS.

Areas Proposed for Critical Habitat Designation for the South Atlantic DPS

For the threatened South Atlantic DPS of green turtles, we propose to designate occupied critical habitat, encompassing 303 km^2 of nearshore waters in USVI, from the mean high water line to 20 m depth. St. Croix's nearshore waters contain reproductive and benthic foraging/resting essential features. St. Thomas' and St. John's nearshore waters contain benthic foraging/resting essential features. Each of the specific areas proposed for designation is of moderate or high conservation value to the DPS. Economic impacts do not outweigh the benefits of designating these areas as critical habitat, and no areas are proposed for exclusion under section 4(b)(2). No areas are ineligible for designation as critical habitat under section 4(a)(3)(B)(i) of the ESA. We have not identified any unoccupied areas that are essential to the conservation of this DPS; thus we are not proposing to designate any unoccupied areas.

East Pacific DPS

The East Pacific DPS is defined as green turtles originating from the eastern Pacific Ocean, including those hatching from nests on the beaches in Mexico and foraging off the coast of California. The range of the DPS is bounded by: 41° N, 143° W in the northwest; 41° N Lat. in the north; along the western coasts of the Americas in the east; 40° S Lat. in the south; and 40° S, 96° W in the southwest. The geographical area occupied by this DPS includes waters outside of U.S. jurisdiction. Within the U.S. EEZ, the range of the DPS includes waters up to 200 nautical miles offshore of the U.S. West Coast. See the Draft Biological Report (NMFS 2023a) for a map of this area.

The 1998 Recovery Plan for U.S. Pacific Populations of the East Pacific Green Turtle (NMFS and USFWS 1998b) requires protection and management of marine habitat, including foraging habitats. Specifically, the Recovery Plan states, ''East Pacific green turtles inhabit a variety of marine habitats, although we are most familiar with their coastal habitat. Increased human presence in this and other sea turtle habitats have contributed to habitat degradation, primarily by coastal construction, increased recreational and fisheries use, and increased industrialization. Habitat loss and degradation must be prevented or slowed.'' To relevant scientific information, the Team worked with biologists from the California Department of Fish and Wildlife.

No Reproductive Essential Feature for the East Pacific DPS

The East Pacific DPS primarily nests in Mexico, Costa Rica, and Ecuador (Seminoff *et al.* 2015). It does not nest on beaches under U.S. jurisdiction. Thus, USFWS is not proposing terrestrial critical habitat for this DPS, and correspondingly, we did not identify a reproductive essential feature (*e.g.,* unobstructed waters adjacent to nesting beaches proposed for critical habitat by USFWS) for this DPS.

Specific Areas Containing the Migratory Essential Feature and Their Conservation Value to the East Pacific DPS

The recovery of the East Pacific DPS requires that adult turtles forage and reproduce. Because foraging and reproductive areas are geographically separated, recovery also requires turtles to successfully migrate between these areas. The following migratory feature is essential to the conservation of the East Pacific DPS: From the mean high water line to 10 km offshore, sufficiently unobstructed corridors that allow for unrestricted transit between foraging and nesting areas for reproductive individuals.

Some green turtles that nest on beaches in Mexico forage in the waters of California, thus requiring migration to complete their life cycle. The foraging population in California is small but has been increasing since the early 2000s, likely as a result of increased nesting in Mexico, which has been attributed to nesting beach protection (Cliffton *et al.* 1982; Alvarado-Díaz *et al.* 2001). Juveniles comprise the majority of the California foraging population, which is expected given the 17 to 30 year age-to-maturity and recent increases in abundance (Turner Tomaszewicz *et al.* 2022).

Satellite tracking (telemetry) data were collected for 25 green turtles for a foraging study in San Diego Bay (Eguchi *et al.* 2020, Southwest Fisheries Science Center (SWFSC) unpublished data 2021). The majority of tracked turtles were juveniles, reflecting the demography of the population. Juvenile turtles remained in San Diego Bay to forage for the duration of the study. However, some adults were also tracked, and five left the Bay (Dutton *et al.* 2019; SWFSC, unpublished data 2021). Four of the five adult turtles that left San Diego Bay migrated south to Mexico, beyond U.S. jurisdiction; the fifth turtle migrated north to other foraging areas. Three adult turtles were tracked to nesting beaches in Mexico, with one making the round trip back to San Diego Bay after nesting. The fourth turtle was male and presumably migrated to waters off Mexico nesting beaches to mate. Between North San Diego Bay and the U.S./Mexico border, the turtles remained close to shore. They did not use a particular depth range but rather remained between the high water line and 10 km offshore. Thus, distance from shore, rather than depth, best describes the data and was used to identify the migratory essential feature.

While the number of tracked turtles using the migratory corridor from San Diego Bay to Mexico is small (n = 4), it is a relatively large proportion of the entire foraging population, whose annual abundance was estimated by Eguchi *et al.* (2010) as ranging from 16 to 60 green turtles, with a confidence interval of 4 to 88 green turtles (this number has likely increased in recent years; SWFSC unpublished data 2022). Thus, the tracking data of four green turtles represents a relatively large proportion of the population, especially

given the age structure of the foraging population (*i.e.,* mostly juveniles) and given that adult females remigrate every 3 years (*i.e.,* approximately one-third of adult females would be expected to migrate from San Diego Bay to Mexico each year). Therefore, we conclude that the migratory behavior of these four turtles is representative of the population. Furthermore, this constricted, narrow migratory corridor is essential to the conservation of the DPS because it allows adults to move between their foraging areas in California and reproductive areas off nesting beaches in Mexico.

During migration, reproductive individuals become concentrated in narrow corridors, making them particularly vulnerable to anthropogenic threats. These constricted migratory corridors may require special management considerations or protection to ensure that migration is not obstructed, deterred, or disturbed by: oil and gas activities (including seismic exploration, construction, removal of platforms, oil spills and response); alternative energy activities (including installation of turbines, offshore wind facilities, and structures to convert wave or tidal energy into power); dredging; and fishing and aquaculture activities. For example, an oil spill and resulting response activities may force migrating turtles far off their preferred track. Similarly, alternative energy, fishing, aquaculture, and dredging operations may deter turtles via blockages or noise (*e.g.,* seismic surveys, Nelms *et al.* 2015). While we do not expect these disturbances to prevent migration, they may delay arrival at mating areas and nesting beaches, which could lead to suboptimal productivity. Furthermore, the additional energy used during longer migrations could reduce energy available for reproductive effort.

To identify specific areas containing the migratory feature essential to the conservation of the DPS, the Team reviewed the satellite tracking data described above. These data demonstrate that green turtles migrate between benthic foraging/resting areas in San Diego Bay and reproductive areas off nesting beaches in Mexico. Green turtles remain close to shore, using the narrow migratory corridor between the mean high water line and 10 km offshore, from North San Diego Bay to the U.S./Mexico border. The Team concluded, and we agree, that the migratory corridor between North San Diego Bay and the U.S./Mexico border provides high conservation value to the DPS because reproductive individuals use it to migrate between reproductive and benthic foraging/resting areas. This migration is directly linked to population growth, and if the narrow corridor was obstructed, the DPS would not recover.

In addition to the tracking data described above, an individual was tracked from Seal Beach NWR in Orange and Los Angeles Counties to Baja California, Mexico. This female did not use a nearshore (*i.e.,* 10 km offshore) constricted or narrow corridor but instead moved more than 10 km offshore, into oceanic waters. Therefore, this area does not contain the migratory essential feature.

Specific Areas Containing the Benthic Foraging/Resting Essential Features and Their Conservation Value to the East Pacific DPS

The recovery of the East Pacific DPS requires successful survival, growth, and development of juveniles and sub-adults, as well as the successful survival and reproduction of adults. The Team was unable to identify surface-pelagic foraging/resting essential features for post-hatchlings and juveniles due to insufficient data on this developmental life stage and its habitat requirements. For benthic juveniles and adults, benthic habitats provide the food resources and refugia necessary to survive, develop, grow, and reproduce. The following benthic foraging/resting features are essential to the conservation of the East Pacific DPS: From the mean high water line to 20 m depth, underwater refugia (*e.g.,* rocks, reefs, and troughs) and food resources (*i.e.,* seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

To identify the benthic foraging/resting essential features, the Team reviewed the following information. Within Southern California, green turtles use diverse habitats within lagoons and bays, including coastal inlets and estuaries. In depths up to 20 m, they forage on seagrass, algae, and invertebrates in shallower areas and move to deeper resting areas for rest. Areas located above the mean high tide line are exposed to the air (*i.e.,* not underwater) for a significant amount of time and are unlikely to contain food resources at levels necessary to support survival, development, growth, and/or reproduction. Therefore, the benthic foraging/resting essential features occur from the mean high water line to the 20 m depth contour.

A stable isotope study on 718 green turtles foraging in 16 areas (including off the coast of California) indicates that turtles of this DPS are omnivorous (Seminoff *et al.* 2021). Another stable isotope study indicates that green turtles in San Diego Bay forage on invertebrates (50 percent), seagrass (26 percent), and to a lesser extent red and green algae (Lemons *et al.* 2011). Local seagrass pastures, especially eelgrass (*Zostera marina*), are of great importance to the DPS because they provide a major food resource and serve as habitat for mobile and sessile invertebrate prey, such as sponges, tunicates, and mollusks (Lemons *et al.* 2011; Crear *et al.* 2017). Where eelgrass is not present, often in urbanized environments, green turtles forage on algae and invertebrates that attach to rocky bottoms and hard man-made structures (Crear *et al.* 2017). To account for their omnivorous diet, the essential foraging feature includes a variety of food resources (*i.e.,* seagrass, marine algae, and/or marine invertebrates).

After foraging, green turtles rest in underwater refugia (MacDonald *et al.* 2013), even in urbanized environments where they rest among high relief substrates and structures, including bridge pilings and discharge outflows (Crear *et al.* 2017). Turtles move between foraging sites and underwater refugia throughout the diel cycle (Seminoff *et al.* 2006; MacDonald *et al.* 2013; Crear *et al.* 2017). In the winter and in some locations, turtles use underwater refugia during the day, suggesting resting between diurnal foraging excursions (MacDonald *et al.* 2013; Crear *et al.* 2017). Rest is marked by prolonged periods of inactivity punctuated by long, deep, dives that allow turtles to achieve neutral buoyancy and efficiently utilize oxygen; however, turtles have also been documented resting for shorter time periods (Crear *et al.* 2017; Seminoff *et al.* 2021). Turtles rest adjacent to culverts (where tide scouring creates a deeper resting habitat), bridge pilings, runoff outflows (Crear *et al.* 2017), and on the seafloor within the warm-water effluent of power plants (MacDonald *et al.* 2012; 2013). Since the closure of a power plant and the loss of its warm water effluent, green turtles continue to forage and rest in South San Diego Bay; however, their night-time home ranges have expanded, suggesting that they use resting sites that are separate from their foraging areas (Eguchi *et al.* 2020). Thus, underwater refugia (*e.g.,* rocks, reefs, and troughs) are essential for the conservation of the DPS.

Generally, adults and benthic foraging juveniles occupy small home ranges that include foraging resources and underwater refugia. For example, green

turtles acoustically tracked in San Diego Bay occupied areas of 2.09 to 8.70 km^2, remaining in one or two core areas more than half the time (MacDonald *et al.* 2012). Larger turtles may use smaller core areas as a result of increased familiarity and foraging efficiency (MacDonald *et al.* 2012). Multiple recaptures within San Diego Bay between 1990 and 2020 confirm the site fidelity of foraging turtles (Eguchi *et al.* 2010; MacDonald *et al.* 2012; NMFS' unpublished data 2021); however, some individuals move long distances between foraging areas, including one individual tracked from San Diego Bay to a foraging area near Long Beach, California (SWFSC unpublished data 2016). Because of site fidelity and small home ranges, underwater refugia and food resources must be available in sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

The benthic foraging/resting essential features may require special management considerations or protection to maintain the quality and quantity of food resources and refugia in nearshore waters. The following may threaten these features (or threaten access to them) include: dredging and disposal; shoreline development and construction projects; beach nourishment; pipeline and cable projects; oil and gas activities, such as seismic exploration, construction, removal of platforms, and oil spills and response activities; alternative energy structures or activities such as installation of turbines, wind farms, and means to convert wave or tidal energy into power; agriculture and other land-use projects; pollution; power and desalination plant operations (*i.e.,* discharges); wastewater treatment plant operations (*i.e.,* discharges); aquaculture and fishing activities; and vessel operations. Such activities may alter the benthos and modify or destroy eelgrass beds and associated shallow subtidal habitat, resulting in a temporary loss of food resources, which would persist until seagrass, macroalgae, and invertebrates are able to recolonize the area. For example, Naval development in the Anaheim Bay/Seal Beach area involved dredging, filling, and rip rap removal and placement, which likely displaced green turtles from these areas temporarily (Hanna 2021). Shoreline development and construction, agriculture, oil and gas activities, desalination, wastewater treatment, and power plant operations result in discharges or run-off, which may contribute to sediment toxicity (Southern California Coastal Water Research Project 2013), anthropogenic nitrogen loading (Seminoff *et al.* 2021), and other water-quality impairments. Dredging also releases contaminants into nearby waters and legacy chemicals back into coastal food webs, some of which (*e.g.,* trace metals) accumulate in eelgrass, *Zostera marina* (Komoroske *et al.* 2011; Komoroske *et al.* 2012; Barraza *et al.* 2019; Barraza *et al.* 2020). Power generating facilities, their warm water discharges, and closures may affect the distribution of sea turtles and their prey (Crear *et al.* 2016; Eguchi *et al.* 2020). Fishing and aquaculture activities may reduce or displace food resources, such as seagrass beds and invertebrates. Vessel activities modify seagrass beds through propeller scarring, anchoring, and groundings. These activities may also modify or destroy the underwater rocks, reefs, and troughs used as refugia. Several activities also produce noise, which may discourage the use of refugia (*e.g.,* seismic surveys; Nelms *et al.* 2016). In addition, climate change is likely to affect foraging/resting essential features in ways that may require special management considerations or protection. Fortification of coastal developments, in response to sea level rise, is likely to limit habitat availability, with a negative impact on foraging resources, such as submerged aquatic vegetation.

Within the range of the East Pacific DPS, many areas contain food resources and underwater refugia that may serve as resting sites. The Team relied on the occurrence of green turtles to determine which of these areas contain resources sufficient to support their survival, development, and growth. First, the Team identified areas where foraging or resting green turtles have been documented in published, peer-reviewed, scientific research studies. Next, the Team identified areas where foraging or resting green turtles have been sighted by scientists or members of the public (*i.e.,* the NMFS turtle sightings database). Finally, the Team used stranding data to confirm the presence and relative abundance of green turtles in areas containing foraging/resting essential features. Within bays and estuaries, the Team had high confidence that stranding data reflect green turtle foraging or resting locations, because they likely entered these areas to forage or rest before becoming stranded there; however, in coastal areas where currents may carry stranded turtles, the Team was less confident that the stranding location accurately represented a turtle foraging or resting location. The Team also identified areas where green turtles forage in the warm water effluent of once-through cooling water intake channels of power plants. These live, healthy turtles often become entrained (*i.e.,* entrapped) within the intake channels while foraging/resting near the entrance. While the range of this DPS extends north of Point Conception, California, these areas do not contain the essential features, as defined above. Green turtles require an adequate warm water season to gain enough nutrition to support normal body function and somatic growth. Six months is the minimum duration that constitutes an adequate growth season, and 15 °C is the minimum temperature threshold for green turtle activity. While temperatures at or slightly above 15 °C are not ideal for green turtle activity, turtles will still forage at this temperature with mild regional endothermy (SWFSC unpublished data 2022). Areas north of Point Conception exhibit a limited warm water season, as offshore temperatures remain above 15 °C for less than 3 months per year, and some months fall below 10 °C. Because these areas host suboptimal temperatures for most of the year, they are unable to support the survival, development, growth, and/or reproduction of green turtles. Therefore, the Team did not recommend these areas for consideration as critical habitat, and analyses focused on areas south of Point Conception, which we refer to as Southern California.

Southern California

Numerous green turtle research studies have been conducted in San Diego Bay, which hosts a resident population of benthic foraging juvenile and adult green turtles (Stinson 1984; McDonald *et al.* 1994; Eguchi *et al.* 2010; Turner-Tomaszewicz and Seminoff 2011; MacDonald *et al.* 2012; MacDonald *et al.* 2013). When the South Bay Power Plant was operational, turtles occupied small home ranges in South San Diego Bay (south of Sweetwater Inlet), where they foraged on dense eelgrass (*Z. marina*) and associated macroalgae and invertebrates during the day and rested at night (and during the day in winter), along the effluent outfall channel and jetty habitat (MacDonald *et al.* 2012; MacDonald *et al.* 2013). Following power plant closure, turtles continue to be observed year-round in this area. Turtles forage on seagrass in the South and Central Bays (MacDonald *et al.* 2012; MacDonald *et al.* 2013), which have dense seagrass beds that have expanded to several thousand acres during the past several years;

however, the industrialized jetties on the eastern shores of the Central Bay do not appear to be used by turtles, perhaps due to the heavy boat traffic. Although less studied, the North Bay does not appear to support significant green turtle foraging (MacDonald *et al.* 2012; NMFS, unpublished data 2016), likely because seagrass is less abundant in this part of San Diego Bay; however, turtles must use this area to access foraging areas in the Central and South Bay.

North of San Diego Bay, La Jolla Shores is an exceptionally productive area with rocky reefs (habitat for invertebrates), seagrass, and algae. Hanna *et al.* (2021) described a resident population of green turtles at La Jolla Shores. In their community-based science study, turtles were observed foraging 14.9 percent of the time and resting 2.3 percent of the time in water temperatures as low as 15.8 °C, one of the lowest recorded temperatures documented for foraging turtles of this DPS (Hanna *et al.* 2021). At La Jolla Cove, a small area within La Jolla Shores, consistent anecdotal data demonstrate year-round occupation by green turtles, often with multiple turtles congregating in a small area (R. Pace pers. comm. 2014 to 2016).

Studies of Seal Beach NWR demonstrate a resident green turtle population in that area (Crear *et al.* 2016; Crear *et al.* 2017; Hanna 2021). Juvenile and sub-adult sea turtles forage and rest in the San Gabriel River, Seal Beach NWR (including the 7th Street Basin), Alamitos Bay, and Anaheim Bay (Crear *et al.* 2017). Hanna (2021) satellite tracked 16 green turtles captured in Seal Beach NWR and found that they spent the majority of their time there; however, 4 turtles transitioned into Anaheim Bay, 2 moved offshore before returning to Anaheim Bay, and 1 visited Huntington Harbor frequently (Hanna 2021). Generally, areas occupied by turtles were characterized by eelgrass and/or soft mud substrate, an important habitat for invertebrates (Hanna 2021). Crear *et al.* (2016) described the movement and behavior of 22 juvenile green turtles (45.2 to 96.8 cm SCL) at Seal Beach NWR and in the San Gabriel River (a highly urbanized river that has been channelized for flood control and receives warm water effluent from 2 power plants). These turtles appear to use the areas for foraging, resting, and avoidance of cold water temperatures of less than 15 °C. Elevated temperatures in this area are attributed to the power plants' discharge of once-through-cooling-water (which will be phased out by 2029), channelization (*i.e.,* concrete lining for flood control), urban runoff, and shallowness (Crear *et al.* 2016). The rock riprap in the San Gabriel River supports a variety of algae and invertebrates for foraging turtles; bridge pilings and runoff outflows may provide resting habitat by sheltering turtles from tidal flow (Crear *et al.* 2017). Turtles forage downstream and rest upstream in the river throughout the year; some turtles leave the river to forage in other locations, for example, in Alamitos Bay, where algae and invertebrates are abundant along the rock riprap, boat docks, and flats (Crear *et al.* 2017). Three turtles tracked in the San Gabriel River exhibited home ranges (95 percent daily area use) of 0.46 ±0.023 km^2 with an average core area of 0.0118 ±0.0066 km^2. Three turtles tracked in the 7th Street Basin exhibited home ranges of 0.024 ±0.012 km^2 with an average core area of 0.0051 ±0.0028 km^2 (Crear *et al.* 2017). The basin supports large, dense eelgrass beds (Merkel and Associates 2014), and the turtles appear to rest in deeper waters, including near the culvert within the 7th Street Basin (Crear *et al.* 2017). Turtles move through Anaheim Bay to access the 7th Street Basin and San Gabriel River (Crear *et al.* 2017). Crear *et al.* (2017) conclude that the urbanized San Gabriel River, with its rocky edges and lack of seagrass, nonetheless offers suitable habitat for green turtles, even in comparison to more natural habitats (such as the restored 7th Street Basin that has a single culvert and an abundance of eelgrass). This is further demonstrated by satellite tagged turtles that remain in these habitats despite access to more natural habitats (Hanna 2021).

Sightings provide additional data on the occurrence of foraging/resting green turtles (SWFSC unpublished data 2022). These data demonstrate the greatest densities of green turtles in known foraging/resting areas around Seal Beach NWR, San Diego Bay, and La Jolla. Multiple or consistent sightings and live strandings also occur at Mission Bay, Aqua Hedionda Lagoon, and Santa Monica Bay, indicating the presence of the foraging/resting essential features in these areas (SWFSC unpublished data 2021). See the Draft Biological Report (NMFS 2023a) for figures.

Based on the best available information, presented above, the Team concluded, and we agree, that South and Central San Diego Bay and the Seal Beach Wetland and Nearshore Complex (including San Pedro Bay, San Gabriel River, Alamitos Bay, Anaheim Bay, Huntington Harbor, Bolsa Chica (excluding lowlands), Seal Beach NWR, 7th Street Basin, and offshore waters) provide high conservation value because they support a high abundance of foraging/resting green turtles. We also identified La Jolla Shores and Cove, Aqua Hedionda Lagoon, and San Onofre as providing high conservation value because the abundance of green turtles foraging and resting in these waters is relatively high. The following areas support a moderate abundance of foraging/resting green turtles and provide moderate conservation value to the DPS: Mission Bay (San Diego); Point Loma to (but not including) La Jolla Shores; La Jolla Shores to Oceanside (including Oceanside); San Onofre to Newport (including Newport Bay); Newport to Huntington Beach; Bolsa Chica Lowlands; Los Angeles and Long Beach Breakwater; Palos Verdes; Santa Monica Bay; and Catalina Island. The following areas provide low conservation value to the East Pacific DPS because of relatively lower density foraging/resting in these areas: Los Angeles and Long Beach Harbors, Channel Islands, and the area from Santa Monica Bay to Point Conception. No data were available for waters along Camp Pendleton.

Review of INRMPs Within the Range of the East Pacific DPS

DoD provided, and we reviewed, INRMPs for nine installations (NMFS 2023c). Three installations do not overlap with areas under consideration as critical habitat for this DPS: Naval Base Ventura County Port Hueneme; Naval Base Ventura County Point Mugu; and Marine Corps Base Camp Pendleton, which is adjacent to an area that was data deficient and therefore not considered for critical habitat. As discussed in the following section, based on economic impacts, we propose to exclude areas overlapping with the following two installations: Naval Base Ventura County San Nicolas Island, and Naval Auxiliary Landing Field San Clemente Island. The remaining two INRMPs include: San Diego Bay INRMP, which is inclusive of Naval Base San Diego, Naval Base Coronado, and Naval Base Point Loma installations; and Naval Weapons Station Seal Beach INRMP. We are working with DoD to identify relevant elements to protect the habitat from the types of effects that would be addressed through a destruction-or-adverse-modification analysis (50 CFR 424.12(h)). We will consider this analysis and other information to determine whether a benefit is provided prior to publication of the final rule to designate critical habitat.

Economic Impacts Within the Range of the East Pacific DPS

For each of the specific areas meeting the definition of critical habitat, we

weighed the economic impact of designation against the benefits of designation, as represented by its conservation value to the East Pacific DPS (see Table 3). Specific areas providing high conservation value are associated with a combined total annualized impact of $70,000. Specific areas providing moderate conservation value are associated with a combined total annualized impact of $55,000 (administrative costs only) to $61,000 (administrative and project modification costs). Specific areas providing low conservation value are associated with a combined total annualized impact of $28,000. Moderate and high conservation value areas are moderately and highly important (respectively) to supporting the overall life history and recovery of the DPS, and the benefits of designating these areas are not outweighed by the low economic impacts. We conclude, however, that the economic impacts outweigh the benefits of designating specific areas of low conservation value. Based on the Team's criteria and best available data, low conservation value areas do not contain essential reproductive and/or migratory features. Furthermore, these areas host a lower abundance and/or density of foraging/resting green turtles, suggesting that they provide less conservation value to the DPS relative to areas hosting moderate or high abundances or densities. Although the estimated annualized costs across all of the low conservation value areas for the DPS were low ($28,000), we concluded that these impacts outweighed the benefits of designating these areas. Therefore, we propose to exclude the following areas from the critical habitat designation: Los Angeles and Long Beach Harbors, Channel Islands, and Santa Monica Bay to Point Conception. As discussed in the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c), we conclude that exclusion of these low conservation value areas from the critical habitat designation will not result in extinction of the East Pacific DPS.

TABLE 3—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE EAST PACIFIC DPS

Area	Conservation value	Annualized impacts
Mexico border to North San Diego Bay	High	$10,000
Central and South San Diego Bay	High	28,000
Mission Bay	Moderate	1,900
Point Loma to La Jolla Shores	Moderate	430
La Jolla Shores/Cove	High	430
La Jolla Shores to Oceanside	Moderate	4,000 to 7,400
Aqua Hedionda	High	2,300
San Onofre	High	3,000
San Onofre to Newport	Moderate	34,000 to 37,000
Newport to Huntington Beach	Moderate	1,100
Bolsa Chica Lowlands	Moderate	1,700
Seal Beach Complex	High	26,000
Los Angeles and Long Beach Harbors	Low	13,000
Los Angeles and Long Beach Breakwaters	Moderate	1,100
Palos Verdes	Moderate	1,100
Santa Monica Bay	Moderate	7,400
Catalina Island	Moderate	2,000
Channel Islands	Low	1,700
Santa Monica Bay to Point Conception	Low	12,000

National Security Impacts Within the Range of the East Pacific DPS

We received two requests for exclusions due to national security impacts of specific areas under consideration for proposed critical habitat of the East Pacific DPS (NMFS 2023c). These requests are not yet reasonably specific to weigh national and homeland security impacts against the benefits of a potential critical habitat designation. We are working with DoD and DHS to gather the specific information and will consider it prior to publication of the final rule to designate critical habitat.

Areas Proposed for Critical Habitat Designation for the East Pacific DPS

For the threatened East Pacific DPS of green turtles, we propose to designate occupied critical habitat, encompassing 652 km^2 of nearshore waters. The proposed designation includes the migratory essential feature from the Mexico border to and including North San Diego Bay, from the mean high water line to 10 km offshore. The proposed designation also includes areas containing the benthic foraging/resting essential features from the mean high water line to 20 m depth in the following areas: South and Central San Diego Bay, San Diego Bay to and including Santa Monica Bay (not including waters adjacent to Camp Pendleton), and Catalina Island. All areas proposed for designation are of moderate or high conservation value to the DPS. A total area of 630 km^2 is proposed for exclusion because the benefits of exclusion outweigh the benefits of inclusion of these low conservation value areas. The Team found, and we agree, that exclusion of these areas from the critical habitat designation would not result in extinction of this DPS (NMFS 2023a). At this time, we have not received reasonably specific information with which to propose exclusions based on national security impacts. At this time, no areas are ineligible for designation as critical habitat under section 4(a)(3)(B)(i) of the ESA. We have not identified any unoccupied areas that are essential to the conservation of this DPS; thus we are not proposing to designate any unoccupied areas.

Central North Pacific DPS

The Central North Pacific DPS is defined as green turtles originating from the Central North Pacific Ocean, including those hatching from nests on the beaches within the Hawaiian Archipelago and those occurring at Johnston Atoll. The range of the DPS is bounded by the following coordinates:

41° N, 169° E in the northwest; 41° N, 143° W in the northeast; 9° N, 125° W in the southeast; and 9° N, 175° W in the southwest. The geographical area occupied by this DPS includes waters outside of U.S. jurisdiction. Within the U.S. EEZ, the range of the DPS includes waters up to 200 nautical miles offshore of the Hawaiian Archipelago (which includes the main Hawaiian Islands (MHI), and the Papahānaumokuākea Marine National Monument (PMNM)) and Johnston Atoll. See the Draft Biological Report (NMFS 2023a) for a map of this area.

The 1998 Recovery Plan for U.S. Pacific Populations of the Green Turtle (NMFS and USFWS 1998) identified recovery criteria to delist the species (*i.e.,* the goal of the plan), including activities needed to protect and prevent the degradation of marine habitat. To identify relevant scientific information, the Team worked with biologists from the Hawai'i Department of Land and Natural Resources Division of Aquatic Resources.

Specific Areas Containing the Reproductive Essential Feature and Their Conservation Value to the Central North Pacific DPS

The recovery of the Central North Pacific DPS is dependent on successful reproduction, and as indicated by the Recovery Plan, increased nesting and nesting locations. While nesting occurs on beaches (*i.e.,* terrestrial habitat, under USFWS jurisdiction), the marine areas adjacent to nesting beaches are essential for mating, movement of reproductive females on and off nesting beaches, internesting, and the swim frenzy and early dispersal (*i.e.,* transit) of post-hatchlings. Therefore, the following reproductive feature is essential to the conservation of the Central North Pacific DPS: From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals, and the transit of post-hatchlings.

The Team used the following information to identify this reproductive essential feature. USFWS reviewed nesting data to identify beaches considered for terrestrial critical habitat, which begins at the mean high water line. Therefore, in-water areas considered for marine critical habitat also begin at the mean high water line (*i.e.,* waters adjacent to nesting beaches). To determine the offshore boundary of the reproductive essential feature, the Team reviewed published and unpublished satellite tracking data on internesting females and males in waters adjacent to nesting beaches. These data are described in detail in the Draft Biological Report (NMFS 2023a). Both males and females return to the nearshore waters off their natal beaches (Dizon and Balazs 1982), where mating occurs in shallow waters, usually within 2 km of the coastline (Balazs 1980). Preliminary analyses of adult males and females (n = 28) demonstrate that turtles spend 90 percent or more of their time at depths of 20 m or less (NMFS Pacific Islands Fishery Science Center (PIFSC) unpublished data 2022). The Team concluded that the reproductive essential feature occurs from the mean high water line to 20 m depth in waters adjacent to nesting beaches proposed as critical habitat by USFWS. Hatchlings emerge from their nests and enter the water at night, usually within a few hours after sunset (Balazs 1980). Post-hatchlings move rapidly (*i.e.,* swim frenzy) through nearshore waters on their way to their oceanic habitat using light cues to orient toward the relatively bright horizon over the ocean (Balazs 1980). This supports the need for dark waters off nesting beaches.

The reproductive essential feature may require special management considerations or protection to maintain unobstructed access to and from nesting beaches and disturbance-free nearshore areas for mating, internesting, and post-hatchling transit. The reproductive season is a time of increased vulnerability for sea turtles because a large proportion of adults (the most productive life stage) is concentrated within relatively small areas adjacent to nesting beaches. The reproductive essential feature may require special consideration due to nearshore structures, which have the potential of blocking access to nesting beaches or open water for hatchlings and post-nesting females. In 2018, Hurricane Walaka passed directly over Lalo/French Frigate Shoals, all but destroying East Island. As a result, Tern Island has become increasingly important to nesting turtles, despite its degraded habitat, which was heavily modified by artificial structures and the building of a runway prior to World War II (Baker *et al.* 2020). Baker *et al.* (2020) indicated the need to mitigate habitat degradation. For example, the seawall surrounding Tern Island is dilapidated, trapping green turtles as they move on and off nesting beaches (Staman *et al.* 2021). Additionally, landfilled materials adjacent to beaches at Tern Island have been shown to contain hazardous substances such as dioxins/furans, polychlorinated biphenyls, lead, hydrocarbons, and heavy metals, which can have negative impacts on wildlife in the marine and terrestrial ecosystems (U.S. Environmental Protection Agency 2014).

Climate change is likely to alter or result in additional losses of essential reproductive habitat. Sea level rise is likely to result in a 3 to 75 percent loss of terrestrial habitat in the PMNM (Baker *et al.* 2006), reducing nesting habitat (Reynolds *et al.* 2012). Increased use of nesting sites in the MHI could buffer against the loss of low-lying areas in the PMNM due to sea level rise (Dutton *et al.* 2014). However, habitats in the MHI have a greater likelihood of human disturbance than those in the remote and uninhabited PMNM. Nesting beach access in the MHI can be blocked or impeded by inwater structures and construction, dredging, oil and gas activities, power generating activities, fishing and aquaculture activities, recreational activities, and pollution (*e.g.,* run-off and contaminants). Artificial lighting in nearshore habitats is likely to disorient nesting females and post-hatchlings.

To identify specific areas containing the reproductive features essential to the conservation of the DPS, we relied on USFWS' identification of nesting beaches. USFWS proposed nesting beaches in the Hawaiian Archipelago as terrestrial critical habitat elsewhere in today's **Federal Register** (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164).

For each of these areas, we identified the adjacent marine area, from the mean high water line to 20 m depth, as containing the reproductive features essential to the conservation of the Central North Pacific DPS and which may require special management consideration or protection. These areas are of high conservation value to the DPS because they are required for successful reproduction, which is directly linked to population growth and recovery. Females must use reproductive areas to reach the nesting beaches proposed as critical habitat by USFWS and for internesting. These areas are also essential for successful mating and post-hatchling swim frenzy and early dispersal. Green turtles do not nest at Johnston Atoll. Thus, USFWS is not proposing terrestrial critical habitat at Johnston Atoll, and correspondingly, we did not identify any areas containing the reproductive essential feature at Johnston Atoll.

No Migratory Essential Feature for the Central North Pacific DPS

The recovery of the Central North Pacific DPS requires that adult turtles forage and reproduce. Because reproduction and benthic foraging/resting are often geographically separated, the recovery of the DPS requires turtles to successfully migrate between these areas.

Individual green turtles of the Hawaiian Archipelago return to their resident foraging areas at the end of each breeding season, *i.e.,* individuals demonstrate both nesting and foraging site fidelity (Balazs 1976; Rice and Balazs 2008). Most adult green turtles of the Central North Pacific DPS migrate between foraging sites in the MHI and reproductive sites at Lalo/French Frigate Shoals (Balazs 1976, 1980); they take 20 to 94 days to travel the 800 to 1,100 km distance (Rice and Balazs 2008; Balazs *et al.* 2017). To migrate between Lalo and MHI, reproductive turtles use two general routes: south over deep, oceanic waters or a direct track via Mokumanamana/Necker and Nihoa Islands (Balazs *et al.* 2017). Most turtles used the oceanic route (Balazs *et al.* 2017; PIFSC unpublished data). A female tracked from Lalo to Johnston Atoll used a direct open-ocean pathway (Balazs *et al.* 2017).

Given these data, the Team concluded that green turtles of this DPS do not use a narrow, constricted migratory corridor. Instead, they use multiple oceanic migratory paths. We were unable to identify a particular depth or distance from shore used by adult green turtles to migrate between reproductive and benthic foraging/resting areas. We were also unable to identify any other physical or biological feature used by migrating turtles because the best available data demonstrate variation among movement patterns of individuals in oceanic habitats. That is to say that migration is not constricted or confined by a continental shelf, current, or other feature, but rather occurs over a large, oceanic environment without defining features (such as depth or distance from shore). Thus, while migration between reproductive and benthic foraging/resting habitats is essential to the conservation of the DPS, we were unable to identify or define a migratory feature for this DPS.

Specific Areas Containing the Benthic Foraging/Resting Essential Features and Their Conservation Value to the Central North Pacific DPS

The recovery of the Central North Pacific DPS requires successful survival, growth, and development of juvenile life stages and the successful survival and reproduction of adults. The Team was unable to identify foraging/resting essential features for post-hatchlings and surface-pelagic juveniles due to insufficient data on this developmental life stage and its habitat requirements. For benthic juveniles and adults, benthic habitats provide the food resources and refugia necessary to survive, develop, grow, and reproduce. The following benthic foraging/resting features are essential to the conservation of the Central North Pacific DPS: From the mean high water line to 20 m depth, underwater refugia (*e.g.,* caves, reefs, protective outcroppings, submarine cliffs, and ''potholes'') and food resources (*i.e.,* seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

To identify the foraging/resting essential features, the Team gathered data on the DPS's use of benthic foraging/resting habitats. In Hawai'i, green turtles spend most of their lives residing in nearshore areas, alternating between feeding and resting (Balazs 1980). The underwater refugia are generally located within 2 km of foraging locations (Balazs *et al.* 1987). Preliminary analyses of adult males and females (n = 28) demonstrates that turtles spend 90 percent or more of their time at depths of 20 m or less (PIFSC unpublished data 2022). Once recruited to an area, juveniles demonstrate foraging site fidelity and have small home ranges (Balazs 1980; Brill *et al.* 1995). Adults are likely to return to the same foraging site after nesting migrations (Balazs 1976; Rice and Balazs 2008).

Green turtles of the Central North Pacific DPS appear to be selective foragers that target a few species but opportunistically feed on many others, including 275 species of marine macroalgae, 2 species of seagrass (*Halophila hawaiiana* and *H. decipiens*), and 9 marine invertebrate taxa (Balazs 1980; Russell *et al.* 2003; McDermid *et al.* 2015). The most common diet items include seagrass (*H. hawaiiana*) and nine species of benthic red, green, and brown algae, including: *Ulva fasciata, Codium edule, C. arabicum,* and *C. phasmaticum* throughout the Archipelago; *Pterocladia capillacea* and *Amansia glomerata* in the MHI; and *Caulepa racemosa, Spyridia filamentosa,* and *Turbinaria ornata* in the PMNM (Balazs 1980). Some introduced algal species (*Acanthophora spicifera, Hypnea musciformis,* and *Gracilaria salicornia*) have become a common element in the turtles' diet (Arthur and Balazs 2008; Russel and Balazs 2009; Russell and Balazs 2015). As these non-native algal species have increased in abundance, their prevalence in the green turtle diet has also increased (Russell and Balazs 2015). The preferred algal species generally occur in greater abundance in the MHI (Balazs 1980), whereas seagrasses occur only in the MHI and at Kuaihelani/Midway Atoll (Balazs 1980). In addition, sea turtles forage on introduced terrestrial grasses and tree leaves, which are abundant in the MHI and provide high caloric content (Ashley 2010; Wills 2010; Russell *et al.* 2011; McDermid *et al.* 2015, 2018). Balazs (1980) observed juveniles and subadults ''voraciously foraging'' on hydrozoans (*Physalia* and *Velella* spp.) and planktonic mollusks (*Janthina* spp.) in coastal areas of the PMNM. The analysis of 2,471 digestive track samples, collected over 35 years, revealed more than 30 animal taxa, including cnidarians, mollusks, crustaceans, echinoderms, and sponges (Russell *et al.* 2011).

For rest and protection from predators, green turtles retreat to underwater refugia located near foraging areas. Such refugia include caves, coral recesses, the undersides of ledges, and sandy bottom areas (called ''nests'') that are relatively free of strong currents and disturbances (Balazs 1980). Refugia occur adjacent to foraging areas at depths of up to 50 m; however, most turtles use shallower resting areas (Balazs 1980).

The benthic foraging/resting essential features may require special management considerations or protection to maintain sufficient food resources and refugia in nearshore habitats. The Recovery Plan (NMFS and USFWS 1998) indicates that protection is needed to prevent the degradation of marine habitats due to construction, dredging, disposal, pollution, coastal erosion, fishing, and vessel activities (*e.g.,* groundings, anchoring, and propeller scarring). The turtles' main food source, macroalgae, is available in nearshore areas throughout the Archipelago, often associated with coral reefs. Coral reefs are highly sensitive to and threatened by overfishing, terrestrial runoff, recreational activities, and climate change (Friedlander *et al.* 2005; Becker *et al.* 2019). Such activities may result in siltation and contamination of foraging areas (Bowen *et al.* 1992; NMFS and USFWS 1998; Friedlander *et al.* 2006; Wedding and Friedlander 2008; Wedding *et al.* 2008;

Van Houtan *et al.* 2010). Seagrass and coral reef habitats of the MHI have been degraded by upland soil erosion and siltation, sedimentation, sewage, and coastal construction (NMFS and USFWS 1998). Discharges from agriculture, development, construction, and stormwater occur throughout the MHI and have a significant effect on the taxonomic and chemical composition of algal communities (*e.g.,* Lapointe and Bedford 2011; Dailer *et al.* 2010; Swarzenski *et al.* 2017). The herbicide glyphosate is introduced to coastal environments through run-off and was shown to negatively impact native macroalgae and seagrasses in Hawaiian waters (Kittle and McDermid 2016). The protection of food resources is especially important at high density foraging areas, such as the Kaloko-Honokohau National Historical Park on Hawai'i Island. Wabnitz *et al.* (2010) expressed concern over water quality in the area because plans have been proposed for the development of adjacent lands that would result in a 300 percent expansion of the small boat harbor and construction of hotels, condominiums, and an industrial park; expected impacts include reduced groundwater flow and increases in sedimentation, nutrient influx, and chemical pollutants. There is also a proposal to dredge areas in front of the Kahala Hotel on O'ahu, where both seagrass species are located (K. Foster, USFWS pers. comm. 2015). In the PMNM, there is concern regarding pollution from previous construction. At Tern Island, landfill materials contain hazardous substances such as dioxins/furans, polychlorinated biphenyls, lead, hydrocarbons, and heavy metals, which can have negative impacts on wildlife in marine and terrestrial ecosystems (U.S. Environmental Protection Agency 2014). Underwater refugia may also be in need of special management considerations or protection as well. Dredging and beach nourishment may cover or destroy underwater refugia. Disrupted underwater rest may prevent adequate digestion, development, and growth.

Within the range of the Central North Pacific DPS, many areas contain food resources and underwater refugia. The Team relied on the occurrence of foraging/resting green turtles to determine which of these areas contain resources sufficient to support their survival, development, growth, and/or reproduction. First, the Team identified areas containing the foraging/resting essential features where green turtles have been documented in published scientific research studies. Next, the Team considered unpublished data from scientific research studies and aerial and in-water surveys. The Team only used stranding data to support other data and to demonstrate the likely extent of the essential features because the origins of strandings are often unknown and strandings may be the result of suboptimal habitat use.

For this DPS, the Team used the best available data to determine whether specific areas provide a high or low conservation value to the DPS. From 2002 to 2015, Becker *et al.* (2019) conducted biennial or triennial nearshore towed diver surveys throughout the U.S. Pacific Islands, estimating green turtle densities at each island. Such densities provide a relative, objective, and consistent measure of an area's conservation value to each DPS (Becker *et al.* 2019). To delineate between high and low densities (and thus high and low conservation value), the Team also considered additional data (*e.g.,* in-water captures). First the Team reviewed in-water capture data that demonstrate high abundances of green turtles in waters of Hawai'i, Maui, Moloka'i, Lana'i, O'ahu, and Kaua'i O'ahu and Lana'i (NMFS 2023a). Then, the Team reviewed the Becker *et al.* (2019) density data for those islands. The lowest density estimates for those islands was 0.10 green turtles/km at Lana'i (Becker *et al.* 2019). Therefore, estimates greater than or equal to 0.10 green turtles/km (Becker *et al.* 2019) constitute high density within the Hawaiian Archipelago. Based on this threshold, high densities of foraging/resting green turtles occur in waters off the Island of Hawai'i (0.27 green turtles/km), Maui (0.24), Moloka'i (0.13), Lana'i (0.10), O'ahu (0.11), and Kaua'i (0.18). Low densities (less than 0.10 green turtles/km) of foraging/resting green turtles occur in waters off Ni'ihau and throughout the PMNM (Becker *et al.* 2019). The Team also compared data at a finer scale, combining PIFSC in-water capture surveys between 1985 and 2016 with NMFS' Coral Reef Ecosystem Program (CREP) towed diver surveys between 2000 and 2015 in some nearshore waters throughout the Archipelago (Becker *et al.* 2019). Green turtles were observed foraging or resting in most areas surveyed (CREP, unpublished data 2016; PIFSC unpublished data 2022). In support of the above data, stranding data are available throughout much of the Archipelago (PIFSC unpublished data 1975 to 2016; Robertson *et al.* 2016). See the Draft Biological Report (NMFS 2023a) for figures. These data indicate that green turtles forage and rest in nearshore areas throughout the Hawaiian Archipelago.

Throughout the Hawaiian Archipelago, benthic foraging areas for green turtles are spatially and behaviorally linked to adjacent beaches where basking occurs (PIFSC unpublished data 2015; Robertson *et al.* 2016). Basking is an alternate and more energy-efficient strategy to resting underwater after bouts of foraging. Green turtles bask on beaches for rest, thermoregulation, digestion, and predator avoidance (Balazs 1977; Wittow and Balazs 1982; Rice and Balazs 2008; Van Houtan *et al.* 2015). The distances between foraging sites and basking sites are most often within 300 to 500 meters and rarely over 1 km (G. Balazs, PIFSC pers. comm. 2016; Balazs and Chaloupka 2004; Balazs *et al.* 2015). USFWS included basking beaches in their consideration of terrestrial critical habitat. Green turtles bask on these beaches after foraging in adjacent waters, demonstrating that these marine areas contain the essential foraging feature. Similar to nesting beaches, adjacent marine areas are important because green turtles must use these waters to access basking beaches proposed as critical habitat by USFWS. Therefore, where USFWS proposed to designate basking beaches as terrestrial critical habitat elsewhere in today's **Federal Register** (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164), we identify the adjacent marine areas as containing the essential foraging feature from the mean high water line to 20 m depth.

Hawai'i (Big Island)

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the island (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters off Hawai'i Island. Juvenile turtles use benthic foraging/resting habitat along the Kona/Kohala coast. Numerous turtles (over 300; Balazs *et al.* 2000) forage in Kiholo Bay (Balazs and Chaloupka 2004; Seaborn *et al.* 2005) on red and green macroalgae, especially *Pterocladia* and *Cladophora* spp. (Arthur and Balazs 2008). Juvenile turtles (n = 44) use the Wainanali'i Lagoon and adjacent fishponds for rest and thermoregulation (Balazs *et al.* 2000; Harrington *et al.* 2000). The rocky inshore reef of Kaloko-Honokohau National Historical Park provides

foraging habitat for juvenile green turtles (Arthur and Balazs 2008). Turtles also forage on turf algae close to shore, possibly to avoid shark predation, at this important foraging area (Wabnitz *et al.* 2010). Kahaluʻu Bay is also an important foraging area for juvenile and subadult green turtles (Balazs 1996; Kohala Center 2015). The waters off the Kaʻu and North Kohala Districts contain foraging/resting essential features for resident adult turtles (Balazs 1980). Balazs (1980) describes turtles foraging along the coastlines of the Kaʻu District, where red algae (*P. capillacea*) grows in shallow, turbulent water on rocks just below the low tide line and in areas where freshwater enters the ocean from underground springs. This area includes Punaluʻu Bay, where green turtles forage on intertidal red algae inside the bay at depths up to 2 m for approximately 9 hours daily and rest outside of the bay at depths of 4 to 38.5 m for approximately 12 hours nightly (Rice *et al.* 2000). Prior to 2018 when lava completely filled Kapoho Bay, juvenile turtles used the geothermal-heated pools for thermoregulation and underwater resting; they foraged on red macroalgae, including *Gracilaria* and *Amansia* spp. (Arthur and Balazs 2008). Turtles in the waters off Hilo forage at high tide on a terrestrial, salt-tolerant turfgrass (seashore paspalum, *Paspalum vaginatum*), which was first introduced to the Hawaiian Islands in the 1930s (McDermid *et al.* 2015).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Hawaiʻi Island, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. This area is of high conservation value to the Central North Pacific DPS because it supports a high density of foraging/resting green turtles (Becker *et al.* 2019).

Maui

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the island (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters off Maui. The waters off the Paia and the Hana District contain foraging/resting essential features for resident adult turtles (Balazs 1980). Balazs (1987) studied foraging areas off Honokowai, Maliko Bay, Olowalu, and Kahului Bay, where numerous turtles forage and rest. At Kahului Bay, large turtles (including many adults) aggregate in the warm water outfall of the power plant, where temperatures range from 27 to 33 °C, for thermoregulation and resting; foraging likely occurs outside of the warm water plume (Balazs *et al.* 1987). The Kahului Generating Station, which was built in 1947, will be decommissioned by 2024. This cessation of warm water outfall is likely to reduce physiological functions, somatic growth rates, and nesting frequencies of resident turtles (G. Balazs, PIFSC pers. comm. 2016). The following have been identified as areas where sea turtles are known to occur in Maui: Slaughterhouse Beach, Black Rock Beach, Hoʻokipa Beach Park, Five Caves, Maluaka Beach, Ulua Beach, Hanakaoʻo Park, Makena Landing, Mala Pier, Chang's Beach, Honokeana Bay, and Kapalua Bay.

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Maui, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. This area is of high conservation value to the Central North Pacific DPS because it supports a high density of foraging/resting green turtles (Becker *et al.* 2019).

Kahoʻolawe

On Kahoʻolawe Island, King (2007) observed 708 sea turtles during aerial, in-water, and coast surveys throughout nearshore waters of the island. Most observed turtles were juveniles; they foraged on turf algae in clear, shallow water (1 to 6 m depth) within coral reef habitats 5 to 20 m from shore (King 2007). Observations were evenly distributed around the island with the highest densities in Kākā, Hakioawa, and Kealaikahiki (King 2007).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Kahoʻolawe, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. This area is of high conservation value to the Central North Pacific DPS because it supports a high density of foraging/resting green turtles (King 2007).

Lanaʻi

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of Lanaʻi (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters off Lanaʻi. The northern and northeastern coastal areas bordering Kalohi and Auau Channels contain essential foraging and refugia features for resident adult turtles (Balazs 1980). Balazs (1987) studied foraging areas off Keomuku, Kuahua, and Polihua Beach for their current or historic importance to green turtles or their unique or representative ecology. Diets of juvenile turtles (n = 20) from the northeastern coast of Lanaʻi included red macroalgae, primarily *A. spicifera,* which was accidentally introduced to the Hawaiian Islands in the 1950s (Doty 1961) and has become a principal component of green turtle diets (Arthur and Balazs 2008).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Lanaʻi, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. USFWS has identified important basking areas on Lanaʻi, including Shipwreck, Federation, and White Stone beaches. Adjacent marine areas are of high conservation value to the Central North Pacific DPS because they provide access to the beaches needed for adequate rest, thermoregulation, and digestion. Other areas of Lanaʻi also provide high conservation value because they support high densities of foraging/resting green turtles (Becker *et al.* 2019).

Molokaʻi

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of Molokaʻi (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters off Molokaʻi. The southern coastal areas from Kamalo to Halena contain foraging/resting essential features for resident adult turtles (Balazs 1980). There is significant foraging habitat along the Palaʻau coastline (Balazs and Chaloupka 2004; Balazs *et al.* 1987), where algae grow on hard-bottom surfaces and coral rubble; resting occurs in crevices, holes, sand channels, and at the base of coral heads inside of the reef

zone within the breakers (Balazs *et al.* 1987). In these areas, green turtles forage on red macroalgae including *Amansia* spp., *Hypnea* spp., and non-native *A. spicifera* (Arthur and Balazs 2008).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Moloka'i, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. USFWS has identified important basking areas on beaches off Kawa'aloa Bay. The adjacent marine area is of high conservation value to the Central North Pacific DPS because it provides access to the beaches needed for adequate rest, thermoregulation, and digestion. Other areas of Moloka'i also provide high conservation value because they support high densities of foraging/resting green turtles (Becker *et al.* 2019).

O'ahu

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the island (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters off O'ahu Island. Many areas contain essential foraging and refugia features, with concentrated foraging/resting areas on the North Shore, West coast (Ewa Beach/Pearl Harbor), South Shore, and East coast (Kaneohe and Kailua Bays). Kaneohe Bay, Kailua Bay, and the northwestern coastal areas from Mokuleia to Kawailoa host foraging/resting resident adult turtles (Balazs 1980). Kaneohe Bay is an important adult and juvenile benthic foraging/resting area, where patch reefs are common and algal growth is most abundant (Brill *et al.* 1995). It provides 135 species of algae and seagrass (Brill *et al.* 1995; Balazs *et al.* 2000; Russell *et al.* 2003; Balazs and Chaloupka 2004; Russell and Balazs 2009; Russell and Balazs 2015), including the seagrasses *H. decipiens* and *H. hawaiiana* (Russell *et al.* 2003; Seaborn *et al.* 2005; Arthur and Balazs 2008). The three most common algal species consumed are non-native species: *A. spicifera, H. musciformis,* and *Gracilaria salicornia* (Russell and Balazs 2009; Russell and Balazs 2015). In Kailua Bay, juvenile green turtles (n = 41) primarily foraged on the non-native red macroalgae, *A. spicifera* (Arthur and Balazs 2008). Six juveniles tracked in the Kawainui Marsh Estuary of Kailua Bay foraged in the bay and rested along the channel and ledge (Francke *et al.* 2013). Balazs (1987) also studied foraging areas off Kawela Bay, Maunalua Bay, West Beach, and Sandy Beach for their current or historic importance to foraging green turtles or their unique or representative ecology. Numerous turtles forage within Kawela Bay (North Shore) but rest further offshore, where turtles are likely to find deeper depths or to avoid human disturbance within the bay (*e.g.,* boating, fishing, and in-water recreation; Balazs *et al.* 1987). They appear to forage at night (primarily on the non-native red macroalgae, *A. spicifera*) and rest during the day (Balazs *et al.* 1987). Turtles also forage off Laniakea Beach, which is an important basking beach (Rice and Balazs 2008; Van Houtan *et al.* 2015). Balazs (1980) describes turtles foraging along Bellows Beach, where algae (*Codium* and *Ulva* spp.) concentrate along sandy bottoms 25 to 100 m from shore, due to wave action and currents. Green turtles also forage in streams, including the Anahulu River, where 968 green turtle sightings were made over 9 evening and 2 morning observation sessions (Clarke *et al.* 2012).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of O'ahu, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. This area is of high conservation value to the Central North Pacific DPS because it supports a high density of foraging/resting green turtles (Becker *et al.* 2019).

Kaua'i

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of Kaua'i (see Draft Biological Report, NMFS 2023a). Published data indicate that Princeville, the northwestern coastal areas of Na Pali, and southern coastal areas from Kukuiula to Makahuena Point contain foraging/resting essential features for resident adult turtles (Balazs 1980).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Kaua'i, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. This area is of high conservation value to the Central North Pacific DPS because it supports a high density of foraging/resting green turtles (Becker *et al.* 2019).

Ni'ihau

Although less studied than the other Main Hawaiian Islands, Ni'ihau also hosts marine benthic algae (Tsuda *et al.* 2021) and coral (Brainard and Asher 2008). Low densities of green turtles use these resources to forage and rest (Baird and Wood 2010; Becker *et al.* 2019). Therefore, while the Team concluded, and we agree, that all nearshore waters of Ni'ihau, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections, this area is of low conservation value to the Central North Pacific DPS because it supports a relatively low density of foraging/resting green turtles.

Papahānaumokuākea Marine National Monument (PMNM)

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the PMNM (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters. Resident aggregations of adults and juveniles forage at Mokumanamana/Necker Island, Lalo/French Frigate Shoals Atoll, Kapou/Lisianski Island, Manawai/Pearl and Hermes Atoll, and to a lesser extent at Kamole/Laysan, Kuaihelani/Midway Atoll, and Hōlanikū/Kure Islands (Balazs 1980). Juveniles and adults (at least 50, as estimated in 1977) forage throughout Mokumanamana/Necker Island's nearshore waters; Shark Bay is an especially important foraging area (Balazs 1977). Stomach contents of three juveniles revealed foraging on *Caulerpa* spp. (Balazs 1977). At Lalo, resident juveniles forage on algae (*Caulerpa* spp. and *Codium* spp.) and anthozoans growing on calcareous reef structures, and reproductive adults feed throughout the breeding season (Balazs 1980). At Kuaihelani/Midway Atoll, turtles forage in algal and partial seagrass habitat (Balazs and Chaloupka 2004). Benthic foraging juvenile turtles, as small as 6 kg (*i.e.,* greater than 6 years of age; Balazs and Chaloupka 2004), are regularly found throughout the PMNM, which may serve as important benthic foraging habitat at this early stage of development (Balazs 1976).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and

summarized here, the Team concluded, and we agree, that all nearshore waters of the PMNM, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. USFWS has identified important basking areas on beaches of Lalo/French Frigate Shoals Atoll, Kamole/Laysan, Kapou/Lisianski Island, Manawai/Pearl and Hermes Atoll, Kuaihelani/Midway Atoll, and Hōlanikū/Kure Islands. These areas are of high conservation value to the Central North Pacific DPS because they provide access to the beaches needed for adequate rest, thermoregulation, and digestion. Manawai/Pearl and Hermes Atoll also supports high density foraging/resting (Becker *et al.* 2019). Other areas of the PMNM (*i.e.,* Nihoa and Mokumanamana/Necker Island) provide low conservation value because they support relatively low densities of foraging/resting green turtles (Becker *et al.* 2019).

Johnston Atoll

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of Johnston Atoll (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters off Johnston Atoll. Marine algae (Tsuda *et al.* 2010) and corals (Maragos and Jokiel 1986) occur throughout the nearshore waters of Johnston Atoll, where adults and juveniles forage and rest (Balazs 1985). While all areas contain the foraging/resting essential features, most turtles occur off the southern shore of Johnston Island, where they forage on algae, including *Bryopsis pennata* and *C. racemosa* (Balazs 1985). During 28 days of effort in 1983, 21 turtles were captured in this area; 60 percent of the captured turtles were adults (Balazs 1985). Only 3 turtles were sighted during 26 diving surveys; the low number may be attributed to poor underwater visibility (from 1.5 to 10 m); in addition, there were 8 sightings at the water's surface (Balazs 1985). These survey data are corroborated by reports of green turtle abundance (*i.e.,* up to 30 turtles in 1 hour of observation) along the southern shores of Johnston Island (Balazs 1985). The primary foraging habitat for turtles at Johnston Atoll consists of a narrow band of heterogeneous algal pastures immediately off and along the southern shore of Johnston Atoll (Balazs 1985). Near this area, two possible refugia sites were identified (Balazs 1985). CREP conducted towed diver surveys in the nearshore waters around Johnston Atoll and identified green turtles along the southern shores (CREP, unpublished data 2016). While the Team concluded, and we agree, that all nearshore waters of Johnston Atoll, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections, this area provides low conservation value because it supports relatively low densities of foraging/resting green turtles (Becker *et al.* 2019).

Review of INRMPs Within the Range of the Central North Pacific DPS

DoD provided, and we reviewed, INRMPs for three installations within the range of the Central North Pacific DPS (NMFS 2023c): Joint Base Pearl Harbor-Hickam, Pacific Missile Range Facility, and Marine Corps Base Hawaii. We are working with DoD to identify relevant elements to protect the habitat from the types of effects that would be addressed through a destruction-or-adverse-modification analysis (50 CFR 424.12(h)). We will consider this and other information to determine whether a benefit is provided prior to publication of the final rule to designate critical habitat.

Economic Impacts Within the Range of the Central North Pacific DPS

For each of the specific areas meeting the definition of critical habitat, we weighed the economic impact of designation against the benefits of designation, as represented by its conservation value to the Central North Pacific DPS (see Table 4). Specific areas providing high conservation value are associated with a combined total annualized impact of $71,000. Specific areas providing low conservation value were associated with a combined total annualized impact of $5,600. High conservation value areas are highly important to supporting the overall life history and recovery of the DPS, and the benefits of designating these areas are not outweighed by the low economic impacts. We conclude, however, that the economic impacts outweigh the benefits of designating specific areas of low conservation value. Based on the Team's criteria and best available data, low conservation value areas do not contain essential reproductive and/or migratory features. Furthermore, these areas host a lower abundance and/or density of foraging/resting green turtles, suggesting that they provide less conservation value to the DPS relative to areas hosting moderate or high abundances or densities. Although the estimated annualized costs across all of the low conservation value areas for the DPS were low ($5,600), we concluded that these impacts outweighed the benefits of designating these areas. Therefore, we propose to exclude the following areas from the critical habitat designation: Niihau, Nihoa, Mokumanamana/Necker Island, and Johnston Atoll. As discussed in the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c), we conclude that exclusion of these low conservation value areas from the critical habitat designations will not result in extinction of the DPS.

TABLE 4—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE CENTRAL NORTH PACIFIC DPS

Area	Conservation value	Annualized impacts
Hawai'i	High	$6,900
Kaho'olawe	High	1,000
Maui	High	7,900
Lana'i	High	2,900
Moloka'i	High	1,300
O'ahu	High	31,000
Kaua'i	High	4,000
Ni'ihau	Low	1,100
Nihoa	Low	1,900

TABLE 4—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE CENTRAL NORTH PACIFIC DPS—Continued

Area	Conservation value	Annualized impacts
Mokumanamana/Necker Island	Low	1,700
Lalo/French Frigate Shoals	High	2,800
Kamole/Laysan Island	High	1,600
Kapou/Lisianski Island	High	2,600
Manawai/Pearl and Hermes Atoll	High	1,600
Kuaihelani/Midway Atoll	High	5,500
Hōlanikū/Kure Atoll	High	1,600
Johnston Atoll	Low	940

National Security Impacts Within the Range of the Central North Pacific DPS

We received 17 requests for exclusions due to national security impacts of specific areas under consideration for proposed critical habitat of the Central North Pacific DPS (NMFS 2023c). Of these, two occur in areas proposed for exclusion based on economic impacts that outweighed the benefits of designating critical habitat. The remaining 15 requests are not yet reasonably specific to weigh national and homeland security impacts against the benefits of a potential critical habitat designation. We are working with DoD and DHS to gather the specific information and will consider it prior to publication of the final rule to designate critical habitat.

Areas Proposed for Critical Habitat Designation for the Central North Pacific DPS

For the threatened Central North Pacific DPS of green turtles, we propose to designate occupied critical habitat, encompassing 2,623 km² of nearshore waters from the mean high water line to 20 m depth of the following Hawaiian Islands: Hawai'i, Maui, Kaho'olawe, Lana'i, Moloka'i, O'ahu, Kaua'i, Lalo/French Frigate Shoals, Kamole/Laysan Island, Kapou/Lisianski Island, Manawai/Pearl and Hermes Atoll, Kuaihelani/Midway Atoll, and Hōlanikū/Kure Atoll. These areas include reproductive and benthic foraging/resting essential features. All areas proposed for designation are of high conservation value to the DPS. A total area of 368 km² is proposed for exclusion because the benefits of exclusion outweigh the benefits of inclusion of these low conservation value areas. The Team found, and we agree, that exclusion of these areas from the critical habitat designation would not result in extinction of this DPS (NMFS 2023a). At this time, we have not received reasonably specific information with which to propose exclusions based on national security impacts. At this time, no areas are ineligible for designation as critical habitat under section 4(a)(3)(B)(i) of the ESA. We have not identified any unoccupied areas that are essential to the conservation of this DPS; thus we are not proposing to designate any unoccupied areas.

Central South Pacific DPS

The Central South Pacific DPS is defined as green turtles originating from the Central South Pacific Ocean, including those hatching from nests on the beaches of American Samoa and Palmyra Atoll. The range of the DPS is bounded by the following coordinates: 9° N, 175° W in the northwest; 9° N, 125° W in the northeast; 40° S, 96° W in the southeast; 40° S, 176° E in the southwest; and 13° S, 171° E in the west. The geographical area occupied by this DPS includes waters outside of U.S. jurisdiction. Within the U.S. EEZ, the range of the DPS includes waters up to 200 nautical miles off all islands of American Samoa and the following islands of the Pacific Remote Islands Marine National Monument: Baker Island, Howland Island, Jarvis Island, Kingman Reef, and Palmyra Atoll. See the Draft Biological Report (NMFS 2023a) for a map of this area.

The 1998 Recovery Plan for U.S. Pacific Populations of the Green Turtle (NMFS and USFWS 1998) identified recovery criteria to delist the species (*i.e.,* the goal of the plan), including activities needed to protect and prevent the degradation of marine habitat. To identify relevant scientific information, the Team worked with biologists from the American Samoa Department of Marine and Wildlife Resources (DMWR).

Specific Areas Containing the Reproductive Essential Feature and Their Conservation Value to the Central South Pacific DPS

The recovery of the DPS is dependent on successful reproduction. While nesting occurs on beaches, the marine areas adjacent to nesting beaches are essential for mating, movement of reproductive females on and off nesting beaches, internesting, and the swim frenzy and early dispersal (*i.e.,* transit) of post-hatchlings. Therefore, the following reproductive feature is essential to the conservation of the Central South Pacific DPS: From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals, and the transit of post-hatchlings.

The Team used the following information to identify this reproductive essential feature. Nesting occurs at Rose Atoll (Tuato'o-Bartley *et al.* 1993; Craig and Balazs 1995; Craig *et al.* 2004; B. Peck, USFWS pers. comm. 2018), Ofu and Olosega (DMWR, unpublished data 2015), Ta'ū (J. Browning, USFWS pers. comm. 2022), and Palmyra Atoll (Sterling *et al.* 2013). USFWS reviewed nesting data to identify beaches considered for terrestrial critical habitat, which begins at the mean high water line. Therefore, in-water areas considered for marine critical habitat also begin at the mean high water line (*i.e.,* waters adjacent to nesting beaches). To determine the offshore boundary of the reproductive essential feature, the Team reviewed published and unpublished satellite tracking data on internesting females and males in waters adjacent to nesting beaches. These data are described in detail in the Draft Biological Report (NMFS 2023a). Seven satellite tracked post-nesting females remained at or around Rose Atoll for approximately 2 months before

departing to foraging areas in late December (Craig *et al.* 2004). Their movements, in addition to those of 53 satellite tracked post-nesting females (from Rose Atoll between 2013 and 2018; PIFSC unpublished data 2022), demonstrate the use of nearshore internesting habitat. The Team concluded, and we agree, that the reproductive essential feature occurs from the mean high water line to 20 m depth in waters off nesting beaches proposed as critical habitat by USFWS.

The reproductive essential feature may require special management considerations or protection to maintain unobstructed access to and from nesting beaches and disturbance-free nearshore areas for mating, internesting, and post-hatchling transit. The following may impede access to and from nesting beaches: inwater structures and construction, dredging, lighting, oil and gas activities, alternative energy development and generation, vessel activities, fishing and aquaculture activities, recreational activities, and pollution (*e.g.,* run-off and contaminants). Climate change may result in the shift or loss of nesting beach habitat, which would alter the location or value of adjacent marine reproductive areas. In American Samoa, we are especially concerned about ship groundings and proposed construction projects near nesting beaches and their adjacent marine waters. For example, a ship grounded at Rose Atoll in 1993, damaging reef habitat and spilling 100,000 gallons of fuel and other contaminants (Marine Conservation Institute 2022). This likely impeded or oiled females accessing nesting beaches and post-hatchlings entering the sea, but no assessments were made at the time. Construction activities include an airport resurfacing project from 2020 to 2022 and a proposed expansion, which would extend the runway onto nesting beaches on Ofu Island. Resulting pollution, noise, and lighting may impede movement on and off nesting beaches. At Swains Island, there is a proposal to create a channel via blasting and dredging, which would reduce available nesting and reproductive habitat. In addition, climate change has the potential to negatively impact green turtle nesting and reproductive habitat via changes in sand temperatures (Santos *et al.* 2017), water temperatures (Crear *et al.* 2016), wave climate (Friedlander *et al.* 2008), and available habitat due to sea level rise (Fish *et al.* 2005).

To identify specific areas containing the reproductive features essential to the conservation of the DPS, we relied on USFWS' identification of nesting beaches. USFWS proposed nesting beaches in American Samoa and Palmyra Atoll as terrestrial critical habitat elsewhere in today's **Federal Register** (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164).

For each of these areas (and for the entire islands at Rose and Palmyra Atolls), we identified the adjacent marine area, from the mean high water line to 20 m depth, as containing the reproductive features essential to the conservation of the Central South Pacific DPS and which may require special management consideration or protection. These areas are of high conservation value to the DPS because they are required for successful reproduction, which is directly linked to population growth and recovery. Females must use these reproductive areas to reach the nesting beaches proposed as critical habitat by USFWS and for internesting. These areas are also essential for successful mating and post-hatchling swim frenzy and early dispersal.

No Migratory Essential Feature for the Central South Pacific DPS

The recovery of the Central South Pacific DPS requires that adult turtles forage and reproduce. Because foraging and reproduction are geographically separated, the recovery of the DPS requires turtles to successfully migrate between these areas. Satellite telemetry of 70 individuals from Rose Atoll indicates that adults migrate long distances between foraging and reproductive areas in the South Pacific. Craig *et al.* (2004) satellite tracked seven post-nesting females at Rose Atoll; six migrated west towards foraging areas in Fiji and the seventh migrated east to Raiatea, French Polynesia. Of 53 post-nesting females tracked from Rose Atoll between 2013 and 2018 (PIFSC unpublished data 2022), most migrated to foraging areas in Fiji (n = 39); individuals also migrated to Western Samoa (n = 5), New Caledonia (n = 4), Vanuatu (n = 1), Solomon Islands (n = 1), Papua New Guinea (n = 1), Cook Islands, (n = 1), and French Polynesia (n = 1; PIFSC unpublished data 2022).

Given these data, the Team concluded that green turtles of this DPS do not use a narrow, constricted migratory corridor. Instead, they use multiple oceanic migratory paths. We were unable to identify a particular depth or distance from shore used by adult green turtles to migrate between reproductive and benthic foraging/resting areas. We were also unable to identify any other physical or biological feature used by migrating turtles because the best available data demonstrate variation among movement patterns of individuals in oceanic habitats. That is to say that migration is not constricted or confined by a continental shelf, current, or other feature, but rather occurs over a large, oceanic environment without defining features (such as depth or distance from shore). Therefore, while migration between reproductive and benthic foraging/resting habitats is essential to the conservation of the DPS, we were unable to identify or define a migratory feature for this DPS.

Specific Areas Containing the Benthic Foraging/Resting Essential Features and Their Conservation Value to the Central South Pacific DPS

The recovery of the DPS requires successful survival, growth, and development of juvenile life stages and the successful survival and reproduction of adults. The Team was unable to identify foraging/resting essential features for post-hatchlings and surface-pelagic juveniles due to insufficient data on this developmental life stage and its habitat requirements. For benthic juveniles and adults, benthic habitats provide the food resources and refugia necessary to survive, develop, grow, and reproduce. The following benthic foraging/resting essential features are essential to the conservation of the Central South Pacific DPS: From the mean high water line to 20 m depth, underwater refugia (*e.g.,* rocks, reefs, and troughs), and food resources (*i.e.,* seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

To identify the benthic foraging/resting essential features, the Team reviewed the following information. As demonstrated by research performed at Fijian foraging areas, green turtles forage on invertebrates (40 percent), fishes (31 percent), and marine plants (including seagrass and algae; 29 percent); seagrass pastures serve as both a primary food source and essential habitat hosting other primary food sources (Piovano *et al.* 2020). Areas to the east of Fiji (*e.g.,* within the U.S. EEZ) exhibit less shallow-water foraging habitat, species diversity, and vegetative biomass (Craig *et al.* 2004). However, 237 algal species and 2 seagrass species occur in the waters of American Samoa (Skelton 2003), and juvenile green turtles are observed foraging in these waters year-round. At Palmyra Atoll, adults and juveniles forage on macroalgae and turf

algal communities at depths of less than 50 m, demonstrating high site fidelity and small home ranges (0.8 to 3.6 km; Naro-Maciel *et al.* 2018). Turf algae species include *Jania, Cladophora,* and *Spyridia* (McFadden *et al.* 2010). Macroalgae species include *Bryopsis, Turbinaria, Halimeda* (calcareous green algae), *Lobophora* (brown algae), *Dictyosphaeria* (green algae), and *Galaxaura* and *Dichotomaria* (red algae) (Braun *et al.* 2008). The Recovery Plan includes two criteria for foraging habitats: existing foraging areas are maintained as healthy environments, and foraging populations are exhibiting statistically significant increases at several key foraging areas within each stock region (NMFS and USFWS 1998). Although little information is available regarding the health of foraging areas or the size of the foraging populations, it is clear that multiple benthic foraging areas are needed for the conservation of this DPS. While data indicate that green turtles forage and rest in depths of up to 50 m, they generally remain in shallow waters (Naro-Maciel *et al.* 2018). Therefore, the Team concluded, and we agree, that the benthic foraging/resting essential features occur from the mean high water line to 20 m depth.

The benthic foraging/resting essential features may require special management considerations to maintain sufficient quality and quantity of food resources and refugia in nearshore waters. The Recovery Plan (NMFS and USFWS 1998) indicates that protection is needed to prevent the degradation of marine habitats due to construction, dredging, disposal, pollution, coastal erosion, fishing, and vessel activities (*e.g.,* groundings, anchoring, and propeller scarring). Coral reefs, important feeding areas for green turtles (Becker *et al.* 2019), are highly sensitive to and threatened by overfishing, terrestrial runoff, and climate change (Dutra *et al.* 2021). Oil spills and other discharges are also a concern. Construction may result in increased siltation and reduced food availability. Naro-Maciel *et al.* (2018) described the high quality of habitat and resources available to green turtles at Palmyra Atoll and the importance of continuing to protect this area because it sustains these endangered green turtles that spend most of their lives within these waters and effectively shields them from threats. USFWS has reviewed proposals to restore hydrodynamic flow in the lagoons at Palmyra Atoll. Such activities may create toxic plumes from pollutants left by the military during World War II and load large amounts of sediment into the marine environment (Collen *et al.* 2009), potentially degrading the lagoon and reef flat habitats used by foraging green turtles (Sterling *et al.* 2013b). In American Samoa, development results in silt-laden runoff and the sedimentation of coastal habitat (Aeby *et al.* 2008). Direct or indirect disposal of anthropogenic waste and nutrients may increase reef eutrophication and threaten reef health (Dailer *et al.* 2010; Smith *et al.* 2010; Swarzenski *et al.* 2017) or introduce contaminants into green turtle foraging habitats (NMFS and USFWS 1998). Pago Pago Harbor in American Samoa is polluted, and uncontrolled effluent contaminants have impaired water quality (Aeby *et al.* 2008). Proposed construction projects (including channel blasting and dredging at Swains Island and a power plant at Ofu and Olosega) would reduce available foraging and refugia habitat. Marine debris presents a threat to green turtles and the quality of their foraging habitat in American Samoa (Aeby *et al.* 2008; Tagarino *et al.* 2008). Ship groundings (*e.g.,* at Rose Atoll in 1993) damage reef habitat and spill fuel and other contaminants (Marine Conservation Institute 2022). Climate change also has the potential to negatively impact food resources via changes in water temperatures, ocean acidification, and coral reef habitat (Friedlander *et al.* 2008).

Within the range of the Central South Pacific DPS within U.S. jurisdiction, many areas contain food resources and underwater refugia. The Team relied on the occurrence of foraging/resting green turtles to determine which of these areas contain resources sufficient to support their survival, development, growth, and/or reproduction. Throughout the range of the DPS, the best available data were gathered during biennial or triennial nearshore towed diver surveys that estimated green turtle densities in the month of April from 2002 to 2015 (Becker *et al.* 2019). Such densities provide a relative, objective, and consistent measure of an area's conservation value to each DPS (Becker *et al.* 2019). To delineate between high and low densities (and thus high and low conservation value), the Team first considered additional capture data that demonstrate a high abundance of foraging/resting green turtles at Rose Atoll (NMFS 2023a). Then, the Team reviewed the Becker *et al.* (2019) density data for Rose Atoll, which was 0.31 green turtles/km. Therefore, estimates greater than or equal to 0.31 green turtles/km (Becker *et al.* 2019) constitute high density for the Central South Pacific DPS. Based on this threshold, high densities of foraging/resting green turtles occur in waters off Jarvis, (3.62 green turtles/km), Palmyra (1.05), Baker (1.21), Howland (0.80), Ta'ū (0.63) Tutuila (0.34), Swains (0.38), and Rose Atoll (0.31). Densities were low (less than 0.31 green turtles/km) at Ofu and Olosega (0.15 green turtles/km) and Kingman Reef (0.06 green turtles/km). The Team mapped these data and an additional 2 years of unpublished data (CREP, PIFSC unpublished data 2022). The towed diver survey data demonstrate the presence of benthic foraging/resting essential features throughout the nearshore waters throughout American Samoa and the Pacific Remote Islands used by the Central South Pacific DPS. See the Draft Biological Report (NMFS 2023a) for figures. These data indicate that green turtles forage and rest in nearshore areas throughout American Samoa and the Pacific Remote Islands National Monument.

American Samoa

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the islands (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters around Tutuila, Ofu, Olosega, Ta'ū, and Swains Islands (NMFS and USFWS 1998; Tagarino *et al.* 2008; Tagarino and Utzurrum 2010; Maison *et al.* 2010). Grant (1997) described seven juvenile green turtles in the waters around Tutuila and three juveniles at Rose Atoll, indicating utilization of the area by multiple life-history stages. From 2004 to 2008, DMWR recorded 84 green turtle sightings in nearshore waters of the following areas (with the number of green turtle sightings in parentheses): Fagaalu (23), Olosega Beach (6), Coconut Point (4), Nuuuli (4), Utulei (3), Aoa (3), Ofu Beach (2), airport (2), Alofau (1), Aua (2), Fagasa (1), Fagatogo (1), Fogagogo (2), Leone (1), Masefau (1), Mataae (1), Mu Point Asili (1), Niuloa Point (1), Pago Harbor (1), Vatia (1), and Rose Atoll (1). More recently DMWR has documented foraging turtles on the following islands and atolls (DMWR unpublished data 2015): Tutuila Island (Coconut Point, Masefau, Fagaitua, and Aua), Ofu Island (Toaga Beach and harbor channel), Rose Atoll, and Swains Island.

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of American Samoa, from the mean high

water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. Rose, Tutuila, and Ta‘ū Island areas are of high conservation value to the DPS because they support a high density of foraging/resting green turtles (Becker *et al.* 2019). Areas off Ofu and Olosega are of low conservation value because they support a relatively low density of foraging/resting green turtles (Becker *et al.* 2019). However, the Team concluded, and we agree, that the marine areas adjacent to nesting beaches proposed as critical habitat by USFWS on Ofu and Olosega provide high conservation value because they also contain the reproductive essential feature.

Pacific Remote Islands Marine National Monument

The density estimates (Becker *et al.* 2019) and CREP towed diver survey data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the islands (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate that green turtles forage and rest throughout the waters of the following islands of the Pacific Remote Islands National Monument: Baker Island, Howland Island, Jarvis Island, Kingman Reef, and Palmyra Atoll. The Palmyra benthic foraging/resting area is used almost exclusively (97 percent) by green turtles of the Central South and Central West DPSs (Naro-Maciel *et al.* 2014). A total of 555 green turtles were captured between 2008 and 2013 of which 123 (22.2 percent) were adults, 193 turtles (34.8 percent) were subadults, and 239 (43 percent) were juveniles (Naro-Maciel *et al.* 2018). High-use areas included the Southern, Northern, and Eastern Lagoon and Flats, and larger turtles were found at the Western and Central Lagoon and Flats (Sterling *et al.* 2013). Turtles generally remained within Palmyra nearshore waters year-round (Naro-Maciel *et al.* 2018).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of the Pacific Remote Islands, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. Areas off Baker, Howland, and Jarvis Islands and Palmyra Atoll are of high conservation value to the DPS because they support a high density of foraging/resting green turtles (Becker *et al.* 2019). Areas off Kingman Reef are of low conservation value because they support a relatively low density of foraging/resting green turtles (Becker *et al.* 2019).

Review of INRMPs Within the Range of the Central South Pacific DPS

We are not aware of any INRMPs for DoD installations that overlap with areas being considered for critical habitat.

Economic Impacts Within the Range of the Central South Pacific DPS

For each of the specific areas meeting the definition of critical habitat, we weighed the economic impact of designation against the benefits of designation, as represented by its conservation value to the Central South Pacific DPS (see Table 5). Specific areas providing high conservation value are associated with a combined total annualized impact of $18,000. Specific areas providing low conservation value were associated with a combined total annualized impact of $620. High conservation value areas are highly important to supporting the overall life history and recovery of the DPS, and the benefits of designating these areas are not outweighed by the low economic impacts. We conclude, however, that the economic impacts outweigh the benefits of designating specific areas of low conservation value. Based on the Team's criteria and best available data, low conservation value areas do not contain essential reproductive and/or migratory features. Furthermore, these areas host a lower abundance and/or density of foraging/resting green turtles, suggesting that they provide less conservation value to the DPS relative to areas hosting moderate or high abundances or densities. Although the estimated annualized costs across all of the low conservation value areas for the DPS were low ($620), we concluded that these impacts outweighed the benefits of designating these areas. Therefore, we propose to exclude the following areas from the critical habitat designation: Kingman Reef and the non-reproductive areas of Ofu and Olosega (see Draft Biological Report; NMFS 2023a). As discussed in the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c), we conclude that exclusion of these low conservation value areas from the critical habitat designation will not result in extinction of the DPS.

TABLE 5—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE CENTRAL SOUTH PACIFIC DPS

Area	Conservation value	Annualized impacts
Tutuila	High	$8,200
Ofu and Olosega: reproductive areas	High	1,700
Ofu and Olosega: all other areas	Low	60
Ta‘ū	High	2,000
Rose Atoll	High	1,500
Swains Island	High	1,500
Baker Island	High	400
Howland Island	High	400
Jarvis Island	High	250
Palmyra Atoll	High	1,800
Kingman Reef	Low	560

National Security Impacts Within the Range of the Central South Pacific DPS

We have not received any requests for exclusions due to national security impacts of specific areas under consideration for proposed critical habitat.

Areas Proposed for Critical Habitat Designation for the Central South Pacific DPS

For the endangered South Pacific DPS of green turtles, we propose to designate occupied critical habitat, encompassing 106 km² of nearshore waters in American Samoa (Rose, Tutuila, Ta'ū, Swains, Aunuu Island, and parts of Ofu and Olosega Islands), Baker Island, Howland Island, Jarvis Island, and Palmyra Atoll, from the mean high water line to 20 m depth. Nearshore waters of Palmyra, Rose, Ta'ū, Swains, Aunuu Island, and Ofu and Olosega (an area encompassing Aunuu Island; Matasina, Vaoto, Fatauana, Toaga, Olosega, Faiava-Sili-Lalomoana, Asagatai, Mafafa, and Tuafanua Beaches) contain essential reproductive and benthic foraging/resting features. Nearshore waters of Tutuila, Baker Island, Howland Island, and Jarvis Islands contain benthic foraging/resting essential features. All areas proposed for designation are of high conservation value to the DPS. A total area of 14 km² is proposed for exclusion (Kingman Reef and two areas on Ofu and Olosega) because the benefits of exclusion outweigh the benefits of inclusion of these low conservation value areas. The Team found, and we agree, that exclusion of these areas from the critical habitat designation would not result in extinction of this DPS (NMFS 2023a). No exclusions are proposed based on national security impacts, and no areas are ineligible for designation as critical habitat under section 4(a)(3)(B)(i) of the ESA. We have not identified any unoccupied areas that are essential to the conservation of this DPS; thus we are not proposing to designate any unoccupied areas.

Central West Pacific DPS

The Central West Pacific DPS is defined as green turtles originating from the Central West Pacific Ocean, including those hatching from nests on the beaches of the Mariana Archipelago (which includes Guam and the Commonwealth of the Northern Mariana Islands, CNMI) and those found in the waters of Wake Island. The range of the DPS is bounded by the following coordinates: 41° N, 146° E in the northwest; 41° N, 169° E in the northeast; 9° N, 175° W in the east; 13° S, 171° E in the southeast; along the northern coast of the island of New Guinea; and 4.5° N, 129° E in the west. The geographical area occupied by this DPS includes waters outside of U.S. jurisdiction. Within the U.S. EEZ, the range of the DPS includes waters up to 200 nautical miles offshore of Guam, the Commonwealth of Northern Mariana Islands, and Wake Island. See the Draft Biological Report (NMFS 2023a) for a map of this area.

The 1998 Recovery Plan for U.S. Pacific Populations of the Green Turtle (NMFS and USFWS 1998) identified recovery criteria to delist the species (*i.e.,* the goal of the plan), including activities needed to protect and prevent the degradation of marine habitat. To identify relevant scientific information, the Team worked with biologists from the Guam Department of Aquatic and Wildlife Resources (DAWR) and the CNMI Department of Land and Natural Resources (DLNR).

Specific Areas Containing the Reproductive Essential Feature and Their Conservation Value to the Central West Pacific DPS

The recovery of the DPS is dependent on successful reproduction. While nesting occurs on beaches, the marine areas adjacent to nesting beaches are essential for mating, movement of reproductive females on and off nesting beaches, internesting, and the swim frenzy and early dispersal (*i.e.,* transit) of post-hatchlings. Therefore, the following reproductive feature is essential to the conservation of the Central West Pacific DPS: From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals, and the transit of post-hatchlings.

The Team used the following information to identify this reproductive essential feature. Green turtles nest in Guam (Guam DAWR unpublished data 2014) and CNMI (Summers *et al.* 2018), where nesting occurs at Saipan, Tinian, Rota, Pagan, and Agrihan (J. Browning, USFWS pers. comm. 2022). USFWS reviewed nesting data to identify beaches considered for terrestrial critical habitat, which begins at the mean high water line. Therefore, in-water areas considered for marine critical habitat also begin at the mean high water line (*i.e.,* waters adjacent to nesting beaches). To determine the offshore boundary of the reproductive essential feature, the Team reviewed unpublished satellite tracking data on internesting females in waters adjacent to nesting beaches. These data are described in detail in the Draft Biological Report (NMFS 2023a). Dive data of post-nesting green turtles (n = 10) in the Mariana Archipelago indicated that they spent the majority (98.9 percent) of time in waters shallower than 50 m, at an average depth of 12 m (PIFSC unpublished data 2022). While depths of 12 m and 50 m were considered, the Team found that a 20 m depth limit accounted for over 90 percent of the data. The Team concluded, and we agree, that the reproductive essential feature occurs from the mean high water line to 20 m depth in waters off nesting beaches.

The reproductive essential feature may require special management considerations or protection because of the importance of maintaining disturbance-free nearshore areas for mating, internesting, and post-hatchling transit. The following activities may impede access to and from nesting beaches, interrupt mating, or disturb internesting females: offshore and nearshore structures, construction, dredging, artificial lighting, oil and gas activities, power generating activities, fishing, aquaculture, shipping, and military activities (NMFS and USFWS 1998; Summers *et al.* 2018). For example, in CNMI, human disturbances prevented females from emerging onto nesting beaches, causing them to nest on adjacent (smaller) pocket beaches with sub-optimal habitat or to leave the original nesting beach until the threat had abated (Summers *et al.* 2018). Summers *et al.* (2018) recorded at least one type of disturbance during 8 percent (40 of 485) of their nocturnal surveys of Saipan. In CNMI, coastal erosion and exotic vegetation have been identified as a high risk to sea turtles (CNMI Coastal Resources Management Office 2011). Construction and associated lighting on the islands of Saipan, Tinian, and Rota may result in loss or degradation of green turtle nesting habitat (NMFS and USFWS 1998; Tetratech 2014). Some nesting beaches on Tinian and Guam occur on military-leased land, where the potential for construction impacts exists (NMFS and USFWS 1998; Project GloBAL 2009a; CNMI Coastal Resources Management Office 2011). Finally, climate change may result in the shift or loss of nesting beach habitat, which would alter the location or value of adjacent marine reproductive areas.

To identify specific areas containing the reproductive features essential to the conservation of the DPS, we relied on USFWS' identification of nesting beaches. USFWS proposed Guam and CNMI nesting beaches as terrestrial

critical habitat elsewhere in today's **Federal Register** (see *https://www.regulations.gov,* Docket No. FWS–R4–ES–2022–0164).

For each of these areas, we identified the adjacent marine area, from the mean high water line to 20 m depth, as containing the reproductive feature essential to the conservation of the Central West Pacific DPS and which may require special management consideration or protection. These areas are of high conservation value to the DPS because they are required for successful reproduction, which is directly linked to population growth and recovery. Females must use reproductive areas to reach the nesting beaches proposed as critical habitat by USFWS and for internesting. These areas are also essential for successful mating and post-hatchling swim frenzy and early dispersal.

No Migratory Essential Feature for the Central West Pacific DPS

The recovery of the DPS requires that adult turtles reproduce and forage/rest. When reproduction and benthic foraging/resting areas are geographically separated, turtles must successfully migrate between these areas. The Team reviewed satellite tracking data of 26 post-nesting females in the Mariana Archipelago: 9 in Guam, and 17 in CNMI (Summers 2011; PIFSC unpublished data 2022). Most post-nesting females migrated thousands of miles to foraging areas outside the Marianas, to nearshore waters of the Philippines (n=13), Japan (n=5), Taiwan (n=1), Spratly Islands (n=1), Palau (n=1), Federated States of Micronesia (n=1), and Indonesia (n=1) (PIFSC unpublished data 2022). Such long-distance migratory patterns are common to turtles within this DPS (Kolinski 1995; Kolinski *et al.* 2014; Parker *et al.* 2015). However, some post-nesting females remain in the Mariana Archipelago to forage (Summers *et al.* 2017; PIFSC unpublished data 2022).

Given these data, the Team concluded that green turtles of this DPS do not use a narrow, constricted migratory corridor. Instead, they use multiple oceanic migratory paths. We were unable to identify a particular depth or distance from shore used by adult green turtles to migrate between reproductive and benthic foraging/resting areas. We were also unable to identify any other physical or biological feature used by migrating turtles because the best available data demonstrate variation among movement patterns of individuals in oceanic habitats. That is to say that migration is not constricted or confined by a continental shelf, current, or other feature, but rather occurs over a large, oceanic environment without defining features (such as depth or distance from shore). Therefore, while migration between reproductive and benthic foraging/resting habitats is essential to the conservation of the species, we were unable to identify or define a migratory feature for this DPS.

Specific Areas Containing the Benthic Foraging/Resting Essential Features and Their Conservation Value to the Central West Pacific DPS

The recovery of the DPS requires successful survival, growth, and development of juvenile life stages as well as the successful survival and reproduction of adults. The Team was unable to identify foraging/resting essential features for post-hatchlings and surface-pelagic juveniles due to insufficient data on this developmental life stage and its habitat requirements. For benthic juveniles and adults, benthic habitats provide the food resources and refugia necessary to survive, develop, grow, and reproduce. The following benthic foraging/resting features are essential to the conservation of the Central West Pacific DPS: From the mean high water line to 20 m depth, underwater refugia (*e.g.,* rocks, reefs, and troughs) and food resources (*i.e.,* seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

To identify the foraging/resting essential features, the Team used information collected during surveys of the nearshore waters off CNMI, Guam, and Wake Island (Kolinski *et al.* 2001; Kolinski *et al.* 2004; Kolinski *et al.* 2005; Kolinski *et al.* 2006; Guam DAWR 2011; Jones and Van Houtan 2014; Tetratech 2014; Martin *et al.* 2016; Summers *et al.* 2017; Becker *et al.* 2019; Gaos *et al.* 2020a; Gaos *et al.* 2020b; CNMI DLNR unpublished data 2016; NMFS CREP unpublished data 2022; PIFSC unpublished data 2022). These studies demonstrate that predominantly juveniles and some adults forage and rest throughout nearshore habitats in the Mariana Archipelago and Wake Island. For example, during 19 in-water surveys in Guam, Saipan, and Tinian for a total of 47 days, Gaos *et al.* (2020a; 2020b) encountered 258 green turtles; of the 97 green turtles that were captured and equipped with satellite tags, only 6 appeared to be adults (Gaos *et al.* 2020a; Gaos *et al.* 2020b), consistent with earlier analyses. Between 2006 and 2014, Summers *et al.* (2017) captured 493 green turtles in nearshore habitats of Saipan, Tinian, and Rota, and all but 4 were juveniles (mean SCL = 50.7 cm). These studies also revealed limited movement (0.5 to 3 km^2) and high foraging/resting site fidelity (Summers *et al.* 2017; Gaos *et al.* 2020a; Gaos *et al.* 2020b) of foraging juveniles, with an estimated mean residency of 17 years (Summers *et al.* 2017). Dive data of green turtles (n=84) in the Mariana Archipelago indicated that green turtles spent the majority (98 percent) of their time in waters shallower than 50 m (Gaos *et al.* 2020a). Diel dive comparisons suggested that green turtles remain in deeper waters during daylight hours (average depth 13.2 m) and move to shallower depths during the night (average depth 8.7 m; Gaos *et al.* 2020a). While the Team considered both 13.2 m and 50 m depth limits, foraging/resting turtles spent more than 90 percent of their time in waters of 20 m depth or less (PIFSC unpublished data 2022). Therefore, the Team concluded, and we agree, that the majority of foraging/resting features essential to the conservation of the DPS occur from the mean high water line to 20 m depth.

Known green turtle food resources found in CNMI include 2 seagrass species (*i.e., Halodule uninervis* and *Halophila ovalis*) and approximately 30 algal species (Kolinski *et al.* 2001; Kolinski *et al.* 2004; Kolinski *et al.* 2006). Algae is more prevalent than seagrass in CNMI, especially in areas of high turtle density; however, stomach contents of a single turtle and reports of cropped blades indicate foraging on seagrass as well (Kolinski *et al.* 2004). Analyzing samples from the oral cavity of 44 turtles, Summers *et al.* (2017) identified the following algal genera: *Amansia* (found in 95.7 percent of the samples), *Gelidiella* (12.8 percent), *Hypnea,* and *Ceramium.*

The benthic foraging/resting essential features may require special management considerations to protect food resources and underwater refugia. The Recovery Plan (NMFS and USFWS 1998) indicates that protection is needed to prevent the degradation of marine habitats due to construction, dredging, disposal, pollution, coastal erosion, fishing, and vessel activities (*e.g.,* groundings, anchoring, and propeller scarring). Impacts to the nearshore marine environment also include shoreline development, sediment-laden runoff, pollution, wastewater effluent, and invasive species (Kelly and Cayanan 2020; Hapdei 2020). Coastal development in Guam has resulted in sedimentation, which has damaged Guam's coral reefs (NMFS and USFWS 1998). Coastal

erosion has also been identified as a high risk in the CNMI due to the existence of concentrated human population centers near erosion-prone zones, coupled with the increasing threat of erosion from sea level rise (CNMI Coastal Resources Management Office 2011). Direct or indirect disposal of anthropogenic waste and nutrients contribute to eutrophication, affecting reef health and green turtle foraging habitats (Dailer *et al.* 2010; Smith *et al.* 2010; Swarzenski *et al.* 2017). Although seagrasses around Tinian and Rota Islands are in good condition, those around Saipan have been degraded by tourism activities (Project GloBAL 2009b).

Within the range of the Central West Pacific DPS, many areas contain food resources and underwater refugia. The Team relied on the occurrence of foraging/resting green turtles to determine which of these areas contain resources sufficient to support their survival, development, growth, and/or reproduction. The Team identified specific areas containing the foraging/resting essential features, where green turtles have been documented foraging/resting in published scientific research studies and unpublished data (*e.g.,* aerial and in-water surveys). Archipelago-wide, the best available data were gathered during biennial or triennial nearshore towed diver surveys that estimated green turtle densities by island in the month of April from 2002 to 2015 (Becker *et al.* 2019). Such densities provide a relative, objective, and consistent measure of an area's conservation value to each DPS (Becker *et al.* 2019). To delineate between high and low densities (and thus high and low conservation value), the Team first reviewed additional data (such as in-water capture data and surveys) that demonstrate high abundances of green turtles in waters of Guam, Saipan, Tinian, Rota (NMFS 2023a), and Pagan (Tetratech 2014). Then, the Team reviewed the Becker *et al.* (2019) density data for those islands. The lowest density estimates for those islands was 0.33 green turtles/km at Pagan (Becker *et al.* 2019). Therefore, estimates greater than or equal to 0.33 green turtles/km (Becker *et al.* 2019) constitute high density within the Mariana Archipelago. Based on this threshold, high densities of foraging/resting green turtles occur in waters off Tinian (1.77 green turtles/km), Saipan (1.6), Guam (0.65), Rota (0.64), Sarigan (0.48), Alamagan (0.38), Pagan (0.33), and Aguijan (0.34). All other areas surveyed, including Wake Island, had low densities (less than 0.33 green turtles/km). These densities reflect other data, described below, that demonstrate high densities of foraging/resting green turtles in Guam, Saipan, Tinian, Rota, and Pagan. Throughout the Mariana Archipelago, published and unpublished data have been gathered during PIFSC in-water captures from 2013 to 2019, CNMI DLNR in-water captures from August 2006 to July 2016, and NMFS CREP towed diver surveys from October 2000 to April 2017. These data, combined with stranding data (CNMI DLNR unpublished data 2022) indicate the presence of foraging/resting green turtles throughout nearshore waters of the Mariana Archipelago. See the Draft Biological Report (NMFS 2023a) for figures.

Guam

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the island (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters around Guam. Guam DAWR has conducted coastal aerial surveys semimonthly (24 surveys per year under ideal conditions) during three time periods: 1963 to 1965, 1975 to 1979, and 1989 to 2012 (Martin *et al.* 2016). Mean number of green turtles increased from 31 (range 8 to 61 in 1963 through 1965) to 299 (range 242 to 355 in 2008 through 2012; Martin *et al.* 2016). Increases mainly occurred on the southern and northern coasts of Guam (Martin *et al.* 2016). The increase in zone 8 (southern Guam) is correlated with the implementation of the Achang Reef Flat Preserve, a marine protected area, in 1999; zone 8 also contains extensive seagrass beds (Martin *et al.* 2016). The surveys also indicate consistent usage of zone 5 (the area around Apra Harbor) over time, which is supported by in-water surveys identifying abundant seagrass beds, coral reefs, and foraging turtles in the area (Gaos *et al.* 2020a, 2020b). PIFSC observed and captured green turtles at numerous locations around Guam at sites consisting of rock, coral, and sandy substrate, including Piti Bomb Holes, Apra Harbor, Orote Point, Dadi Beach, Sella Bay, Cocos Island, Achang Reef Flat, Talo'fo'fo, Pago Bay, Ritidian, Tarague, Tumon Bay, and Tanguisson (Gaos *et al.* 2020a, 2020b). PIFSC tracked foraging green turtles (n = 46) via satellite telemetry at several locations around Guam. Turtles remained within restricted home ranges, with average core home ranges of 0.15 km^2 ±0.13km^2 and overall home ranges of 1.08 km^2 ±0.78 km^2 (Gaos *et al.* 2020a). It is important to note that the in-water surveys were designed to capture turtles in specific locations, and therefore they do not reflect systematic sampling of all reef areas around Guam, but efforts were made to survey as many areas as possible (Gaos *et al.* 2020a).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Guam, from the mean high water line to 20 m depth, contain the benthic foraging/resting essential features that may require special management considerations or protections. The waters surrounding Guam are of high conservation value to the DPS because they support a high density of foraging/resting green turtles (Becker *et al.* 2019).

CNMI

The density estimates (Becker *et al.* 2019), CREP towed diver survey data, and PIFSC observational and capture data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the islands (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters throughout CNMI. PIFSC in-water surveys and satellite telemetry between 2013 and 2019 confirmed the residency of juvenile green turtles within much of the nearshore habitat around Saipan, including Balisa, Fishing Basin, Chalan Kanoa Reef, Coral Ocean Point, Dan Dan, Lao Lao Bay, Tank Beach, Forbidden Island, Spotlight, Cowtown, Pau Pau Beach, and Aqua Reef (Gaos *et al.* 2020a). A total of 33 satellite tags were deployed on green turtles. Nearly all turtles remained within restricted foraging areas during tracking and had average core and overall home ranges of 0.22 km^2 ±0.2 km^2 and 1.45 km^2 ±1.3 km^2 respectively. Between 2006 and 2014, Hapdei (2020) captured 493 foraging or resting green turtles (mostly juveniles) in the nearshore habitats of Saipan, Tinian, and Rota. Surveying Saipan from 2006 to 2016, CNMI DLNR (Summers *et al.* 2017; unpublished data through 2016) identified the following foraging locations (the total number of unique individuals captured is in parentheses): Balisa (576); Lao Lao Bay (35); Chalan Kanoa Reef (3); Cow Town (1); and Spotlight (1). Summers *et al.* (2017) captured foraging/resting turtles at: Laguna Garapan (Balisa), Lao Lao Bay, Barcinas Cove, Tachungnya Bay, Tinian Harbor, Dumpcoke, Turtle Cove, Fleming Point, Sasanlagu or Pinatang, Teteto, Sasanhaya Bay (including Jerry's

Reef), and Puntan Poña. During a 10-day in-water survey conducted in 2005, Ilo *et al.* (2005) observed 30 juveniles and 1 adult female between Naftan Point and Banzai Cliff (including the reefs of Chalan Kanoa, Chalan Laulau, and Tanapag Lagoons). Ilo *et al.* (2005) also observed 37 green turtles (including 26 juveniles) during shoreline and cliff-side assessments of the eastern shore of Saipan, conducted in July 2005. During their in-water and cliff-side surveys of Saipan, Kolinski *et al.* (2001) encountered most foraging turtles (60 percent) along the relatively uninhabited east coast, where human access is limited, the benthos is topographically complex, and a variety of food resources occur; they also observed turtles at Central Naftan, Forbidden Island (north of the isthmus), North Naftan, the Kingfisher Golf Course, and Balisa.

Tinian also hosts a large resident population of green turtles. In-water and cliff-side surveys of Tinian waters, contracted by the Navy and conducted over several weeks in 2013, estimated a population size of 795 to 1,107 resident (*i.e.,* foraging and resting) green turtles (Tetratech 2014). In-water surveys and satellite telemetry conducted between 2013 and 2019 confirmed the residency of juvenile green turtles at several sites around Tinian, specifically at Dumpcoke Cove, Fleming Point, Tinian Harbor, Tachungnya Bay, Red Wall, Tohgong, Dangkolo, and Chulu (Gaos *et al.* 2020a). A total of 17 satellite tags were deployed on green turtles around the island and the tags transmitted for an average of 154 days, ±82.1 days. All turtles remained within restricted foraging areas during tracking and had average core and overall home ranges of 0.57 km^2 ±0.19 km^2 and 3.09 km^2 ±0.78 km^2, respectively. From 2006 to 2016, CNMI DLNR (unpublished data 2016) identified the following foraging locations on Tinian (the total number of individuals captured is in parentheses): Dumpcoke (5); Fleming Point (6); Red Wall (Puntan Carolinas to Horseshoe Reef; 8); and Turtle Cove (2). Kolinski *et al.* 2001 reported that most turtles are juvenile and occur along the relatively uninhabited east coast but identified many foraging locations throughout the nearshore waters of Tinian.

Rota also hosts a large resident population of green turtles. During surveys covering 67 percent of Rota's shoreline, Kolinski *et al.* (2006) observed an estimated 73 green turtles (Kolinski *et al.* 2006). While these estimates are based on 2 days of surveys in a single year, the results are comparable to previous surveys conducted by Ilo and Manglona (2001), who surveyed 94.4 percent of Rota's shorelines, observed 56 turtles, and projected a total of 92 green turtles. The similarity of estimates suggests short-term stability in turtle abundance at Rota (Kolinski *et al.* 2006).

In-water and cliff-side surveys of Pagan waters contracted by the Navy and conducted over several weeks in 2013 were used to estimate a population size of 297 green turtles (Tetratech 2014). Foraging has been observed at Leeward South, South (Jurassic Park), Green, and Blue beaches.

Other islands of CNMI also support foraging/resting green turtles. At Aguijan and Farallon de Medinilla Islands, 14 and 9 green turtles respectively were observed during marine surveys covering 95 percent of the islands in 2001 (Kolinski *et al.* 2004). In 2003, Kolinski *et al.* (2005) conducted 36 hours of surface surveys and 34 hours of submerged surveys (tow-board and dive) throughout seven reef systems throughout the Archipelago: Stingray Shoal, Supply Reef, Zealandia Bank, Pathfinder Reef, Arakane Reef, and Tatsumi Reef. They observed a total of three turtles (one each at Supply Reef, Zealandia Bank, and Arakane Reef); two were juveniles, and one was juvenile/adult (Kolinski *et al.* 2005). The authors attributed the low abundance to low recruitment rates, inadequate habitat range and resources, increased exposure to predation, and/or increased effort required to remain on location (Kolinski *et al.* 2005).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of CNMI, from the mean high water line to 20 m depth, contain the benthic foraging/resting essential features that may require special management considerations or protections. The areas surrounding Saipan, Tinian, Rota, Sarigan, Alamagan, Pagan, and Aguijan are of high conservation value to the DPS because they support a high density of foraging/resting green turtles (Becker *et al.* 2019). Other islands of CNMI hosted relatively low densities of turtles and thus provide low conservation value. However, the Team concluded, and we agree, that the marine areas adjacent to nesting beaches proposed as critical habitat by USFWS on Agrihan provide high conservation value because they also contain the reproductive essential feature.

Wake Island

The density estimates (Becker *et al.* 2019) and CREP towed diver survey data demonstrate occurrence of foraging/resting green turtles throughout nearshore waters of the island (see Draft Biological Report, NMFS 2023a). The following published data also demonstrate the presence of foraging/resting green turtles in nearshore waters off Wake Island. During a 1998 terrestrial survey, multiple turtles were observed in nearshore and lagoon waters at Wake Island (DoD 2007). Green turtles are regularly observed in the waters surrounding Wake Island (PRSC 2017).

Based on the data detailed in the Draft Biological Report (NMFS 2023a) and summarized here, the Team concluded, and we agree, that all nearshore waters of Wake Island, from the mean high water line to 20 m depth, contain benthic foraging/resting essential features that may require special management considerations or protections. However, Wake Island hosts relatively low densities of benthic foraging/resting turtles (Becker *et al.* 2019) and thus provides low conservation value to the DPS.

Review of INRMPs Within the Range of the Central West Pacific DPS

DoD provided, and we reviewed, INRMPs on two installations within the range of the Central West Pacific DPS (NMFS 2023c). One installation occurs near an area that, as discussed in the following section, we propose to exclude based on economic impacts (Wake Island Airfield). For the Joint Region Marianas INRMP, we are working with DoD to identify relevant elements to protect the habitat from the types of effects that would be addressed through a destruction-or-adverse-modification analysis (50 CFR 424.12(h)). We will consider this and other information to determine whether a benefit is provided prior to publication of the final rule to designate critical habitat.

Economic Impacts Within the Range of the Central West Pacific DPS

For each of the specific areas meeting the definition of critical habitat, we weighed the economic impact of designation against the benefits of designation, as represented by its conservation value to the Central West Pacific DPS (see Table 6). Specific areas providing high conservation value are associated with a combined total annualized impact of $28,000. Specific areas providing low conservation value were associated with a combined total annualized impact of $1,700. High conservation value areas are highly important to supporting the overall life history and recovery of the DPS, and the benefits of designating these areas are not outweighed by the low economic

impacts. We conclude, however, that the economic impacts outweigh the benefits of designating specific areas of low conservation value. Based on the Team's criteria and best available data, low conservation value areas do not contain essential reproductive and/or migratory features. Furthermore, these areas host a lower abundance and/or density of foraging/resting green turtles, suggesting that they provide less conservation value to the DPS relative to areas hosting high abundances or densities. Although the estimated annualized costs across all of the low conservation value areas for the DPS were low ($1,700), we concluded that these impacts outweighed the benefits of designating these areas. Therefore, we propose to exclude the following areas from the critical habitat designation: Wake Island, non-reproductive areas of Agrihan Island, and Anatahan, Guguan, Asuncion, and Maug Islands. As discussed in the Draft Sections 4(a)(3) and 4(b)(2) Report (NMFS 2023c), we conclude that exclusion of these low conservation value areas from the critical habitat designations will not result in extinction of the DPS.

TABLE 6—CONSERVATION VALUE AND ESTIMATED, INCREMENTAL, ANNUALIZED ECONOMIC IMPACTS ASSOCIATED WITH SECTION 7 CONSULTATIONS OVER THE NEXT 10 YEARS FOR THE SPECIFIC AREAS MEETING THE DEFINITION OF CRITICAL HABITAT FOR THE CENTRAL WEST PACIFIC DPS

Area	Conservation value	Annualized impacts
Guam	High	$19,000
Rota	High	810
Aguijan	High	370
Saipan	High	4,200
Tinian	High	2,200
Alamagan	High	370
Sarigan	High	370
Pagan	High	370
Agrihan (reproductive areas)	High	370
CNMI: all other areas	Low	480
Wake Island	Low	1,600

National Security Impacts Within the Range of the Central West Pacific DPS

We received 16 requests for exclusions due to national security impacts of specific areas under consideration for proposed critical habitat of the Central West Pacific DPS (NMFS 2023c). Of these, one occurs in an area that was excluded based on economic impacts that outweighed the benefits of designating critical habitat. The remaining 15 requests are not yet reasonably specific to weigh national and homeland security impacts against the benefits of a potential critical habitat designation. We are working with DoD and DHS to gather the specific information and will consider it prior to publication of the final rule to designate critical habitat.

Areas Proposed for Critical Habitat Designation for the Central West Pacific DPS

For the endangered Central West Pacific DPS of green turtles, we propose to designate occupied critical habitat, encompassing 202 km^2 of nearshore waters in Guam and CNMI (Saipan, Tinian, Rota, Pagan, Aguijan, Alamagan, Sarigan, and off the nesting beaches at Agrihan), from the mean high water line to 20 m depth. Nearshore waters of Guam, Saipan, Tinian, Rota, Pagan, and Agrihan contain essential reproductive and benthic foraging/resting features. Nearshore waters of Aguijan, Alamagan, and Sarigan contain the foraging/resting essential features. All areas proposed for designation are of high conservation value to the DPS. A total area of 271 km^2 is proposed for exclusion because the benefits of exclusion outweigh the benefits of inclusion of these low conservation value areas. The Team found, and we agree, that exclusion of these areas from the critical habitat designation would not result in extinction of this DPS (NMFS 2023a). At this time, we have not received reasonably specific information with which to propose exclusions based on national security impacts. At this time, no areas are ineligible for designation as critical habitat under section 4(a)(3)(B)(i) of the ESA. We have not identified any unoccupied areas that are essential to the conservation of this DPS; thus we are not proposing to designate any unoccupied areas.

Effects of Critical Habitat Designations

Section 7(a)(2) of the ESA requires Federal agencies, including NMFS, to insure that any action authorized, funded or carried out by the agency is not likely to jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify designated critical habitat. In addition to actions carried out by a Federal agency, activities subject to the ESA section 7 consultation process include those occurring on Federal lands, requiring a permit or other authorization from a Federal agency, or funded by a Federal agency. ESA section 7 consultation is not required for actions on non-Federal and private lands that are not carried out, funded, or authorized by a Federal agency.

Federal agencies must consult with us on any proposed agency action that may affect the listed species or its critical habitat. During section 7 consultation, we evaluate the agency action to determine whether the action is likely to adversely affect listed species or critical habitat. The potential effects of a proposed action may depend on, among other factors, the specific timing and location of the action relative to seasonal presence of essential features or seasonal use of critical habitat by the listed species for essential life history functions. While the requirement to consult on an action that may affect critical habitat applies regardless of the season, NMFS addresses the varying spatial and temporal considerations when evaluating the potential impacts of a proposed action during consultation. If we conclude that the agency action would likely result in the destruction or adverse modification of critical habitat, we would recommend reasonable and prudent alternatives to the action in the biological opinion. Reasonable and prudent alternatives are defined in 50 CFR 402.02 as alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent

with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that would avoid the destruction or adverse modification of critical habitat. In the biological opinion, NMFS may also provide a statement containing discretionary conservation recommendations. Conservation recommendations are advisory and are not intended to carry any binding legal force.

Section 7(a)(4) of the ESA requires Federal agencies to confer with us on any action likely to destroy or adversely modify proposed critical habitat. Regulations at 50 CFR 402.16 require Federal agencies that have retained discretionary involvement or control over an action, or where such discretionary involvement or control is authorized by law, to reinitiate consultation on previously reviewed actions in instances where, with respect to critical habitat: (1) critical habitat is subsequently designated that may be affected by the identified action; or (2) new information or changes to the action may result in effects to critical habitat not previously considered in the biological opinion.

Activities That May Be Affected

ESA section 4(b)(8) requires, to the maximum extent practicable, in any proposed regulation to designate critical habitat, an evaluation and brief description of those activities (whether public or private) that may adversely modify such habitat or that may be affected by such designation. A wide variety of activities may affect the proposed critical habitat and may be subject to the ESA section 7 consultation processes when carried out, funded, or authorized by a Federal agency. These include: (1) in-water structures and construction, including dredging and beach nourishment; (2) oil and gas activities, including construction, maintenance, operations, oil spills, and clean-up; (3) alternative energy development, including the construction, maintenance, and operation of wind farms; (4) vessel activities, including the establishment of shipping lanes and those that may cause damage by grounding, anchoring, and propeller scarring; (5) military activities; (6) space vehicle and missile launches; (7) Federal fisheries; (8) aquaculture; (9) water quality management including pesticide registration, establishment of water quality standards, and Clean Water Act general permits; and (10) any activity resulting in run-off, pollution, or contamination into waters occupied by green turtles.

The designation of critical habitat does not preclude a Federal agency from performing its action within that specific area. Rather, a Federal agency is required to insure that its action will not result in destruction or adverse modification of critical habitat. During section 7 consultations, NMFS' biologists would review Federal actions and their effects on the essential features within specific areas designated as critical habitat, in addition to effects to the species. For continuing actions that have previously undergone section 7 consultation for the species, reinitiation of consultation would be required to assess effects to the critical habitat upon its designation. Although not required, a Federal agency may request a conference on any action that may affect proposed critical habitat; the conference opinion may be adopted as the biological opinion to satisfy the section 7 consultation requirements once the designation is finalized.

For areas containing the reproductive essential feature, consulting biologists would evaluate whether the Federal action is likely to obstruct areas used for transit to or from nesting beaches, mating, or internesting; the action would also be evaluated for artificial lighting, which may impede post-hatchlings' swim frenzy and early dispersal. A destruction or adverse modification analysis would consider the extent to which these areas are obstructed or lighted, including but not limited to timing (during the mating/nesting season), duration (permanent or temporary), and magnitude (large or small scale). Actions having effects that are temporary, small-scale, or occur outside of the mating/nesting season are not expected to result in a destruction or adverse modification determination.

Similarly, for areas containing the migratory essential feature, consulting biologists would evaluate whether the Federal action is likely to obstruct corridors used by reproductive individuals for transit between reproductive and benthic foraging/resting areas. A destruction or adverse modification analysis would consider the extent to which a migratory corridor is obstructed, including but not limited to timing (before, during, or after the mating/nesting season), duration (permanent or temporary), and magnitude (large or small scale). Actions having effects that are temporary, small-scale, or occur outside of the migratory season are not expected to result in a destruction or adverse modification determination.

For areas containing the foraging/resting essential features, consulting biologists would evaluate whether the Federal action is likely to adversely affect underwater refugia and food resources (*i.e.,* seagrasses, macroalgae, and/or invertebrates) and/or *Sargassum* habitat for the North Atlantic DPS. A destruction or adverse modification analysis would consider the extent to which such resources are modified or destroyed, including but not limited to magnitude (large or small scale) and availability of other resources nearby. Actions having effects that are small in scale or that allow turtles to forage and rest nearby are not expected to result in a destruction or adverse modification determination.

Given these considerations, it is anticipated that many Federal actions would not result in a destruction or adverse modification determination. For many actions, it is also anticipated that simple modifications could be made to proposed actions to avoid or minimize adverse effects to critical habitat. Such determinations will be made by consulting biologists on a case-by-case basis. However, we provide some examples for guidance. Obstructions to areas containing reproductive and migratory features could be avoided by planning actions well outside of mating/nesting and migratory seasons, minimizing the footprint of the action (so that turtles could easily move around the obstruction), or minimizing the duration of the action. To avoid artificial lighting, actions could be performed during the day. Actions could minimize the damage and loss of seagrass beds by relocating their action or minimizing its footprint and impact. Minimizing the footprint of an action would also minimize impacts to macroalgae and invertebrates. These species may grow on artificial substrates, which may need to be removed or maintained. In such instances, Federal agencies could ensure that other foraging resources are available to green turtles (*e.g.,* avoid removing all available food resources at one time). Similarly, refugia may be destroyed by dredging or in-water construction. In such instances, Federal agencies could ensure that other refugia are available (*e.g.,* avoid removing all available refugia at one time). In some cases, these modifications may have already been incorporated into Federal actions (*e.g.,* best management practices).

Private or non-Federal entities may be affected by the proposed critical habitat designation if their project is authorized or funded by a Federal agency (*i.e.,* a Federal action). The Federal agency would need to consult on any action that may affect designated critical habitat, as described above; however,

the Federal agency may request information from the private or non-Federal entities. We do not anticipate a non-Federal project (*i.e.,* one that is not authorized, funded, or carried out by a Federal agency) to be affected by the designation of critical habitat.

Public Comments Solicited

To ensure the final action resulting from this proposed rule will be as accurate and effective as possible, we solicit comments on and information about this proposed rule from the public, other government agencies, federally recognized tribes and organizations, the scientific community, industry, non-governmental organizations, and any other interested party. In particular, we are interested in data and information regarding the following: (1) the distribution and habitat use of green turtles in waters under U.S. jurisdiction; (2) the relative conservation value of specific areas containing the features essential to green turtles; (3) the boundaries of specific areas and proposed critical habitat units; (4) information regarding potential benefits of designating any particular area as critical habitat; (5) information regarding the types of Federal actions that may trigger an ESA section 7 consultation and possible modifications that may be required of those activities; (6) information regarding current or planned activities in the areas proposed as critical habitat, including both Federal and non-Federal activities, that may be impacted by the proposed critical habitat designation; (7) any foreseeable economic, national security, Tribal, or other relevant impact resulting from the proposed designations; (8) whether any data used in the economic analysis needs to be updated; (9) additional costs arising specifically from the designation of green turtle critical habitat that have not been identified in the Draft Economic Analysis or improved costs estimates for activities that are included in the Draft Economic Analysis; and (10) additional information regarding impacts on small businesses that were not identified in the Draft Economic Analysis or the initial regulatory flexibility analysis. To the extent possible, we request that the data or information provided be clearly specific to one or more of the DPSs addressed in this proposed rule. Please include sufficient information with your submission (such as scientific journal articles or other publications) to support your comment. Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, do not provide substantial information necessary to support a determination because Section 4(b)(2) of the ESA directs the Secretary to designate critical habitat on the basis of the best scientific data available.

You may submit your comments and supporting information concerning this proposal electronically or by mail (see **ADDRESSES**) or during public hearings (see **DATES**). The proposed rule and supporting documentation can be found on the Federal e-Rulemaking Portal at *https://www.regulations.gov* by entering *NOAA–NMFS–2023–0087* in the Search box. Click on the ''Comment'' icon, complete the required fields, and enter or attach your comments. In preparing the final rule, we will consider all comments pertaining to the proposed designations received during the comment period. Accordingly, the final designation may differ from that which is proposed here.

Public Informational Meetings and Public Hearings

Section 4(b)(5) of the ESA requires us to promptly hold at least one public hearing if any person requests one within 45 days of publication of a proposed rule to designate critical habitat. In-person or virtual public hearings provide a forum for accepting formal verbal comments on this proposed rule. Prior to the public hearings, we will provide an overview of the proposed rule during public informational meetings. We have scheduled the following public informational meetings and public hearings on this proposed rule (see **DATES**):

- *For the North and South Atlantic DPSs:* We are holding a virtual public informational meeting and virtual public hearing in coordination with USFWS.
- *For the East Pacific DPS:* We are holding a virtual public informational meeting and virtual public hearing.
- *For the Central North Pacific DPS:* We are holding a virtual public informational meeting and virtual public hearing in coordination with USFWS.
- *For the Central South Pacific DPS:* We are holding an in-person public informational meeting and in-person public hearing in coordination with USFWS.
- *For the Central West Pacific DPS:* We are holding in-person public informational meetings and in-person public hearings in coordination with USFWS.

Requests for additional public hearings must be made in writing (see **ADDRESSES**) by September 5, 2023. Dates and specific locations for additional hearings will be announced in a separate **Federal Register** notice.

Reasonable Accommodation

We are committed to providing access to the public informational meetings and public hearings for all participants. Requests for accommodations should be directed to Jennifer Schultz (see **FOR FURTHER INFORMATION CONTACT**) as soon as possible, but no later than 10 business days prior to the hearing date (see **DATES**).

References Cited

A complete list of all references cited in this proposed rule can be found on the Federal e-Rulemaking Portal at *https://www.regulations.gov* by entering *NOAA–NMFS–2023–0087* in the Search box, and is available upon request from the NMFS Office of Protected Resources (see **ADDRESSES**).

Classification

National Environmental Policy Act

We have determined that an environmental analysis as provided for under the National Environmental Policy Act of 1969 for critical habitat designations made pursuant to the ESA is not required. See *Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995), cert. denied, 116 S.Ct. 698 (1996).

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996, whenever an agency publishes a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (*i.e.,* small businesses, small organizations, and small government jurisdictions). We have prepared an initial regulatory flexibility analysis (IRFA), which is provided in the Draft Economic Analysis (NMFS 2023b). The IRFA describes the economic impact this proposed rule, if adopted, would have on small entities. The IRFA is summarized below.

This proposed rule, if adopted, does not directly apply to any particular entity, small or large. It directly applies to Federal agencies, which are required to consult on activities that may affect designated critical habitat and insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Section 7 consultations may result in economic impacts to Federal

agencies and third parties (*e.g.,* permittees, applicants, grantees) of Federal actions. Those economic impacts may include the administrative costs of section 7 consultation and, in some instances, project modification costs.

This proposed, if adopted, rule will not impose any recordkeeping or reporting requirements on small entities. During section 7 consultations, there may be communication among NMFS, the Federal action agency, and a third party applicant applying for Federal funding or permitting. Third party applicants may include non-Federal entities that are permitted or funded by a Federal agency. Communication may include written letters, phone calls, and/or meetings. Third party costs may include administrative work (such as cost of time and materials to prepare for letters, calls, and/or meetings) and analyses of effects to designated critical habitat. In addition, third parties may be required to monitor for impacts to critical habitat, as a requirement of the funding or permit received from the Federal action agency.

The proposed rule, if adopted, will not duplicate or conflict with any other laws or regulations. The incremental impacts contemplated in this IRFA are expected to result from the critical habitat designation and not from other Federal regulations.

While we do not here prejudge the outcome of any section 7 consultation, the best available information supports the conclusion that for nearly all Federal activities that are predicted to occur over the time horizon of the analysis (*i.e.,* in the next 10 years), those activities that are likely to adversely affect critical habitat and require formal consultation are also expected to constitute adverse effects to listed green turtles, other listed species, or other designated critical habitat, either directly or indirectly (*i.e.,* such activities already require formal consultation). Therefore, most projects likely to adversely affect proposed green turtle critical habitat are not expected to result in incremental project modification costs. However, beach nourishment activities occurring in California could require project modifications beyond those required under the baseline. With the exception of approximately $10,000 in potential annualized costs of project modifications to beach nourishment projects in California, these costs reflect administrative costs of adding critical habitat analyses to future section 7 consultations. Therefore, the vast majority of costs attributable to this rule are the administrative costs of adding critical habitat analyses to a section 7 consultation that would otherwise occur.

The designation of green turtle critical habitat proposed herein is expected to have a limited economic impact over the next 10 years, on the order of $639,000 in annualized costs for the North Atlantic DPS, $25,000 for the South Atlantic DPS, $125,000–$131,000 for the East Pacific DPS, $71,000 for the Central North Pacific DPS, $18,000 for the Central South Pacific DPS, and $28,000 for the Central West Pacific DPS. Most incremental impacts are borne by NMFS and other Federal agencies and not by private entities or small governmental jurisdictions. However, some consultations may include third parties that may be also be small entities.

The best available information was used to identify the potential impacts of the proposed critical habitat designation on small entities. However, there are uncertainties that complicate quantification of these impacts, particularly with respect to the extent to which the quantified impacts may be borne by small entities. As a result, the IRFA employed a conservative approach (*i.e.,* more likely to overestimate than underestimate impacts to small entities) in assuming that the quantified costs that are not borne by the Federal government are borne by small entities. Because the proposed critical habitat designation occurs in marine waters, the analysis focused on small entities located coastally in Florida, North Carolina, Texas, Puerto Rico, USVI, California, Hawai'i, American Samoa, Guam, and CNMI. For purposes of this analysis, we separated activity categories into construction activities (*e.g.,* construction, dredging, and beach nourishment) and non-construction activities (*e.g.,* commercial fishing, oil and gas, renewable energy, aquaculture, military activities, space launches and reentry, and water quality management).

For all non-construction activity categories relevant to this analysis, the expected costs borne by third parties are expected to be negligible. For each of these activities, two or fewer consultations are anticipated per year across all areas proposed as critical habitat. As a result, the annualized incremental costs that may be borne by small entities in related industries is estimated to be less than $1,100, even under a conservative scenario that assumes that a single small entity bears all third party costs associated with a particular activity category. The analysis, therefore, focused on the costs of consultations on construction activities, which occur more frequently within the critical habitat area.

We next considered all construction activity categories relevant to this analysis. As described in the Draft Economic Report (NMFS 2023b), approximately 254 consultations per year focus on construction activities. We estimate that small entities may bear the third party costs of up to 211 of these consultations annually. Small entities that may incur third party costs associated with section 7 consultations on construction projects are assumed to be primarily involved in the following North American Industry Classification System industry sectors: Highway, Street, and Bridge Construction; Other Heavy and Civil Engineering Construction; and Dredging and Surface Cleanup Activities. Along with private businesses, there also may be consultations for which small governmental jurisdictions (*i.e.,* jurisdictions with populations of less than 50,000 people) participate in consultations as third parties. The IRFA identified 70 small government jurisdictions adjacent to critical habitat that may be involved in future consultations.

Ultimately, based on the IRFA, up to 211 small entities per year may bear costs associated with participation in consultation regarding green turtle critical habitat, as proposed. Total annualized administrative and project modification costs that may be borne by these small entities (businesses or governments) engaged in construction activities are approximately $133,000. Under a scenario in which the $133,000 in total annualized costs are spread across 211 small entities, or the maximum number of small entities potentially subject to Section 7 consultation annually, the average annual cost of $630 borne by each small entity represents less than 0.1 percent of average annual revenues. This scenario may overstate the number of small entities impacted by the critical habitat designation but understate the revenue impact. Under a scenario in which a single small entity bears all third party costs, the $133,000 in costs represents 9.8 percent of average annual revenues of the small companies involved in construction activities. However, this scenario is not feasible, as it requires that a single small entity be involved in all 211 construction projects potentially subject to section 7 consultation annually. In addition, it is likely that a substantial portion of the costs that this IRFA assumes would be borne by small entities would be passed along to Federal agencies or third parties.

The RFA, as amended by SBREFA, requires us to consider alternatives to the proposed regulation that will reduce the impacts to small entities. We considered three alternatives. First, we considered the alternative of not designating any additional critical habitat for green turtles. This alternative would impose no additional economic, national security, or other relevant impacts. However, after compiling and reviewing the biological information for these DPSs, we rejected this alternative because it would violate section 4 of the ESA, which requires us to designate critical habitat to the maximum extent prudent and determinable. A second alternative we considered was to propose to designate all areas meeting the definition of critical habitat. However, following our consideration of national security, economic, and other relevant impacts of designating all the specific areas, we rejected this alternative. In particular, and as described in our Draft Sections 4(a)(3) and 4(b)(2) Report, we determined that economic costs outweighed the benefits of designating areas of low conservation value and that excluding these areas would not result in the extinction of any DPS (see NMFS 2019c). We chose the third alternative, which proposes to exclude a subset of areas meeting the definition of critical habitat where the impacts outweigh the benefits, as described in this proposed rule. This alternative provides a conservation benefit to DPSs and reduces economic impacts.

Coastal Zone Management Act

Under section 307(c)(1)(A) of the Coastal Zone Management Act (CZMA) (16 U.S.C. 1456(c)(1)(A)) and its implementing regulations, each Federal activity within or outside the coastal zone that has reasonably foreseeable effects on any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State coastal management programs. We have yet not made determinations in regards to the CZMA. We are reviewing enforceable policies of the approved coastal management programs of Florida, North Carolina, Texas, Puerto Rico, USVI, California, Hawai'i, American Samoa, Guam, and CNMI. We will send our determinations to the responsible agencies in the aforementioned States and Territories for review. After considering their responses, we will make determinations in the final rule to designate critical habitat.

Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to minimize the paperwork burden for individuals, small businesses, educational and nonprofit institutions, and other persons resulting from the collection of information by or for the Federal government. This proposed rule does not contain any new or revised collection of information requirement. This rule, if adopted, would not impose recordkeeping or reporting requirements on State, Territory, local, or tribal governments, individuals, businesses, or organizations.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

The designation of critical habitat does not impose an ''enforceable duty'' on State, Territory, local, or tribal governments, or the private sector and therefore does not qualify as a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an ''enforceable duty'' upon non-Federal governments or the private sector and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.''

This proposed rule, if adopted, will not produce a Federal mandate. The designation of critical habitat does not impose an enforceable or legally-binding duty on non-Federal government entities or private parties. The only regulatory effect is that Federal agencies must insure that their actions do not destroy or adversely modify critical habitat under section 7 of the ESA. Non-Federal entities that receive Federal funding, assistance, permits or otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, but the Federal agency has the legally binding duty to avoid destruction or adverse modification of critical habitat. We do not find that this proposed rule, if adopted, would significantly or uniquely affect small governments because it is not likely to produce a Federal mandate of $100 million or greater in any year; that is, it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act. In addition, the designation of critical habitat imposes no obligations on State, Territory, local, or tribal governments. Therefore, a Small Government Agency Plan is not required.

Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

The longstanding and distinctive relationship between the Federal and Tribal governments is defined by treaties, statutes, executive orders, judicial decisions, and co-management agreements, which differentiate tribal governments from the other entities that deal with, or are affected by, the Federal Government. This relationship has given rise to a special Federal trust responsibility involving the legal responsibilities and obligations of the United States toward Indian Tribes and the application of fiduciary standards of due care with respect to Indian lands, Tribal trust resources, and the exercise of Tribal rights. Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments outlines the responsibilities of the Federal Government in matters affecting Tribal interests. Section 161 of Public Law 108–199 (188 Stat. 452), as amended by section 518 of Public Law 108–447 (118 Stat. 3267), directs all Federal agencies to consult with Alaska Native corporations on the same basis as Indian Tribes under E.O. 13175.

Because all of the specific areas under consideration as potential critical habitat area were located seaward of the coastline, we preliminarily found that there were no Indian lands subject to consideration for possible relevant impacts. We will continue to work with NMFS' Tribal coordinator and regional Tribal liaisons to request input regarding tribal resources and issues, usual and accustomed areas, or the exercise of Tribal rights that may be impacted by critical habitat designations for green turtle DPSs. If we receive information on Tribal impacts in response to this proposed rule, we will consult and coordinate with the affected Tribe(s) or Native corporations. However, at this time and based on communications with NMFS' Tribal coordinator and regional Tribal liaisons, it does not appear that this designation will have ''Tribal implications'' (defined as having a substantial direct effect on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes) that would trigger a requirement to conduct Government to Government consultations.

Information Quality Act and Peer Review

The data and analyses supporting this proposed action have undergone a pre-dissemination review and have been determined to be in compliance with applicable information quality guidelines implementing the Information Quality Act (Section 515 of Pub. L. 106–554).

As described in the Office of Management and Budget (OMB) Final Information Quality Bulletin for Peer Review (70 FR 2664, January 14, 2005), the primary purpose of the Bulletin is to improve the quality and credibility of scientific information disseminated by the Federal Government by requiring peer review of ''influential scientific information'' and ''highly influential scientific information'' prior to public dissemination. ''Influential scientific information'' is defined as ''information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions.'' The Bulletin provides agencies broad discretion in determining the appropriate process and level of peer review. Stricter standards were established for the peer review of ''highly influential scientific assessments,'' defined as information whose ''dissemination could have a potential impact of more than $500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest.''

The information in the Draft Biological Report (NMFS 2023a) and the Draft Economic Report (NMFS 2023b) supporting this proposed critical habitat rule are considered influential scientific information and subject to peer review. To satisfy our requirements under the OMB Bulletin, we obtained independent peer review of these reports, and incorporated the peer reviewer comments as applicable into the draft reports prior to proposing critical habitat for designation. Comments received from peer reviewers of the Draft Biological Report and Draft Economic Report are available online at *https://www.noaa.gov/organization/information-technology/peer-review-plans.*

Executive Order 12630, Takings

Under E.O. 12630, Federal agencies must consider the effects of their actions on constitutionally protected private property rights and avoid unnecessary takings of property. A taking of property includes actions that result in physical invasion or occupancy of private property that substantially affect its value or use. In accordance with E.O. 12630, the proposed rule does not have significant takings implications. The designation of critical habitat affects only Federal agency actions. Further, no areas of private property exist within the proposed critical habitat, and therefore none would be affected by this action. Therefore, a takings implication assessment is not required.

Executive Order 12866, Regulatory Planning and Review

OMB has determined that this proposed rule is significant for purposes of E.O. 12866 review. The Draft Economic Report (NMFS 2023b) and Draft ESA Section 4(b)(2) Report (NMFS 2023c) have been prepared to support the exclusion process under section 4(b)(2) of the ESA and our consideration of alternatives to this rulemaking as required under E.O. 12866. To review these documents, see **ADDRESSES**.

Based on the Draft Economic Report (NMFS 2023b), the total estimated present value of the quantified incremental impacts of the proposed critical habitat designation is approximately $900,000 (rounded total) in annualized costs: $639,000 for the North Atlantic DPS; $25,000 for the South Atlantic DPS; $125,000–$131,000 for the East Pacific DPS; $71,000 for the Central North Pacific DPS; $18,000 for the Central South Pacific DPS; and $28,000 for the Central West Pacific DPS. These total impacts include the additional administrative efforts necessary to consider critical habitat in section 7 consultations. Overall, economic impacts are expected to be small and mainly are associated with the administrative costs borne by Federal agencies. While there are expected economic benefits of designating critical habitat, insufficient data are available to monetize them.

Executive Order 13132, Federalism

Executive Order 13132 requires agencies to take into account any federalism impacts of regulations under development. It includes specific consultation directives for situations in which a regulation may preempt state law or impose substantial direct compliance costs on State, Territory, and local governments (unless required by statute). Pursuant to E.O. 13132, we determined that this proposed rule does not have significant federalism effects and that a federalism assessment is not required. The designation of critical habitat directly affects the responsibilities of Federal agencies. As a result, the proposed rule does not have substantial direct effects on the States, Territories, on the relationship between the national government and the States or Territories, or on the distribution of power and responsibilities among the various levels of government, as specified in the Order. State, Territories, or local governments may be indirectly affected by the proposed designation if they require Federal funds or formal approval or authorization from a Federal agency as a prerequisite to conducting an action. In these cases, the State, Territories, or local government agency may participate in the section 7 consultation as a third party. However, in keeping with Department of Commerce policies and consistent with ESA regulations at 50 CFR 424.16(c)(1)(ii), we will request information on this proposed rule from the appropriate resource agencies in Florida, North Carolina, Texas, Puerto Rico, USVI, California, Hawai'i, American Samoa, Guam, and CNMI.

Executive Order 13211, Energy Supply, Distribution, and Use

E.O. 13211 requires agencies to prepare a Statement of Energy Effects when undertaking a significant energy action. Under E.O. 13211, a significant energy action means any action by an agency that is expected to lead to the promulgation of a final rule or regulation that is a significant regulatory action under E.O. 12866 and is likely to have a significant adverse effect on the supply, distribution, or use of energy. We have considered the potential impacts of this proposed action on the supply, distribution, or use of energy and find that the designation of critical habitat would not have impacts that exceed the thresholds identified in OMB's memorandum M–01–27, Guidance for Implementing E.O. 13211. Thus, this proposed designation, if finalized, would not have a significant adverse effect within the meaning of the executive order. The energy impacts analysis is presented in the Draft Economic Analysis (NMFS 2023b).

List of Subjects

50 CFR Parts 223 and 224

Endangered and threatened species, Exports, Imports, Transportation.

50 CFR Part 226

Endangered and threatened species.

Dated: June 28, 2023.

Samuel D. Rauch, III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons set out in the preamble, NMFS proposes to amend 50 CFR parts 223, 224, and 226 as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

■ 1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531–1543; subpart B, § 223.201–202 also issued under 16 U.S.C. 1361 *et seq.;* 16 U.S.C. 5503(d) for § 223.206(d)(9).

■ 2. In § 223.102, amend the table in paragraph (e), by revising the entries for ''Sea turtle, green (Central North Pacific DPS),'' ''Sea turtle, green (East Pacific DPS),'' ''Sea turtle, green (North Atlantic DPS),'' and ''Sea turtle, green (South Atlantic DPS)'' under the ''Reptiles'' subheading to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

* * * * *

(e) * * *

Species [1]			Citation(s) for listing determination(s)	Critical habitat	ESA rules
Common name	Scientific name	Description of listed entity			
*	*	* *	*	*	*
		Reptiles [2]			
Sea turtle, green (Central North Pacific DPS).	*Chelonia mydas*	Green sea turtles originating from the Central North Pacific Ocean, bounded by the following coordinates: 41° N, 169° E in the northwest; 41° N, 143° W in the northeast; 9° N, 125° W in the southeast; and 9° N, 175° W in the southwest.	81 FR 20058, April 6, 2016.	226.208	223.205, 223.206, 223.207.
*	*	* *	*	*	*
Sea turtle, green (East Pacific DPS).	*Chelonia mydas*	Green sea turtles originating from the East Pacific Ocean, bounded by the following lines and coordinates: 41° N, 143° W in the northwest; 41° N Lat. in the north; along the western coasts of the Americas; 40° S Lat. in the south; and 40° S, 96° W in the southwest.	81 FR 20058, April 6, 2016.	226.208	223.205, 223.206, 223.207.
Sea turtle, green (North Atlantic DPS).	*Chelonia mydas*	Green sea turtles originating from the North Atlantic Ocean, bounded by the following lines and coordinates: 48° N Lat. in the north, along the western coasts of Europe and Africa (west of 5.5° W Long.); north of 19° N Lat. in the east; bounded by 19° N, 65.1° W to 14° N, 65.1° W then 14° N, 77° W in the south and west; and along the eastern coasts of the Americas (north of 7.5° N, 77° W).	81 FR 20058, April 6, 2016.	226.208	223.205, 223.206, 223.207.
*	*	* *	*	*	*
Sea turtle, green (South Atlantic DPS).	*Chelonia mydas*	Green sea turtles originating from the South Atlantic Ocean, bounded by the following lines and coordinates: along the northern and eastern coasts of South America (east of 7.5° N, 77° W); 14° N, 77° W to 14° N, 65.1° W to 19° N, 65.1° W in the north and west; 19° N Lat. in the northeast; 40° S, 19° E in the southeast; and 40° S Lat. in the south.	81 FR 20058, April 6, 2016.	226.208	223.205, 223.206, 223.207.
*	*	* *	*	*	*

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement, see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement, see 56 FR 58612, November 20, 1991).

[2] Jurisdiction for sea turtles by the Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, is limited to turtles while in the water.

PART 224—ENDANGERED MARINE AND ANADROMOUS SPECIES

■ 3. The authority citation for part 224 continues to read as follows:

Authority: 16 U.S.C. 1531–1543 and 16 U.S.C. 1361 *et seq.*

■ 4. In § 224.101, amend the table in paragraph (h), by revising the entries for ''Sea turtle, green (Central South Pacific DPS)'' and ''Sea turtle, green (Central West Pacific DPS)'' under the ''Reptiles'' subheading to read as follows:

§ 224.101 Enumeration of endangered marine and anadromous species.

* * * * *

(h) * * *

Species [1]			Citation(s) for listing determination(s)	Critical habitat	ESA rules
Common name	Scientific name	Description of listed entity			
		Reptiles [2]			
*	*	* *	*	*	*
Sea turtle, green (Central South Pacific DPS).	*Chelonia mydas*	Green sea turtles originating from the Central South Pacific Ocean, bounded by the following coordinates: 9° N, 175° W in the northwest; 9° N, 125° W in the northeast; 40° S, 96° W in the southeast; 40° S, 176° E in the southwest; and 13° S, 171° E in the west.	81 FR 20058, April 6, 2016.	226.208	224.104
Sea turtle, green (Central West Pacific DPS).	*Chelonia mydas*	Green sea turtles originating from the Central West Pacific Ocean, bounded by the following coordinates: 41° N, 146° E in the northwest; 41° N, 169° E in the northeast; 9° N, 175° W in the east; 13° S, 171° E in the southeast; along the northern coast of the island of New Guinea; and 4.5° N, 129° E in the west.	81 FR 20058, April 6, 2016.	226.208	224.104
*	*	* *	*	*	*

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement, see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement, see 56 FR 58612, November 20, 1991).

[2] Jurisdiction for sea turtles by the Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, is limited to turtles while in the water.

PART 226—DESIGNATED CRITICAL HABITAT

■ 5. The authority citation of part 226 continues to read as follows:

Authority: 16 U.S.C. 1533.

■ 6. Revise § 226.208 to read as follows:

§ 226.208 Critical habitat for the North Atlantic, South Atlantic, East Pacific, Central North Pacific, Central South Pacific, and Central West Pacific distinct population segments (DPSs) of green turtles (*Chelonia mydas*).

Critical habitat is designated for the North Atlantic, South Atlantic, East Pacific, Central North Pacific, Central South Pacific, and Central West Pacific green turtle DPSs as described in this section. The maps in paragraph (h) of this section, clarified by the textual descriptions in this section, are the definitive sources for determining the critical habitat boundaries.

(a) *Critical habitat designated for green turtles DPSs within U.S. jurisdiction.* Critical habitat is designated for green turtles DPSs within U.S. jurisdiction in waters off the coasts of the following States and Territories: Florida, Texas, Louisiana, Mississippi, Alabama, North Carolina, Puerto Rico, U.S. Virgin Islands, California, Hawai'i, American Samoa, Pacific Remote Island Areas, Guam, and Commonwealth of Northern Mariana Islands. We identified the following physical or biological features essential to the conservation of green turtles (some features were not identifiable or did not occur within U.S. jurisdiction for some DPSs):

(1) *Reproductive (North Atlantic, South Atlantic, Central North Pacific, Central South Pacific, and Central West Pacific DPSs).* From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches designated as critical habitat by U.S. Fish and Wildlife Service (USFWS), to allow for the transit, mating, and internesting of reproductive individuals and the transit of post-hatchlings.

(2) *Migratory (North Atlantic and East Pacific DPSs).* From the mean high water line to 20 m depth (North Atlantic DPS) or 10 km offshore (East Pacific DPS), sufficiently unobstructed waters that allow for unrestricted transit of reproductive individuals between benthic foraging/resting and reproductive areas.

(3) *Benthic foraging/resting (North Atlantic, South Atlantic, East Pacific, Central North Pacific, Central South Pacific, and Central West Pacific DPSs).* From the mean high water line to 20 m depth, underwater refugia and food resources (*i.e.,* seagrasses, macroalgae, and/or invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

(4) *Surface-pelagic foraging/resting (North Atlantic DPS).* Convergence zones, frontal zones, surface-water downwelling areas, the margins of major boundary currents, and other areas that result in concentrated components of the *Sargassum*-dominated drift community, as well as the currents which carry turtles to *Sargassum*-dominated drift communities, which provide sufficient food resources and refugia to support the survival, growth, and development of post-hatchlings and surface-pelagic juveniles, and which are located in sufficient water depth (at least 10 m) to ensure offshore transport via ocean currents to areas which meet forage and refugia requirements.

(b) *Critical habitat boundaries for the North Atlantic DPS of green sea turtles.* Critical habitat for the North Atlantic DPS includes all marine waters within the designated areas as shown by the maps in paragraph (h)(1) of this section and those prepared and made available by NMFS pursuant to 50 CFR 424.18.

(1) *Florida.* All nearshore areas from the mean high water line to 20 m depth. These areas contain reproductive, migratory, and benthic foraging/resting essential features.

(2) *Texas.* From the Mexico border to and including Galveston Bay, all nearshore areas from the mean high water line to 20 m depth. These areas contain benthic foraging/resting essential features.

(3) *North Carolina.* From the South Carolina border to but not including Albemarle and Currituck Sounds, all nearshore areas from the mean high water line to 20 m depth. These areas contain benthic foraging/resting essential features.

(4) *Puerto Rico.* All nearshore areas from the mean high water line to 20 m depth of: Culebra Island, the southern coast of Mona Island, the eastern and southern coasts of Vieques Island, the

reproductive areas of Maunabo and Guayama, and the northern coast of Puerto Rico Island including Punta Salinas, Escambron, and Arrecifes Isla Verde Natural Reserve. These areas contain benthic foraging/resting essential features. The southern coast of Mona Island, the eastern and southern coasts of Vieques Island, and the reproductive areas of Maunabo and Guayama also contain the reproductive essential feature.

(5) *Gulf of Mexico and Atlantic Ocean (Sargassum Habitat).* In the Gulf of Mexico, surface-pelagic areas from 10 m depth to the outer boundary of the U.S. Exclusive Economic Zone (EEZ). In the Atlantic Ocean, surface-pelagic areas from 10 m depth to the outer boundary of the U.S. EEZ, with the exception of areas north of Cape Canaveral, where the nearshore boundary follows the edge of the Gulf Stream (as defined in the critical habitat designation for loggerhead turtle *Sargassum* habitat, § 226.223 (a)(37)). These areas contain surface-pelagic foraging/resting essential features.

(c) *Critical habitat boundaries for the South Atlantic DPS of green sea turtles.* Critical habitat for the South Atlantic DPS includes all marine waters within the designated areas of U.S. Virgin Islands (USVI) as shown by the maps in paragraph (h)(2) of this section and those prepared and made available by NMFS pursuant to 50 CFR 424.18.

(1) *USVI.* All nearshore areas from the mean high water line to 20 m depth of: St. Croix, St. Thomas, St. John, and other islands. These areas contain benthic foraging/resting essential features. St. Croix also contains the reproductive essential feature.

(2) [Reserved]

(d) *Critical habitat boundaries for the East Pacific DPS of green sea turtles.* Critical habitat for the East Pacific DPS includes all marine waters within the designated areas of California as shown by the maps in paragraph (h)(3) of this section and those prepared and made available by NMFS pursuant to 50 CFR 424.18.

(1) *California (Migratory).* From the Mexico border to and including North San Diego Bay, all nearshore areas from the mean high water line to 10 km offshore. These areas contain the migratory essential feature.

(2) *California (Foraging/resting).* All nearshore areas from the mean high water line to 20 m depth, from and including San Diego Bay to and including Santa Monica Bay (except for the area between Oceanside and San Onofre, where no data were available) and surrounding Catalina Island. These areas contain benthic foraging/resting essential features.

(e) *Critical habitat boundaries for the Central North Pacific DPS of green sea turtles.* Critical habitat for the Central North Pacific DPS includes all marine waters within the designated areas of Hawai‘i as shown by the maps in paragraph (h)(4) of this section and those prepared and made available by NMFS pursuant to 50 CFR 424.18.

(1) *Hawai‘i.* All nearshore areas from the mean high water line to 20 m depth of: Hawai‘i, Maui, Lana‘i, Moloka‘i, Kaho‘olawe, O‘ahu, Kaua‘i, Lalo/French Frigate Shoals, Kamole/Laysan Island, Kapou/Lisianski Island, Manawai/Pearl & Hermes Atoll, Kuaihelani/Midway Atoll, Kuaihelani/Midway Atoll, and Hōlanikū/Kure Atoll. These areas contain reproductive and benthic foraging/resting essential features.

(2) [Reserved]

(f) *Critical habitat boundaries for the Central South Pacific DPS of green sea turtles.* Critical habitat for the East Pacific DPS includes all marine waters within the designated areas as shown by the maps in paragraph (h)(5) of this section and those prepared and made available by NMFS pursuant to 50 CFR 424.18.

(1) *American Samoa.* All nearshore areas from the mean high water line to 20 m depth of: Rose Atoll (Motu o Manu), Swains Island, Ta‘ū Island, Aunuu Island, and Tutuila Island, and the reproductive area of Ofu and Olosega. These areas contain benthic foraging/resting essential features. Rose Atoll (Motu o Manu), Swains Island, Ta‘ū Island, and Aunuu Island also contain the reproductive essential feature.

(2) *Palmyra Atoll.* All nearshore areas from the mean high water line to 20 m depth. These areas contain essential reproductive and benthic foraging/resting features.

(3) *Jarvis Island.* All nearshore areas from the mean high water line to 20 m depth. These areas contain benthic foraging/resting essential features.

(4) *Baker Island.* All nearshore areas from the mean high water line to 20 m depth. These areas contain benthic foraging/resting essential features.

(5) *Howland Island.* All nearshore areas from the mean high water line to 20 m depth. These areas contain benthic foraging/resting essential features.

(g) *Critical habitat boundaries for the Central West Pacific DPS of green sea turtles.* Critical habitat for the East Pacific DPS includes all marine waters within the designated areas as shown by the maps in paragraph (h)(6) of this section and those prepared and made available by NMFS pursuant to 50 CFR 424.18.

(1) *Guam.* All nearshore areas from the mean high water line to 20 m depth. These areas contain reproductive and benthic foraging/resting essential features.

(2) *Commonwealth of the Northern Mariana Islands (CNMI).* All nearshore areas from the mean high water line to 20 m depth of: Saipan, Tinian, Rota, Aguijan, Pagan, Alamagan, and Sarigan, and the reproductive area of Agrihan. These areas contain benthic foraging/resting essential features. Saipan, Tinian, Rota, Pagan, and the reproductive area of Agrihan also contain the reproductive essential feature.

(h) *Maps of green turtle critical habitat.* Spatial data for these critical habitats and mapping tools are maintained on our website and are available for public use (*www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat*).

(1) Maps of critical habitat for the North Atlantic DPS of green turtles.

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Figure 1 to paragraph (h)(1)

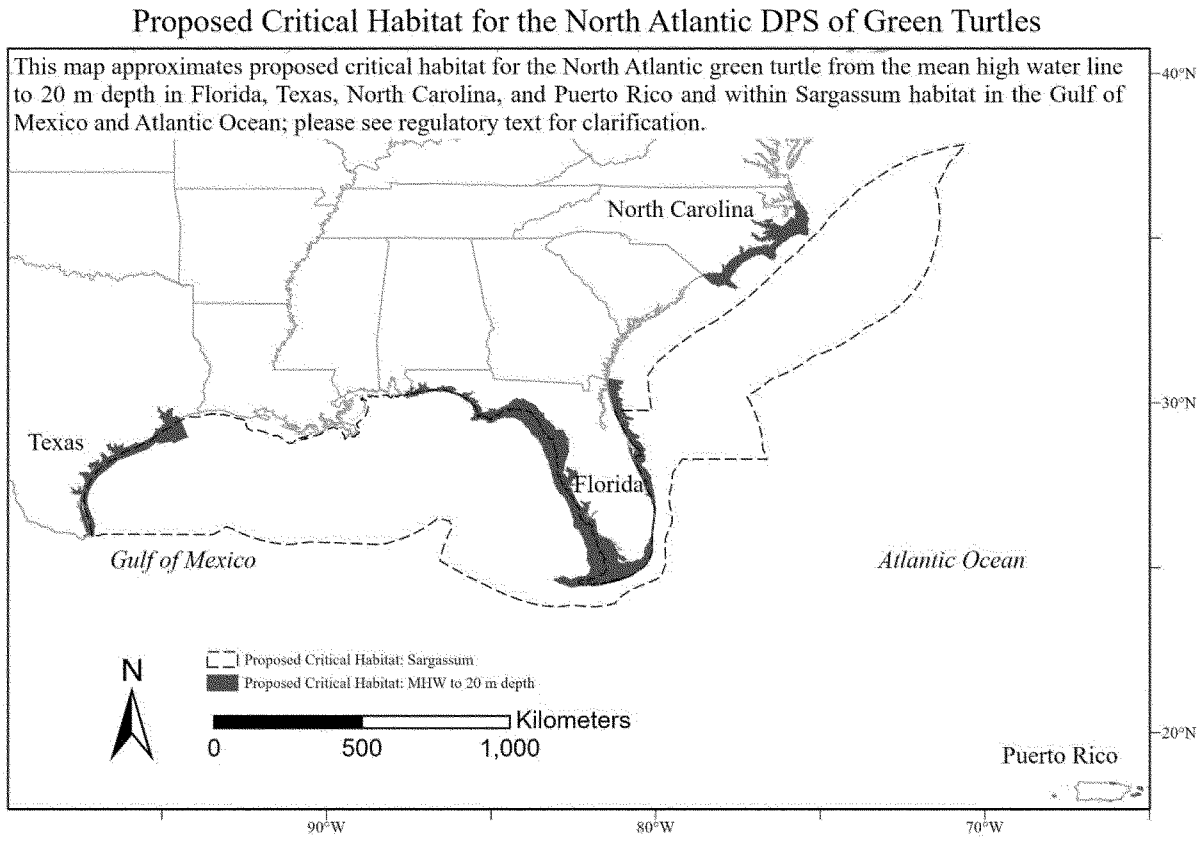
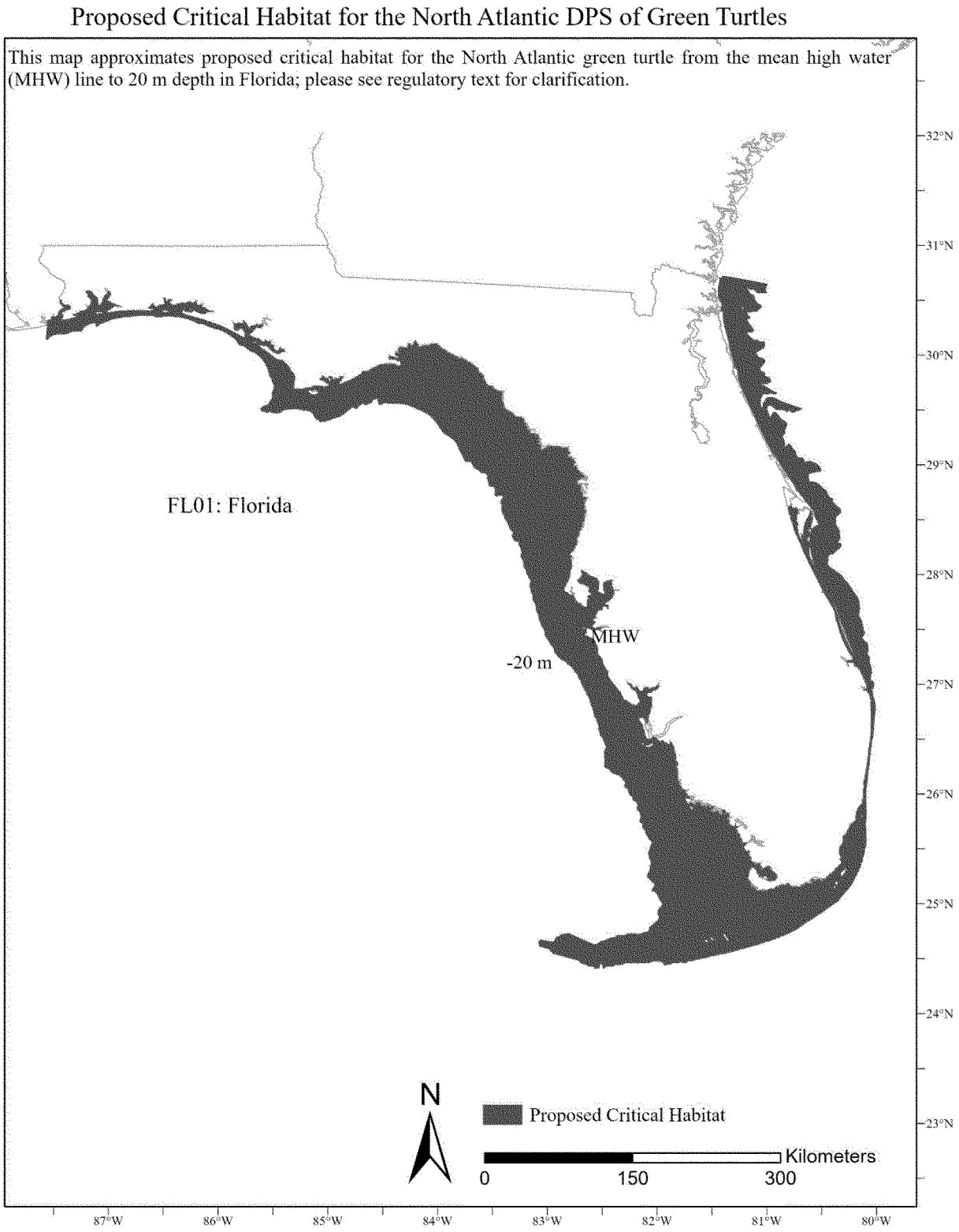


Figure 1a to paragraph (h)(1)



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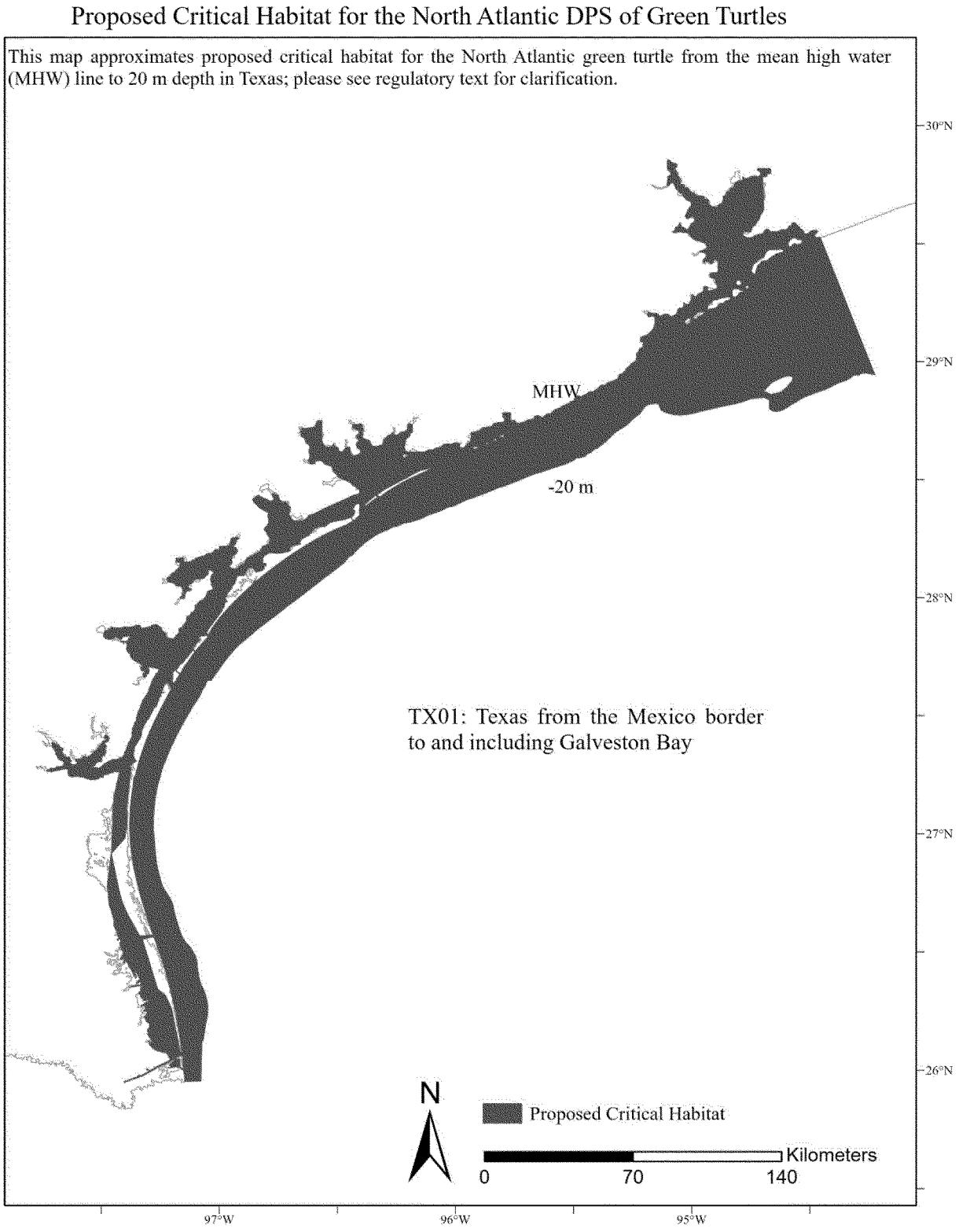

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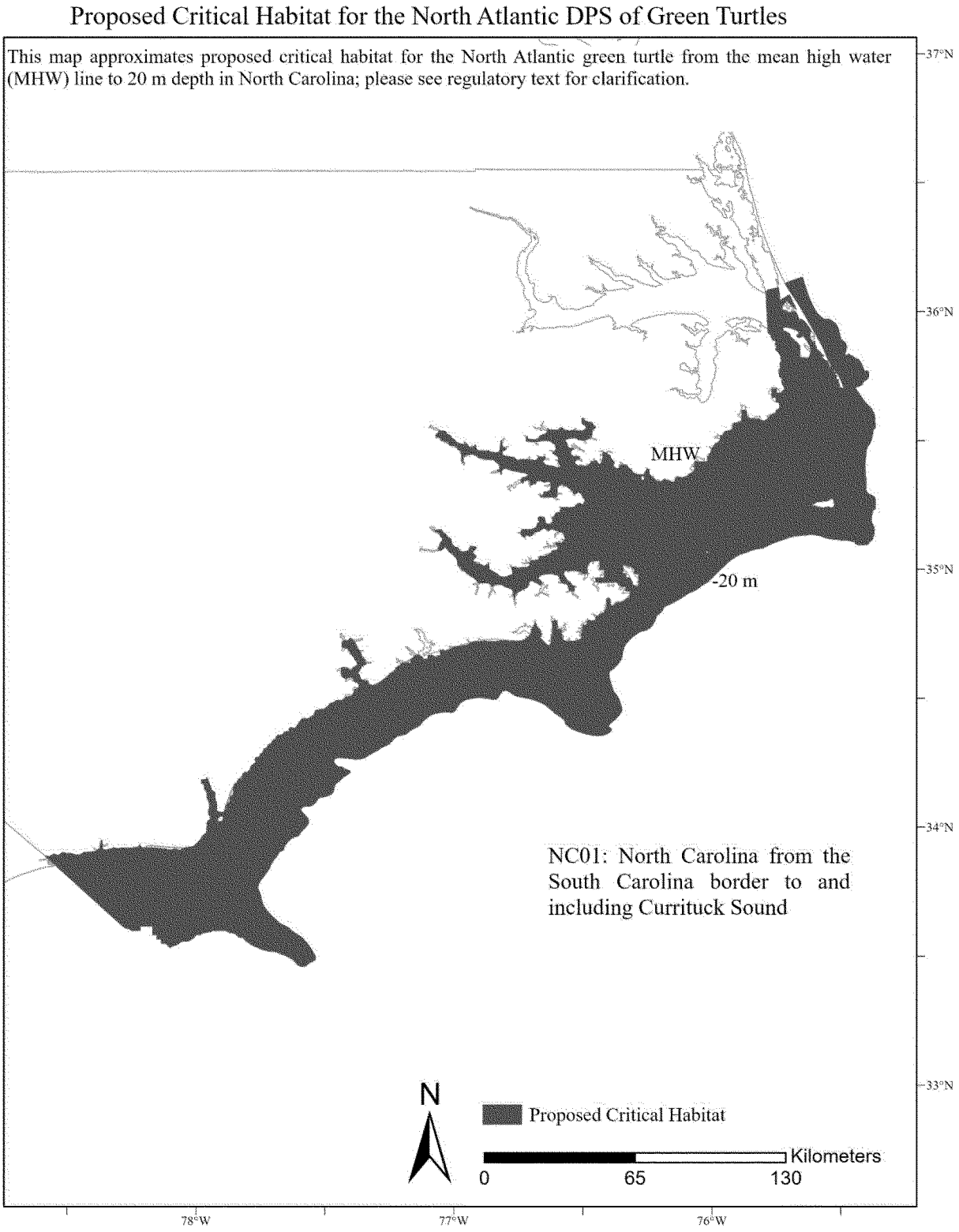

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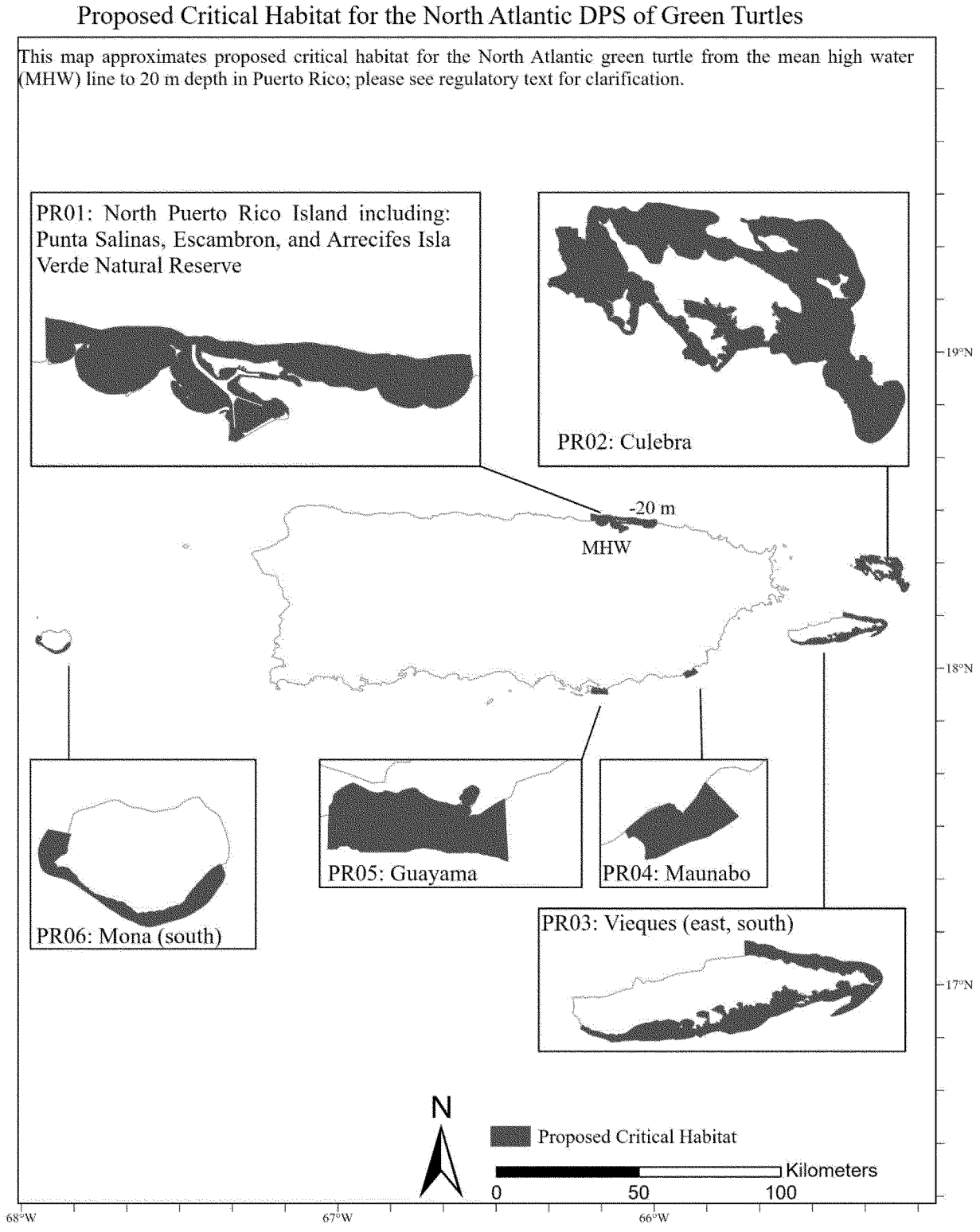

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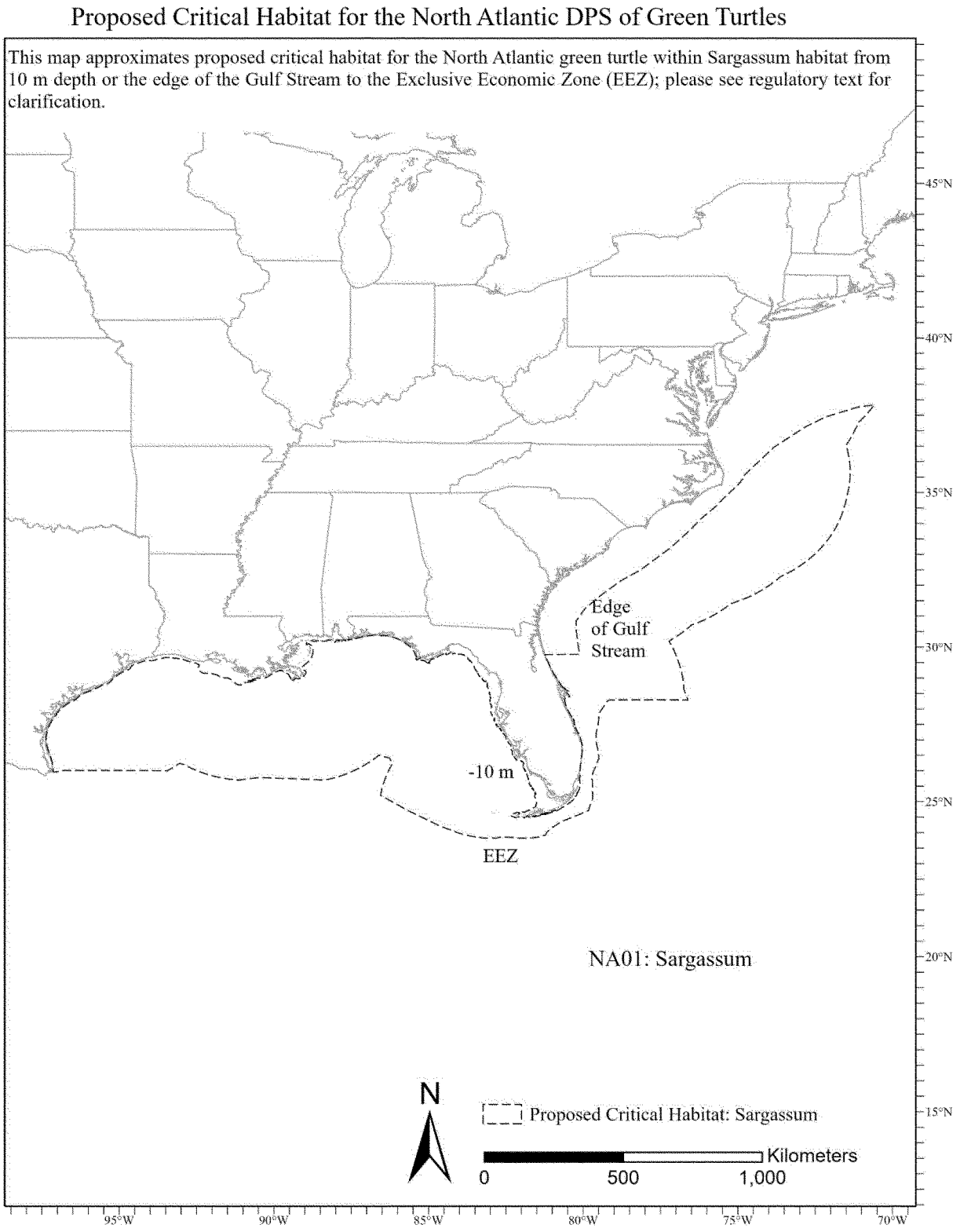
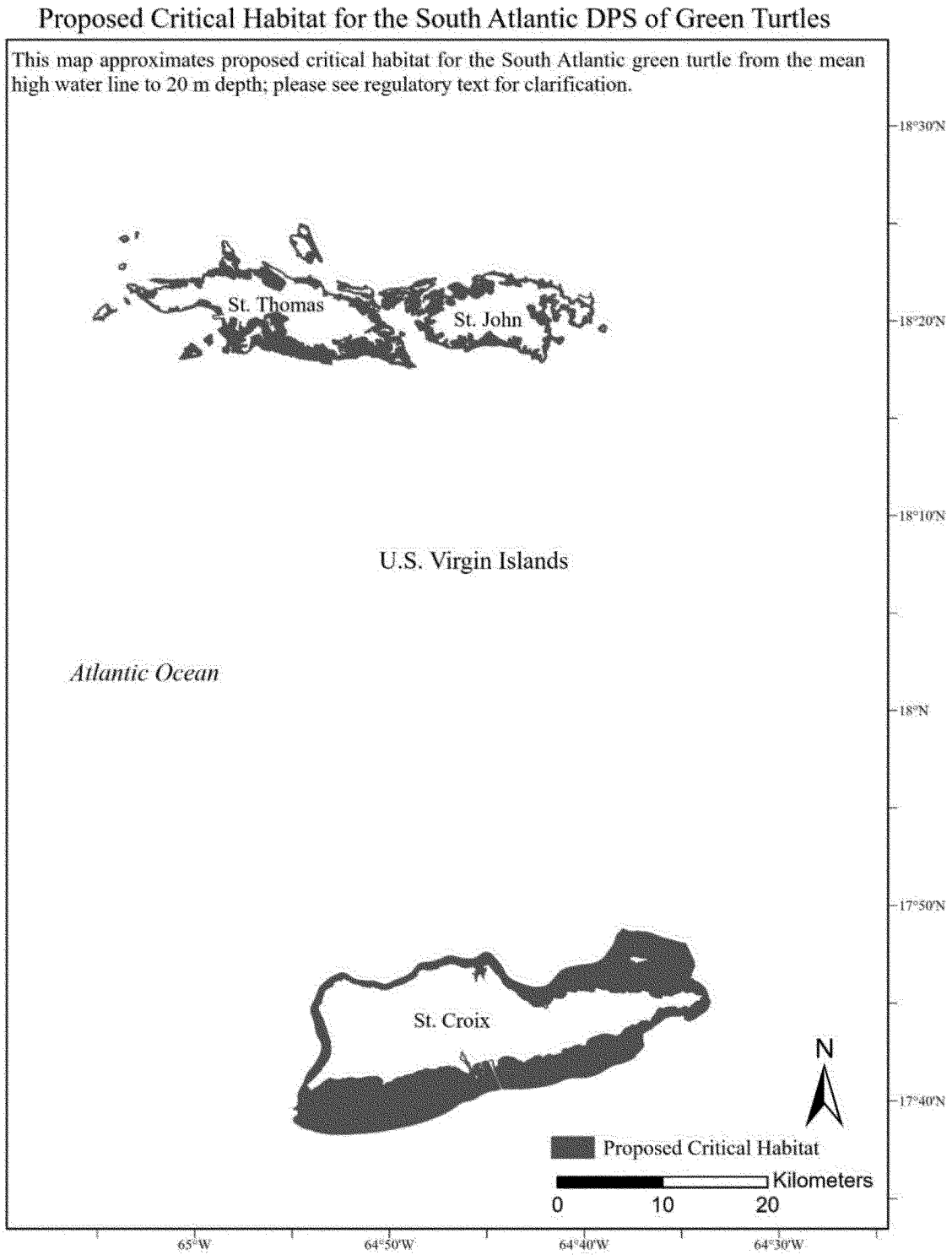


Figure 2 to paragraph (h)(2)

(2) Maps of critical habitat for the South Atlantic DPS of green turtles.



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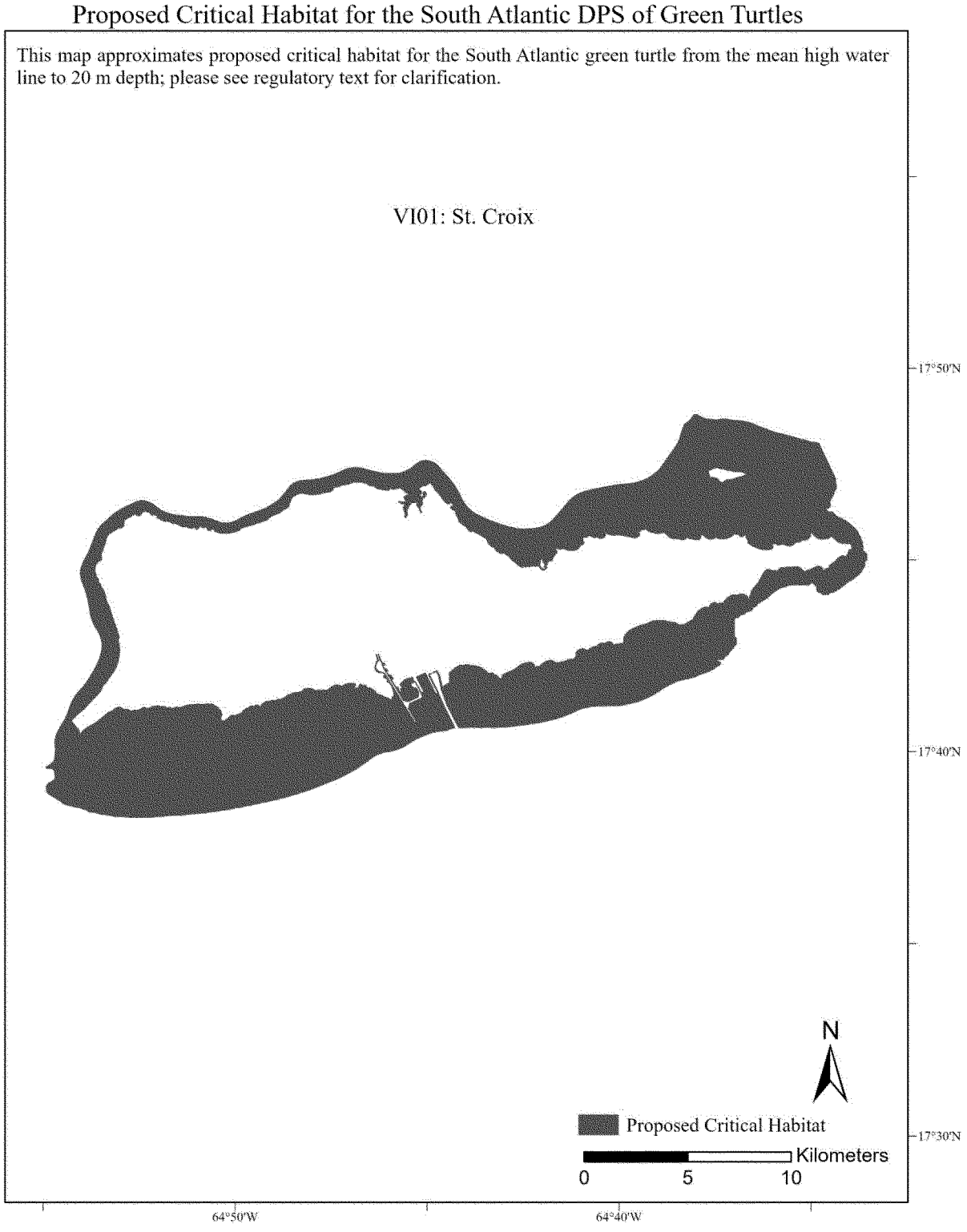

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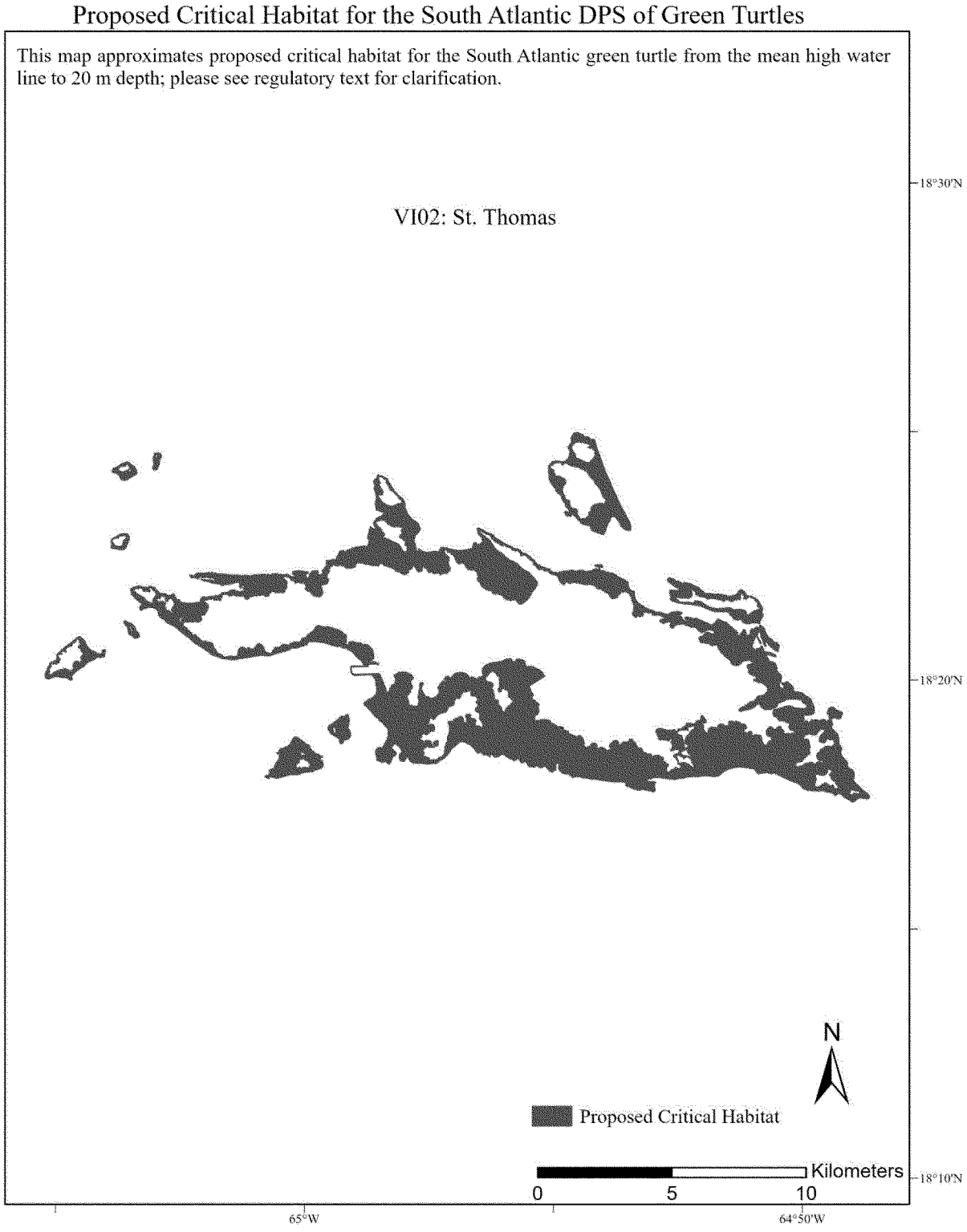

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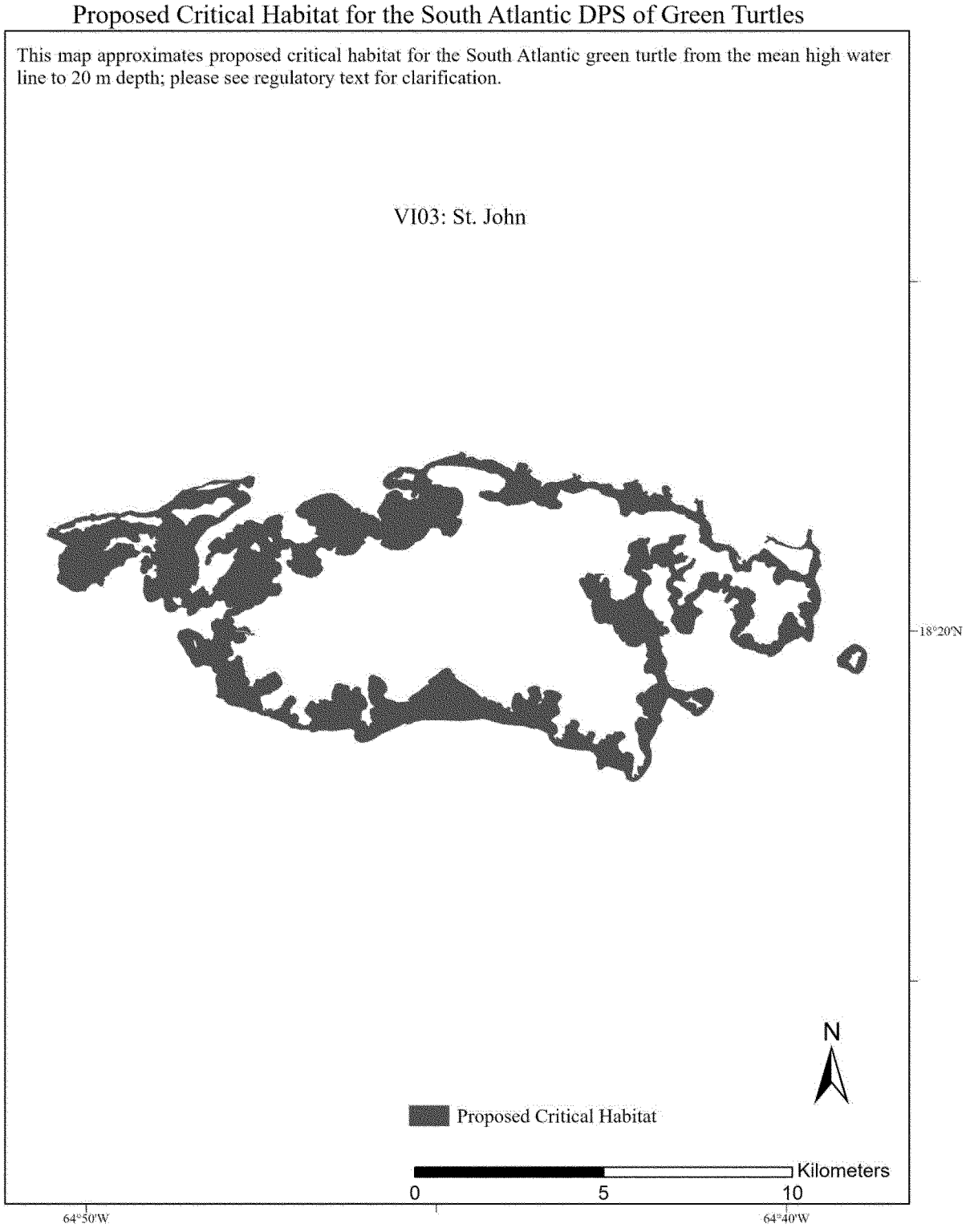


Figure 3 to paragraph (h)(3)

(3) Maps of critical habitat for the East Pacific DPS of green turtles.

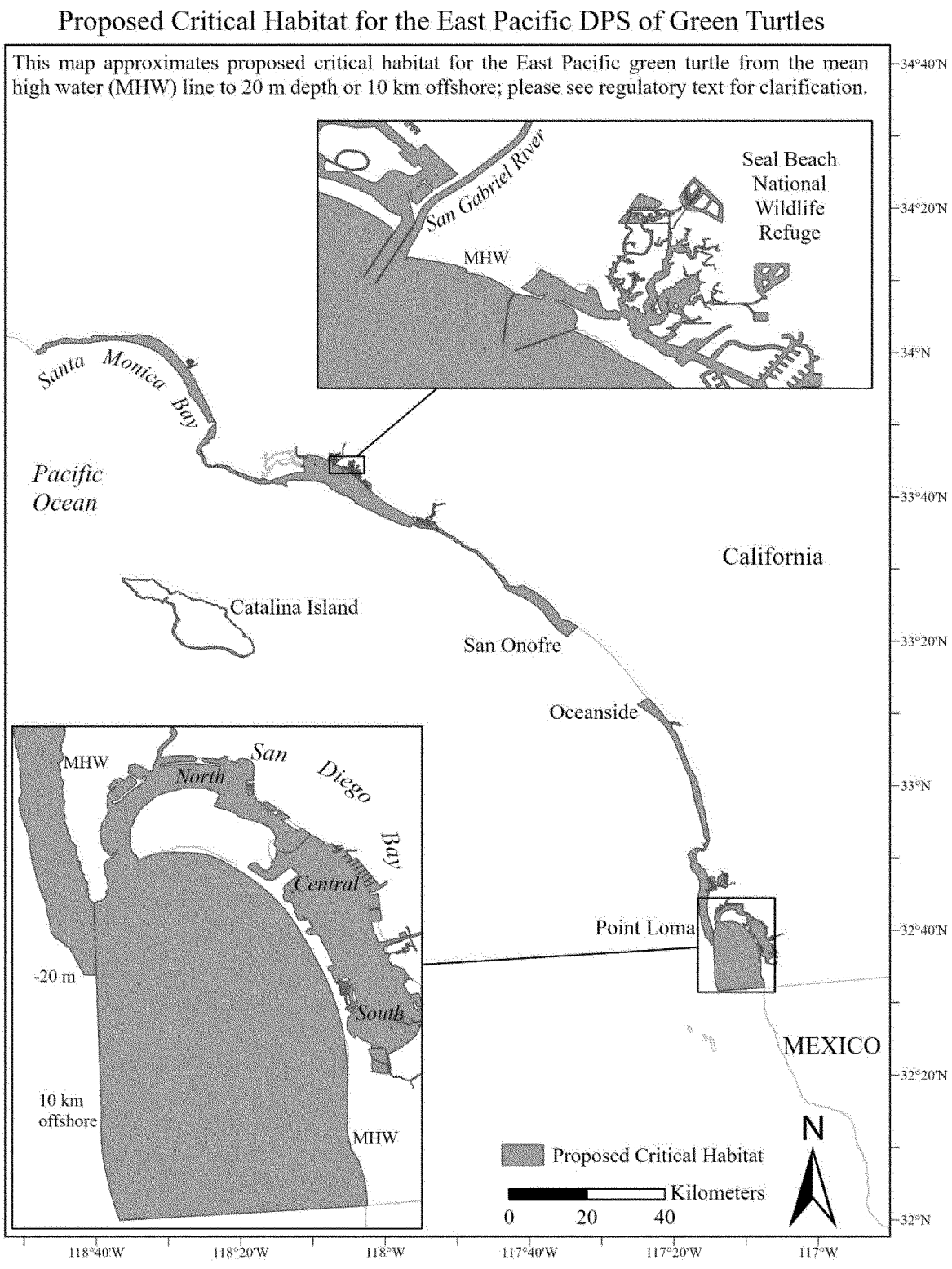


Figure 3a to paragraph (h)(3)

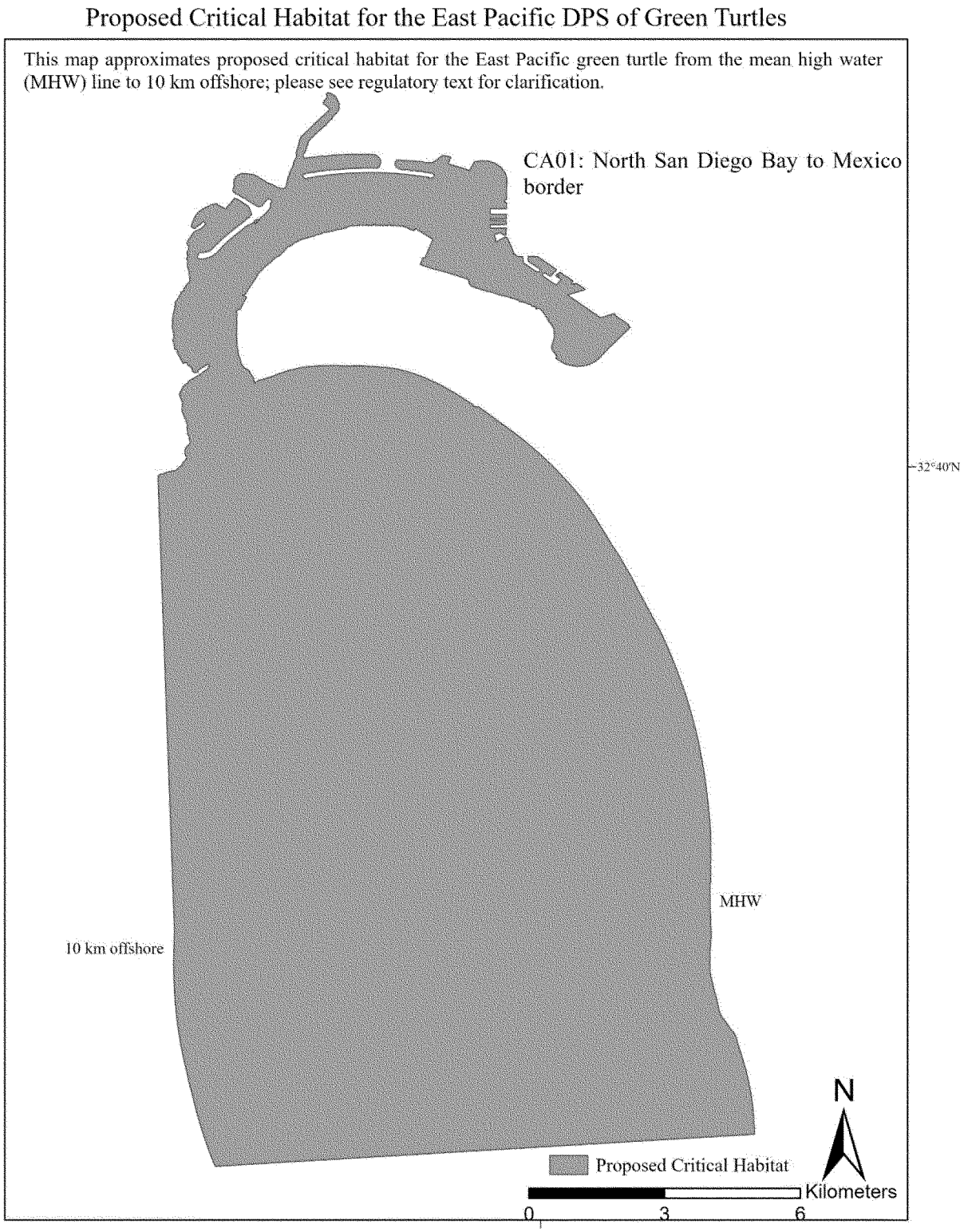
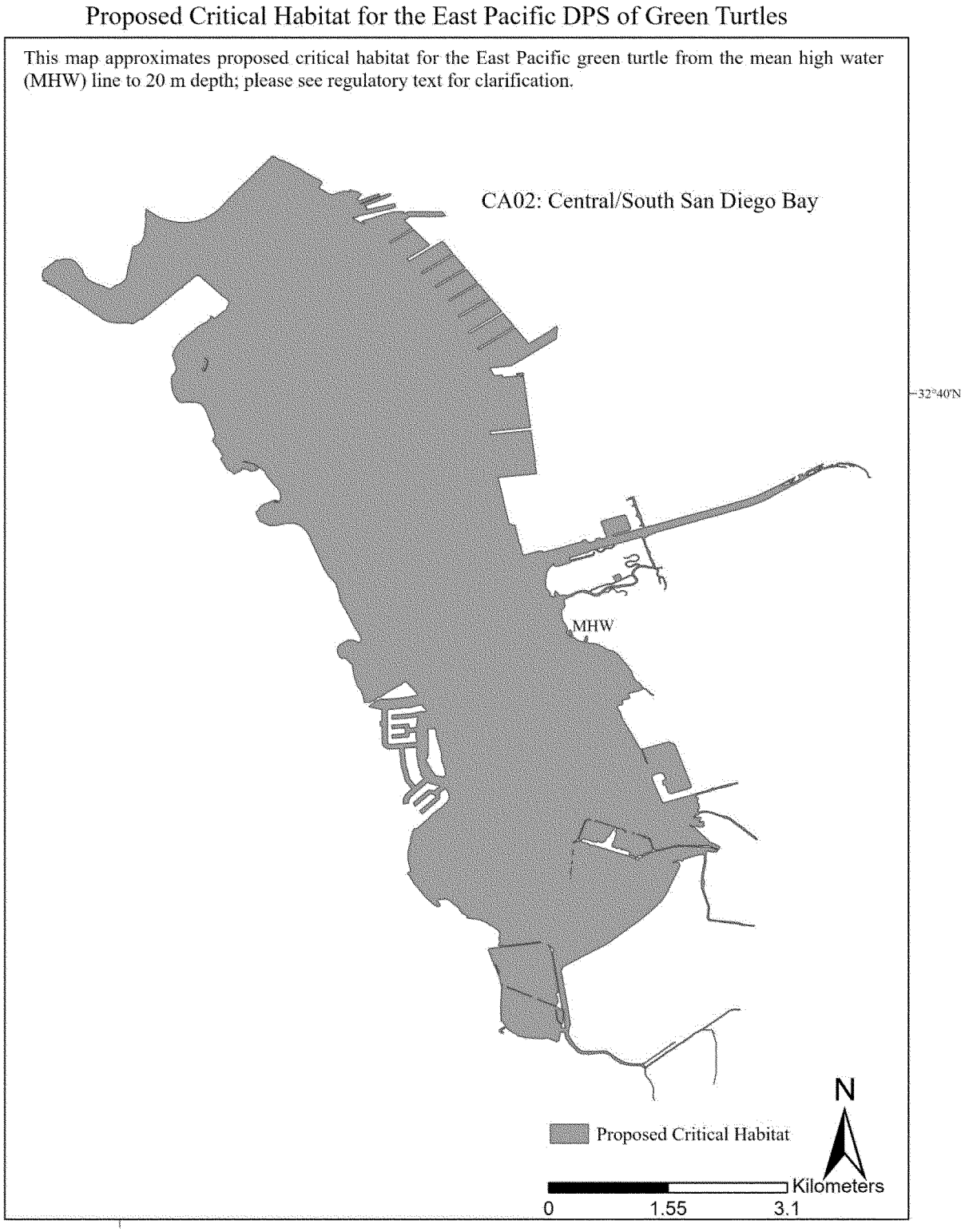


Figure 3b to paragraph (h)(3)



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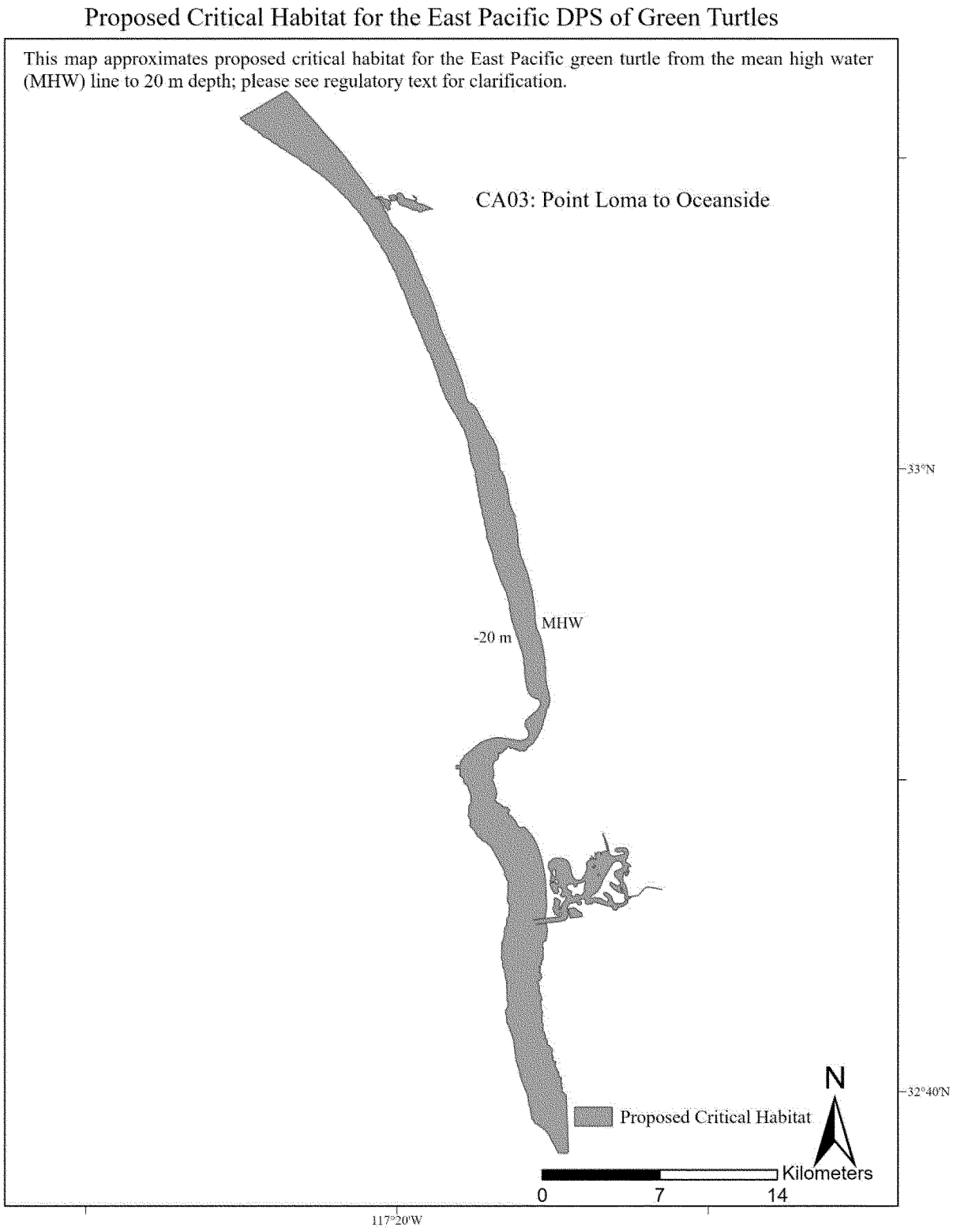

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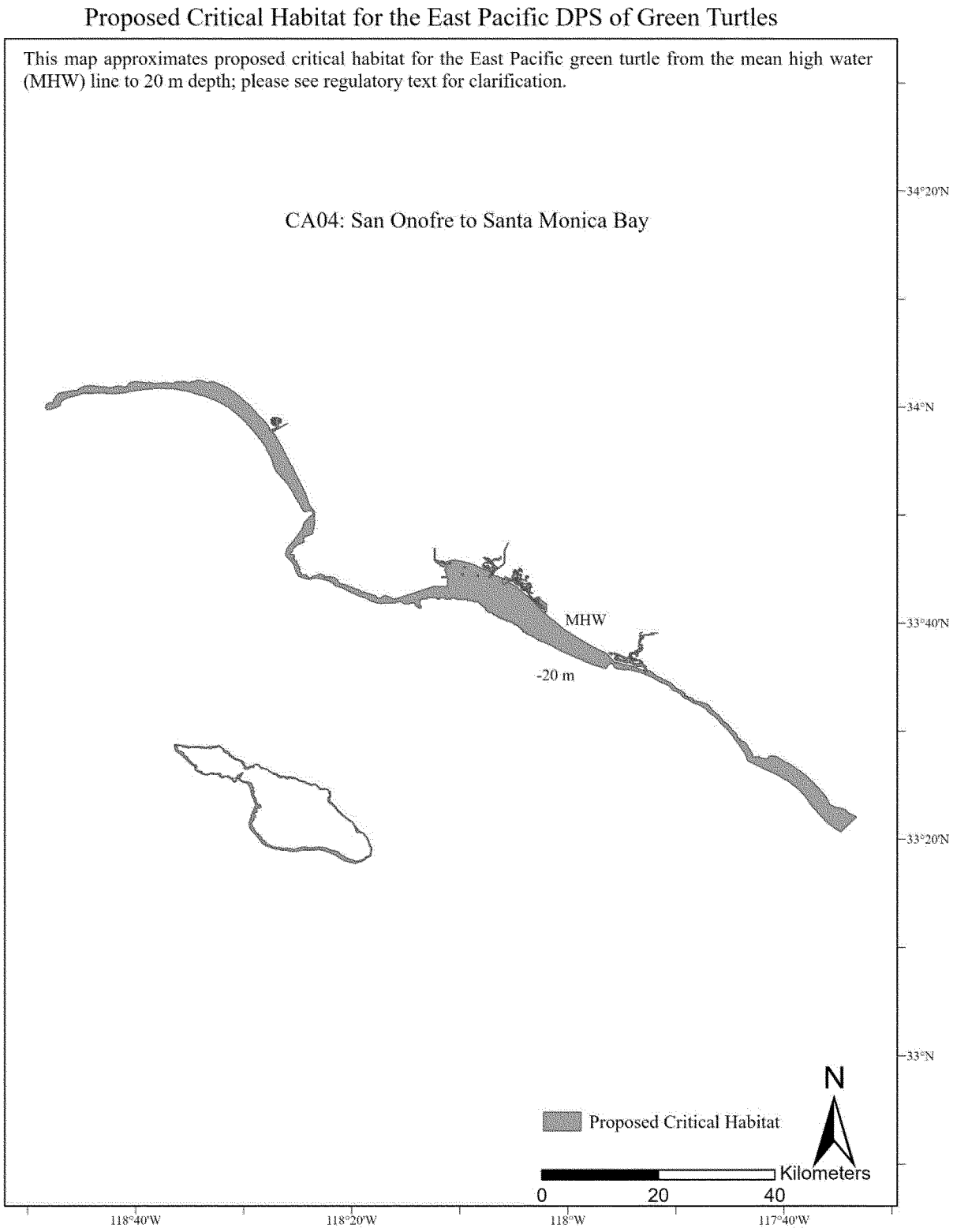


Figure 4 to paragraph (h)(4)

(4) Maps of critical habitat for the Central North Pacific DPS of green turtles.

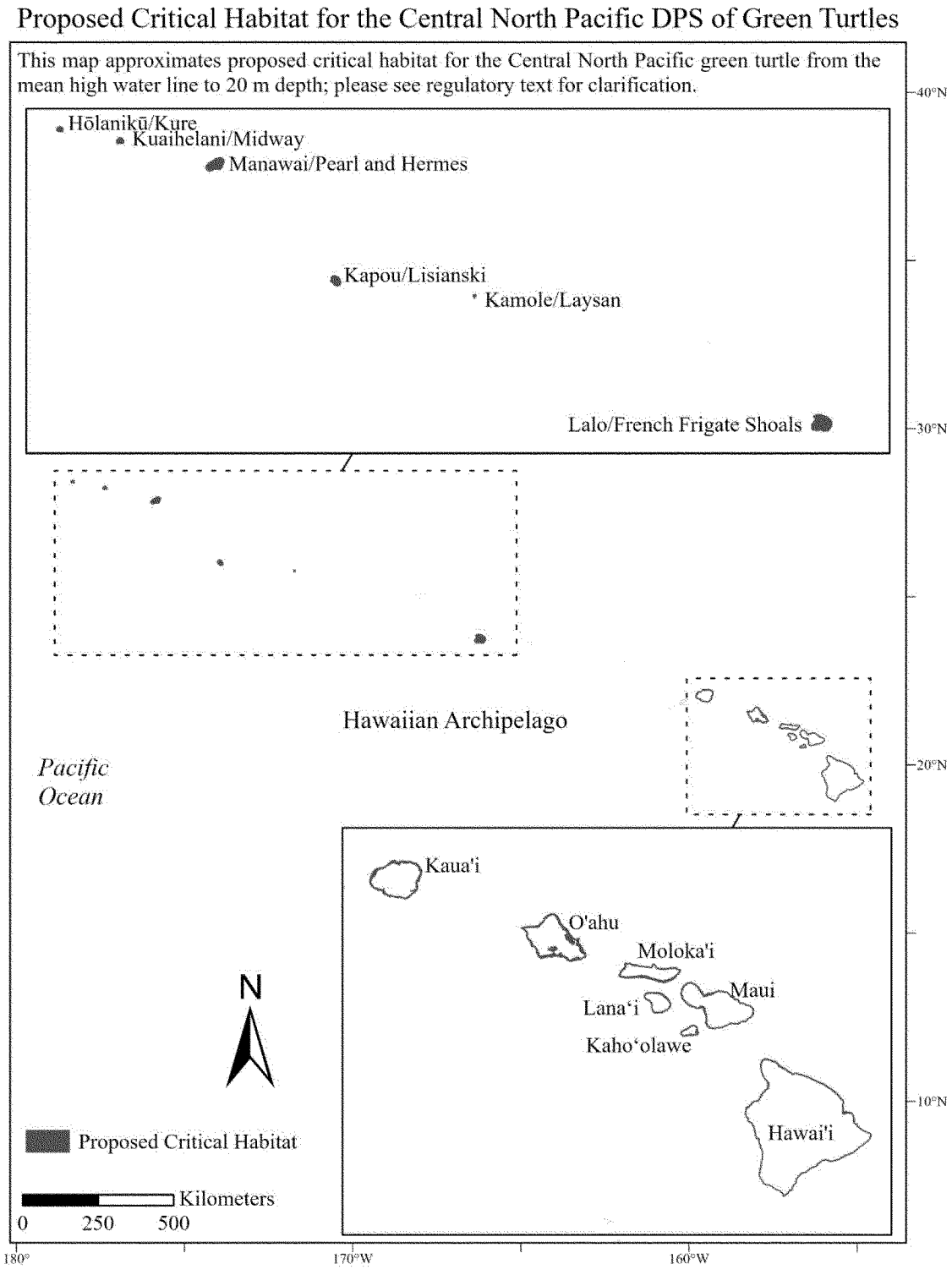
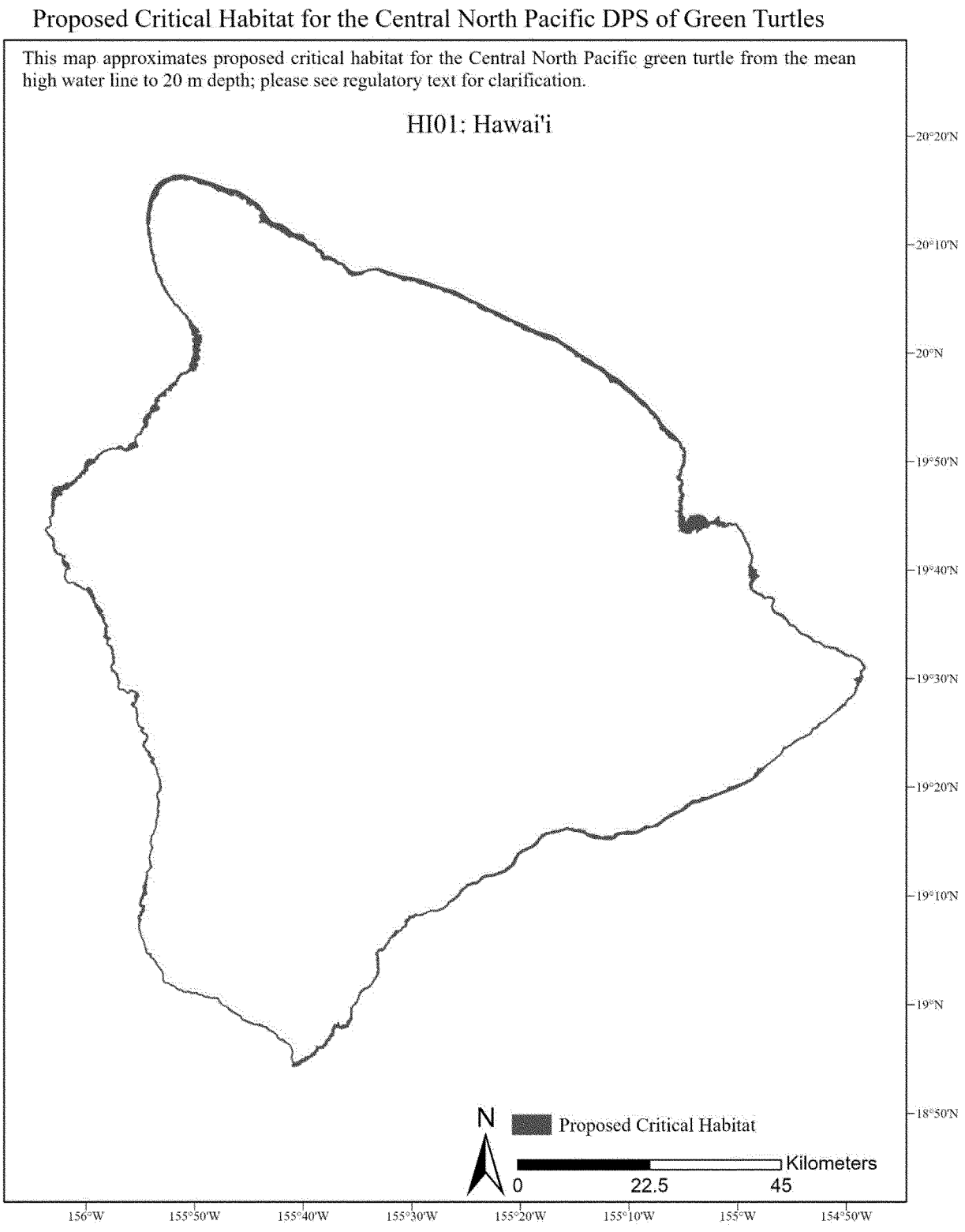


Figure 4a to paragraph (h)(4)



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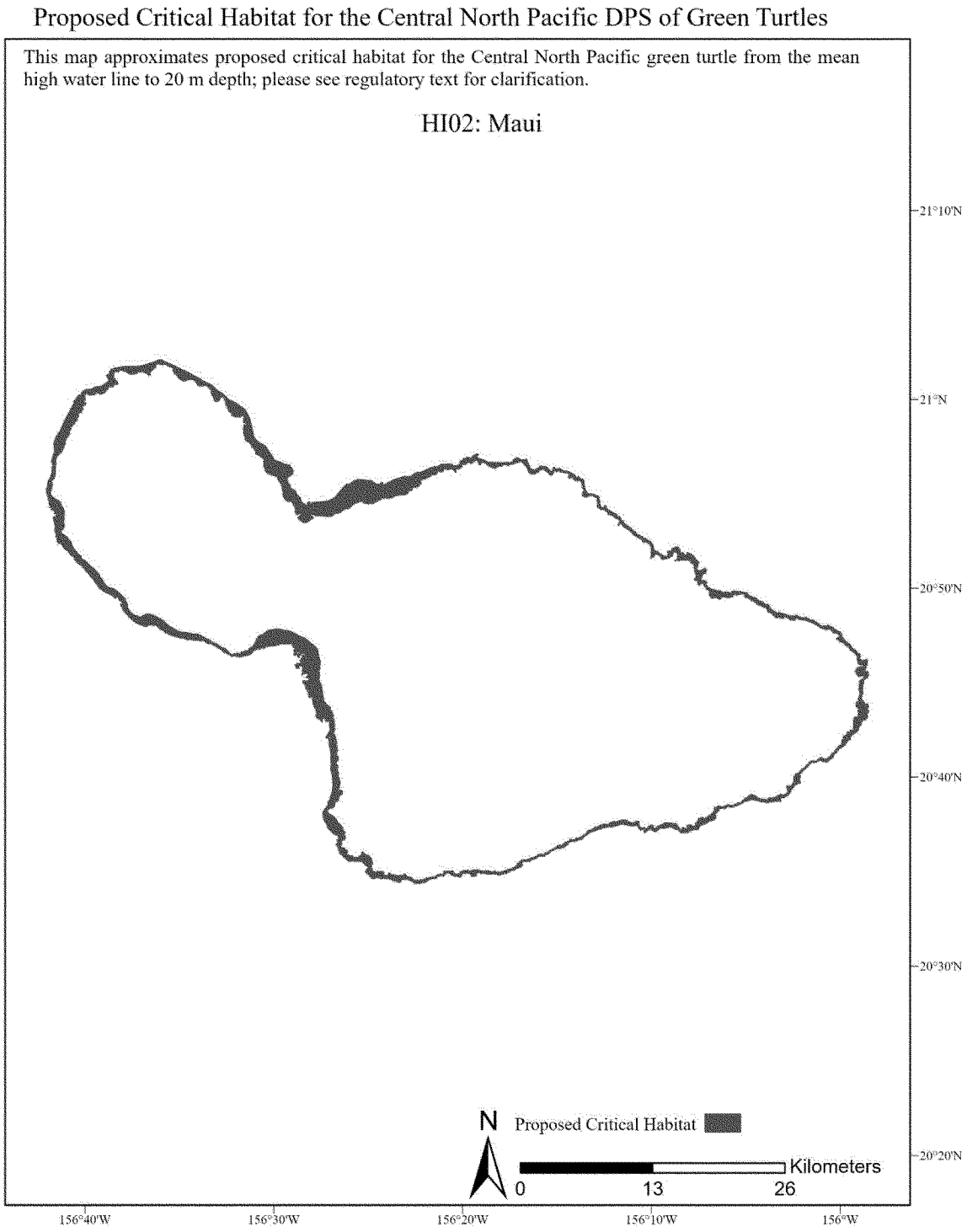

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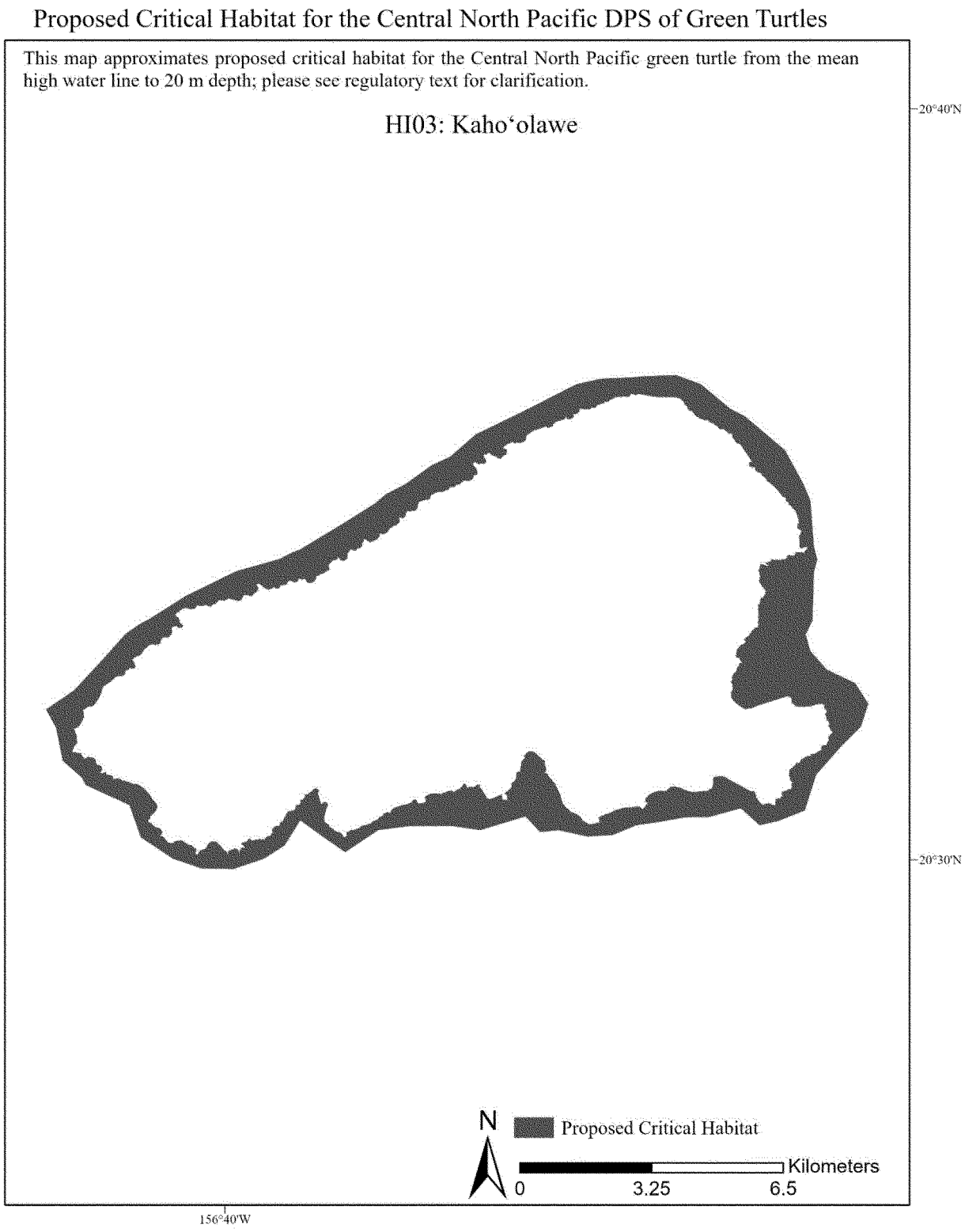

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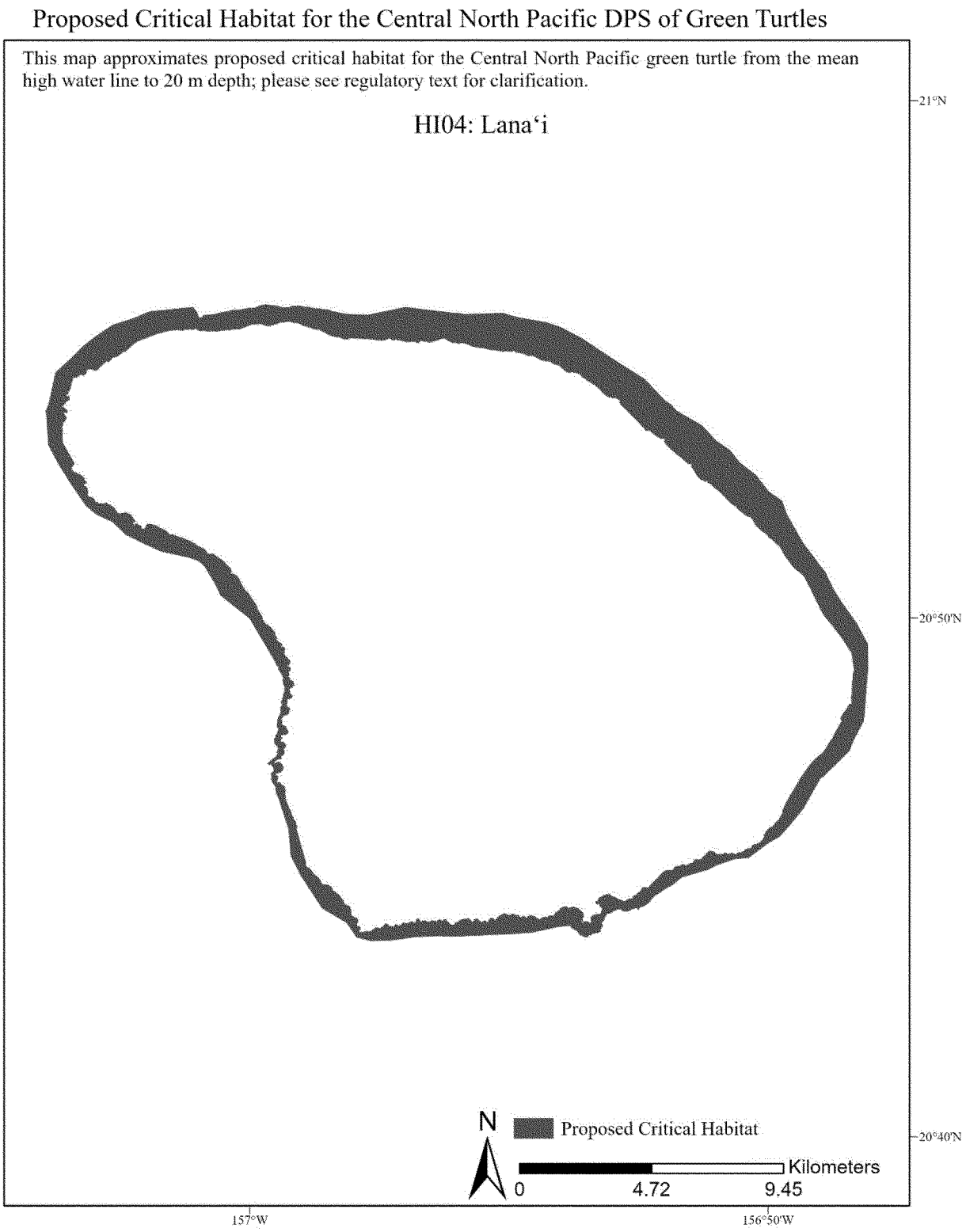

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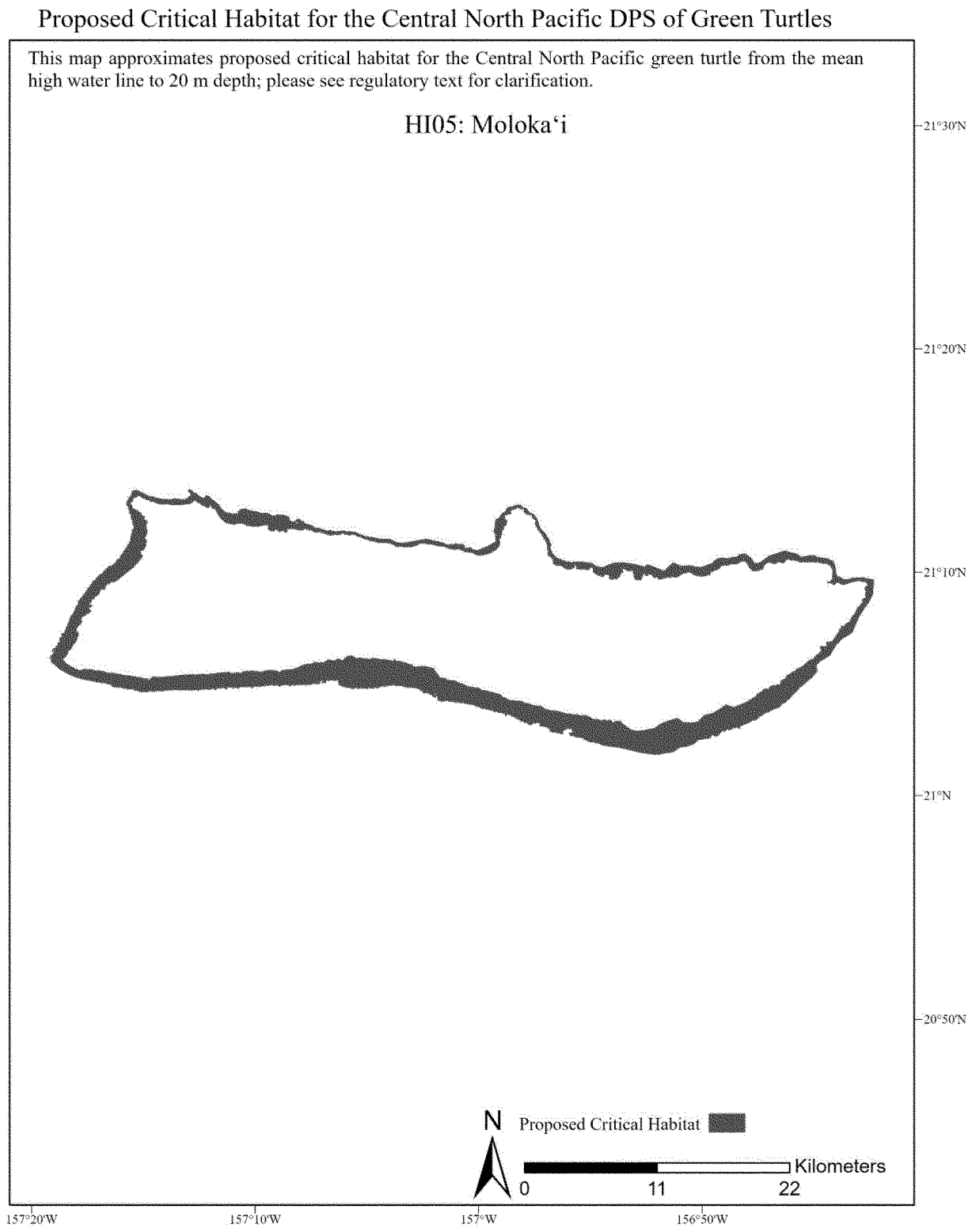


Figure 4f to paragraph (h)(4)

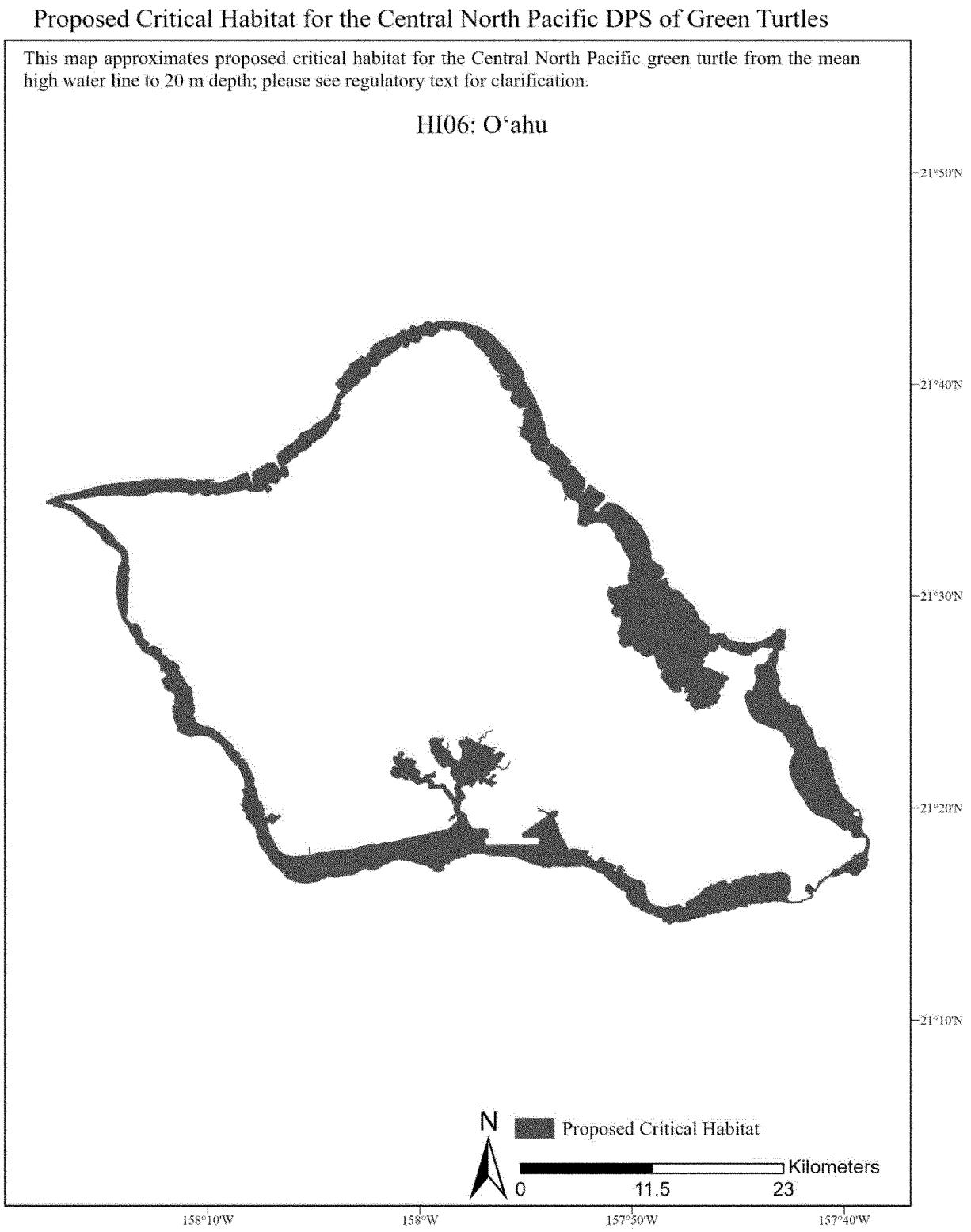


Figure 4g to paragraph (h)(4)

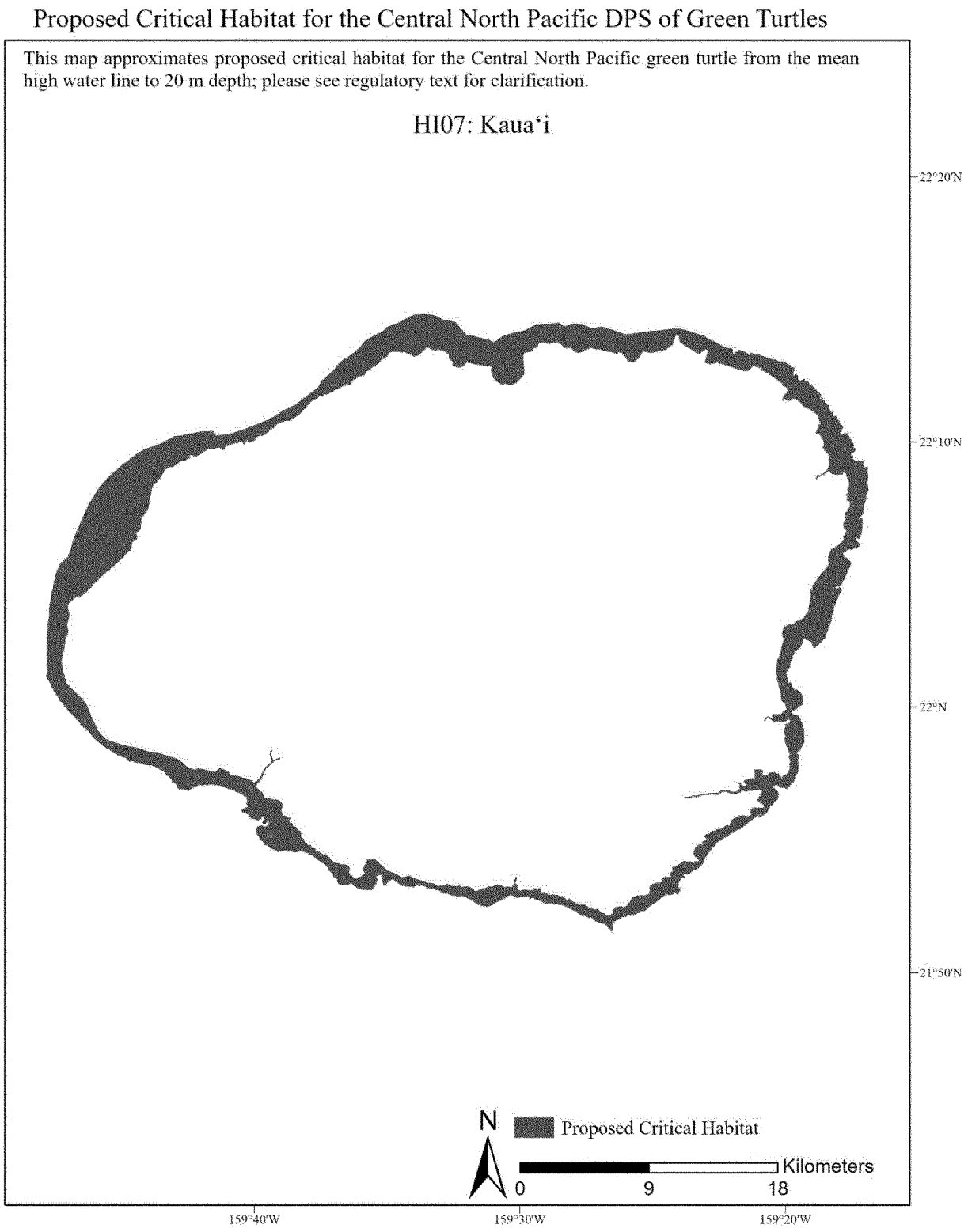


Figure 4h to paragraph (h)(4)

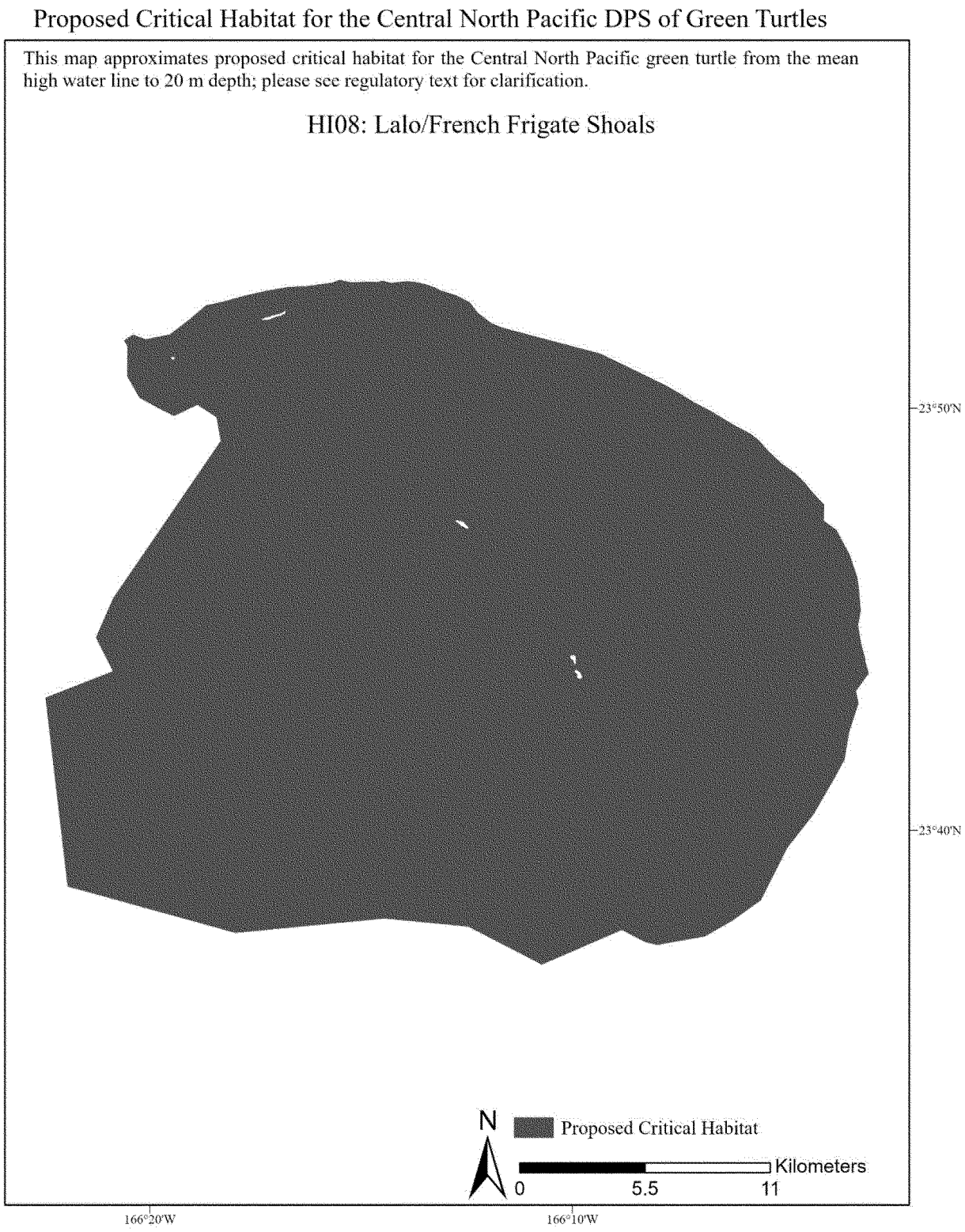


Figure 4i to paragraph (h)(4)

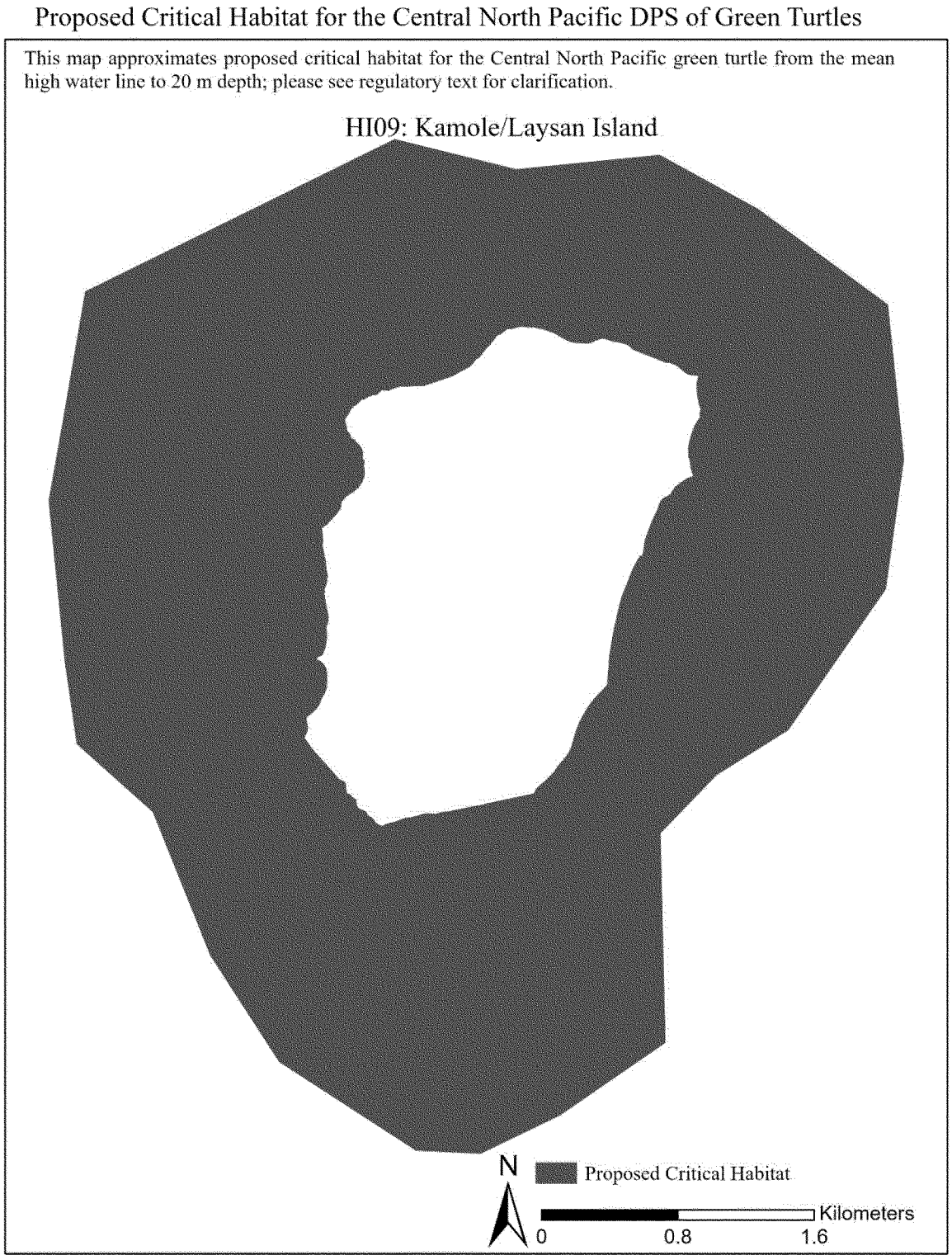
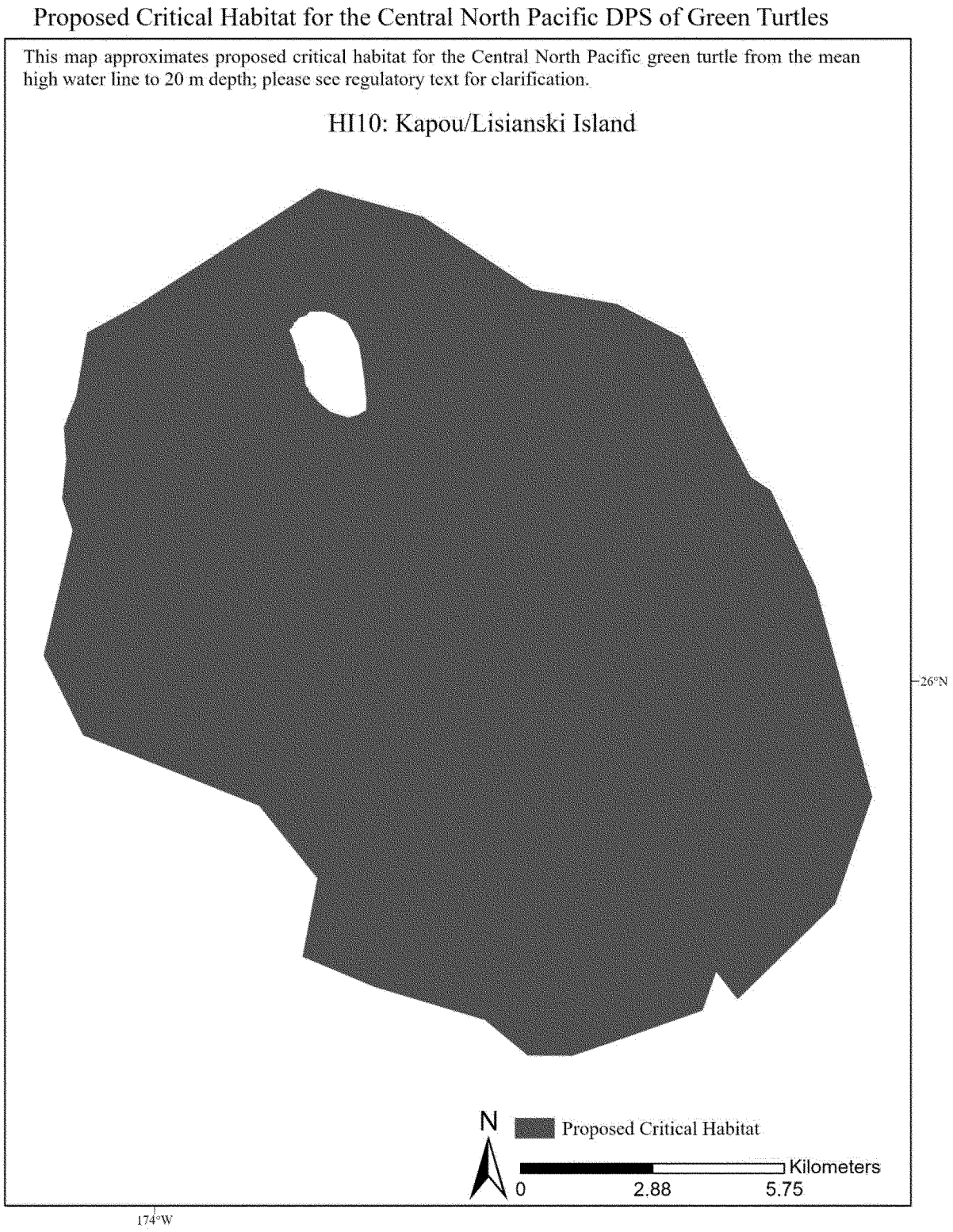


Figure 4j to paragraph (h)(4)



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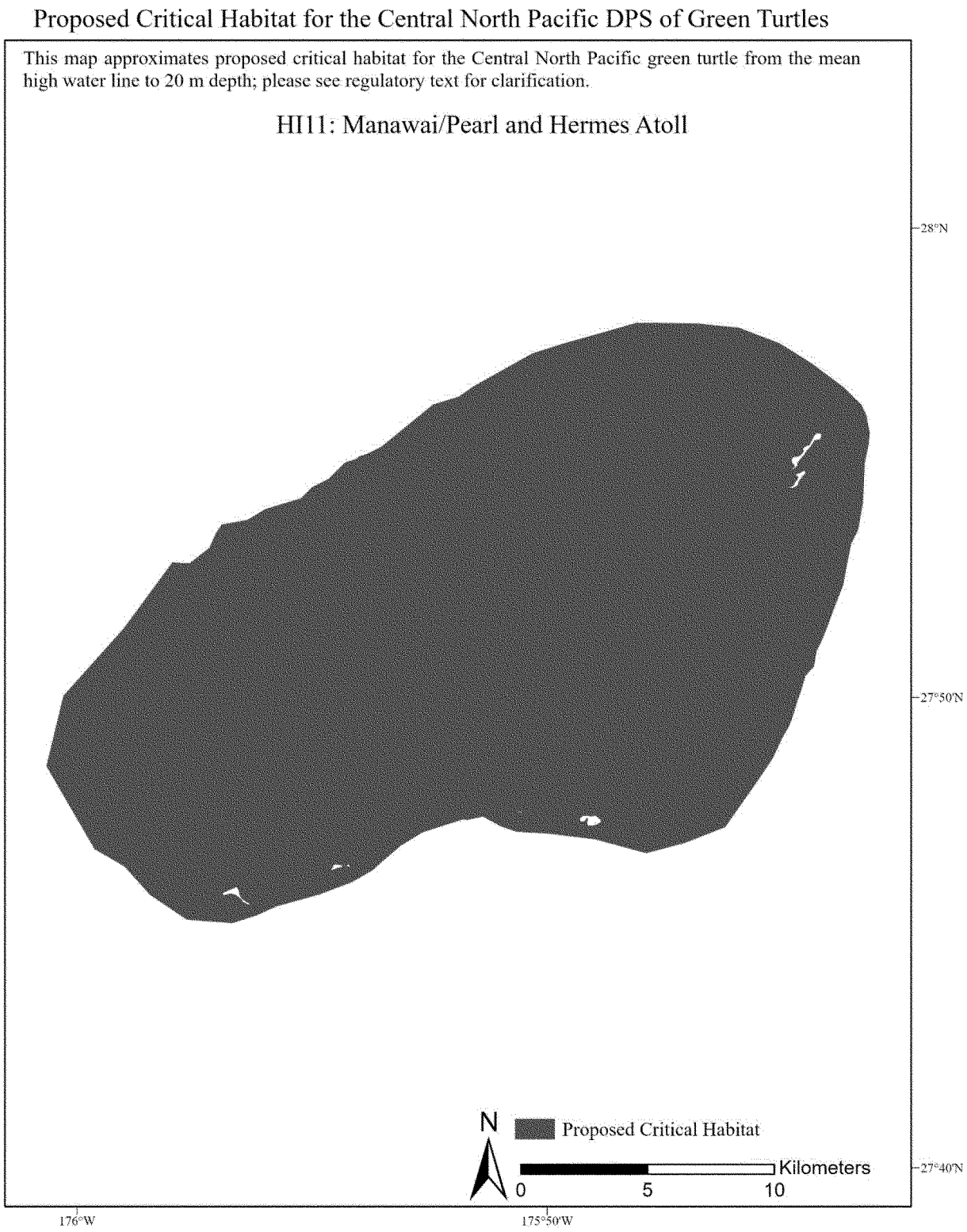


Figure 4l to paragraph (h)(4)

Figure 4m to paragraph (h)(4)

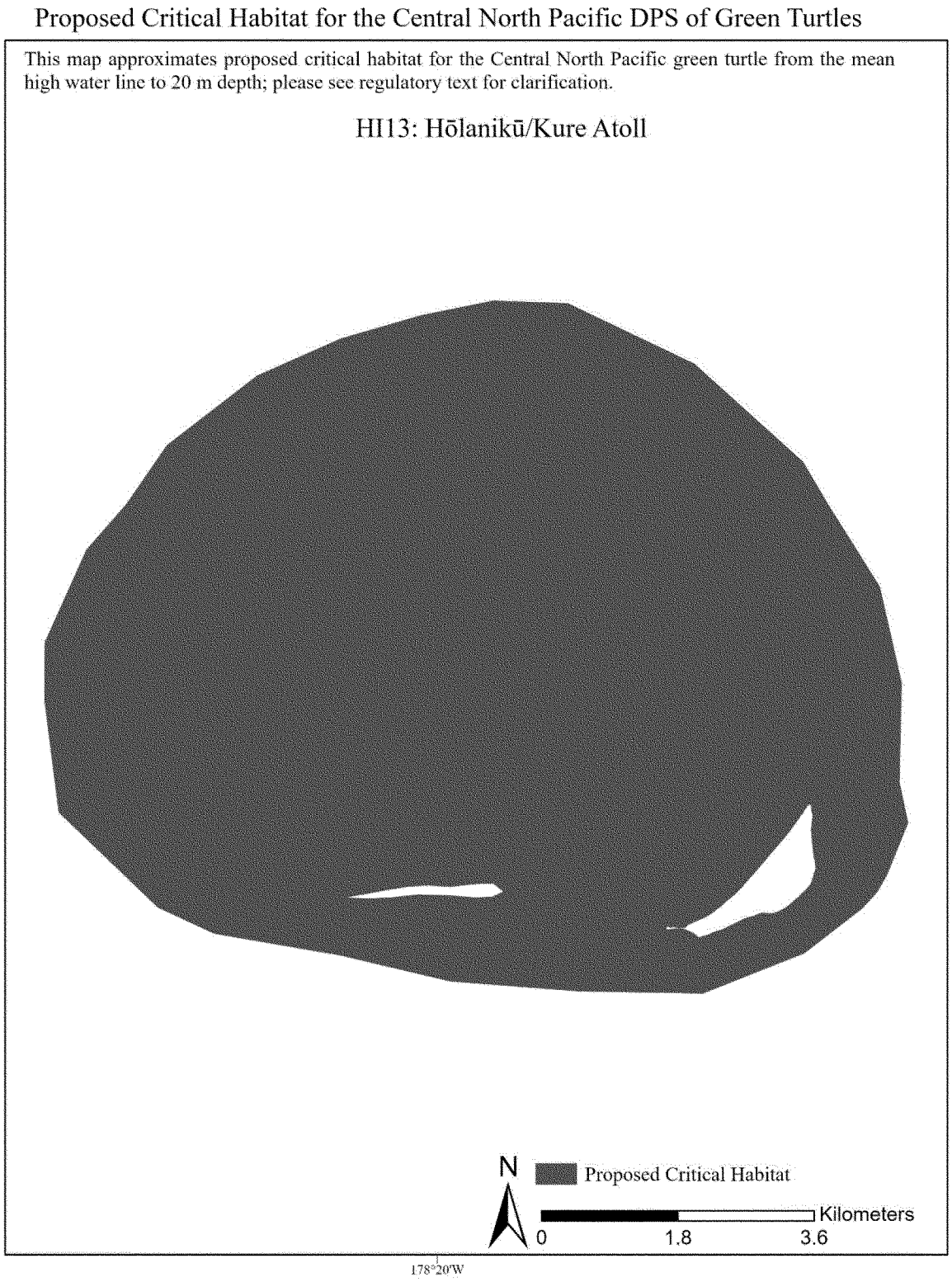


Figure 5 to paragraph (h)(5)

(5) Maps of critical habitat for the Central South Pacific DPS of green turtles.

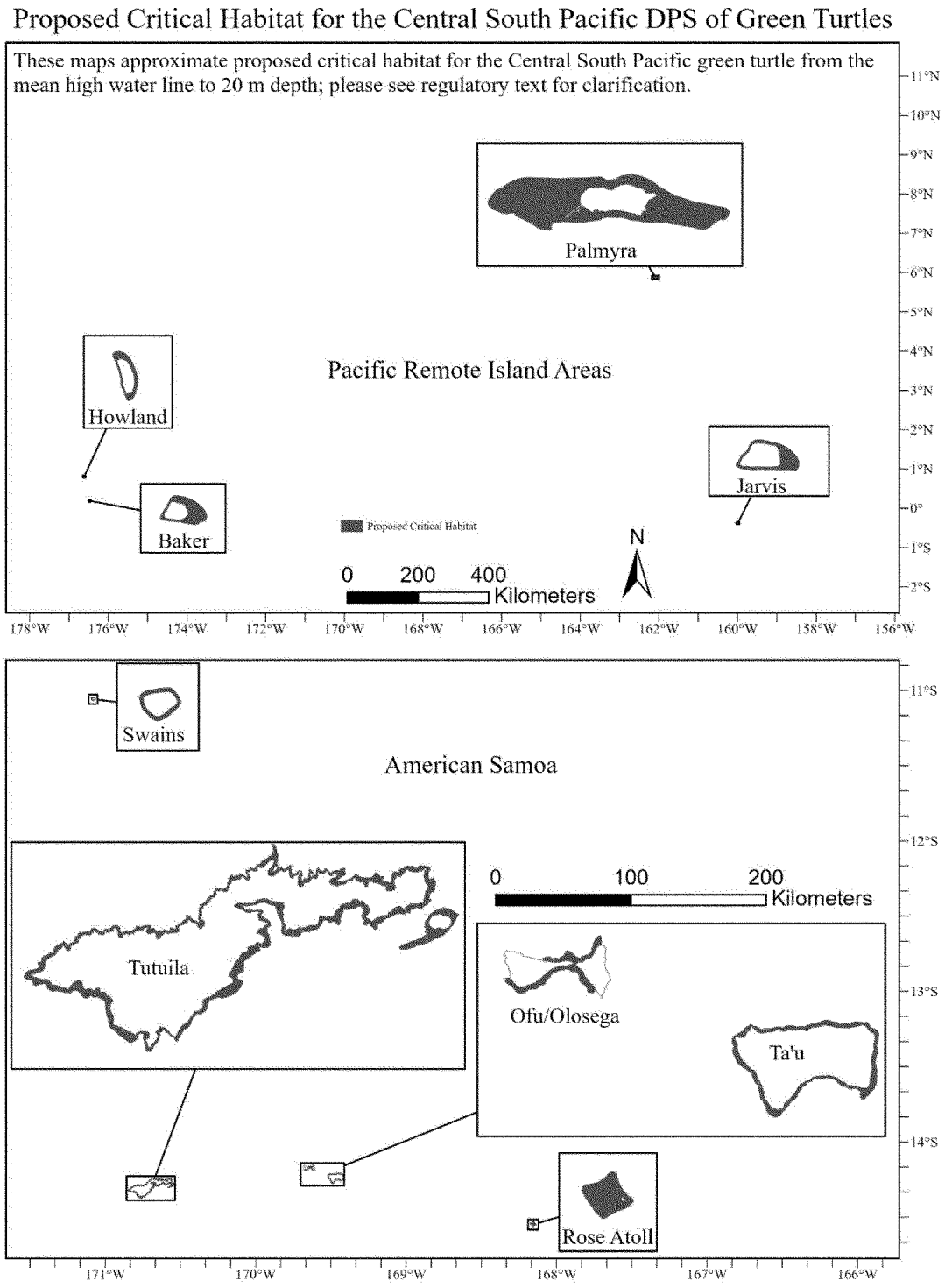


Figure 5a to paragraph (h)(5)

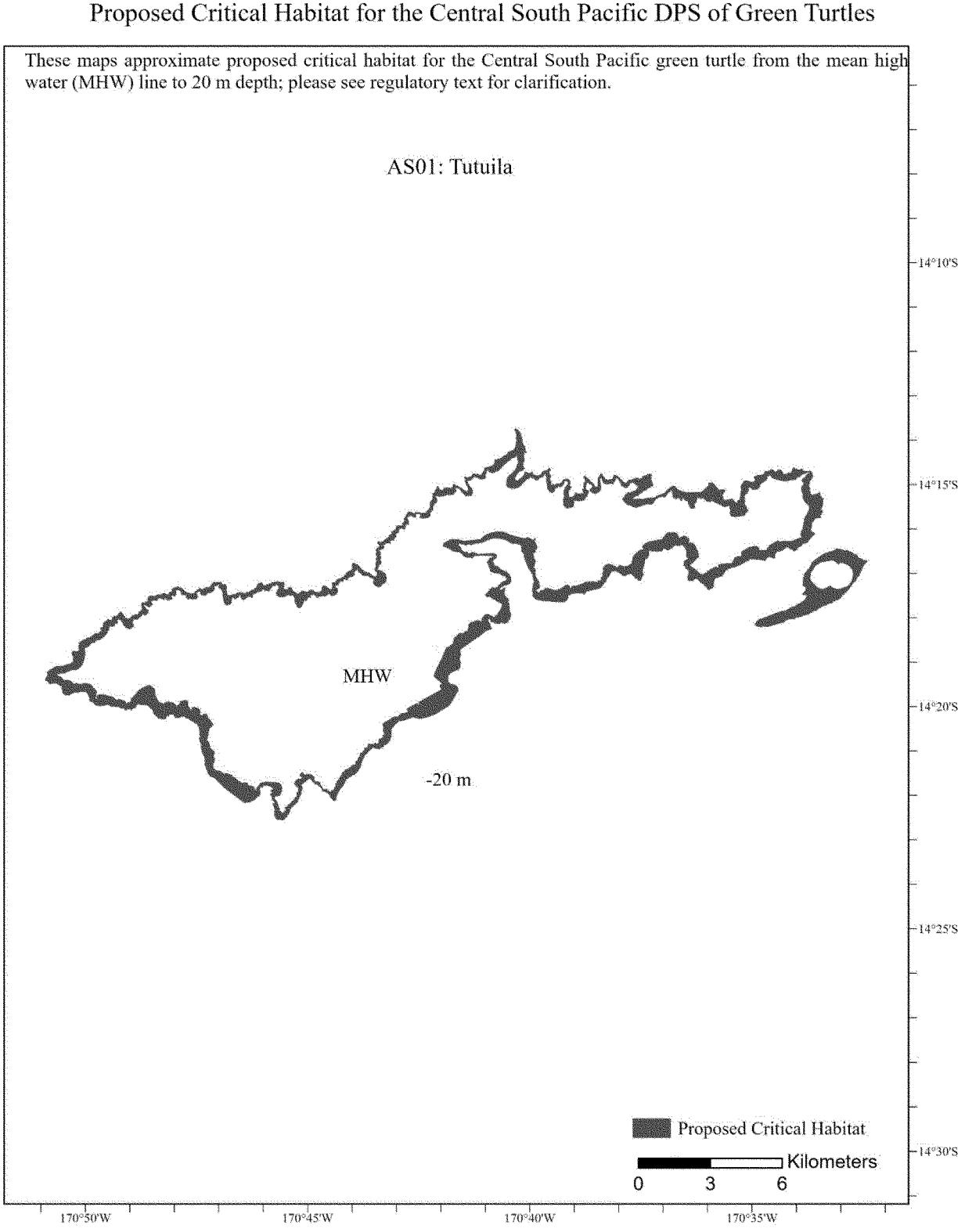


Figure 5b to paragraph (h)(5)

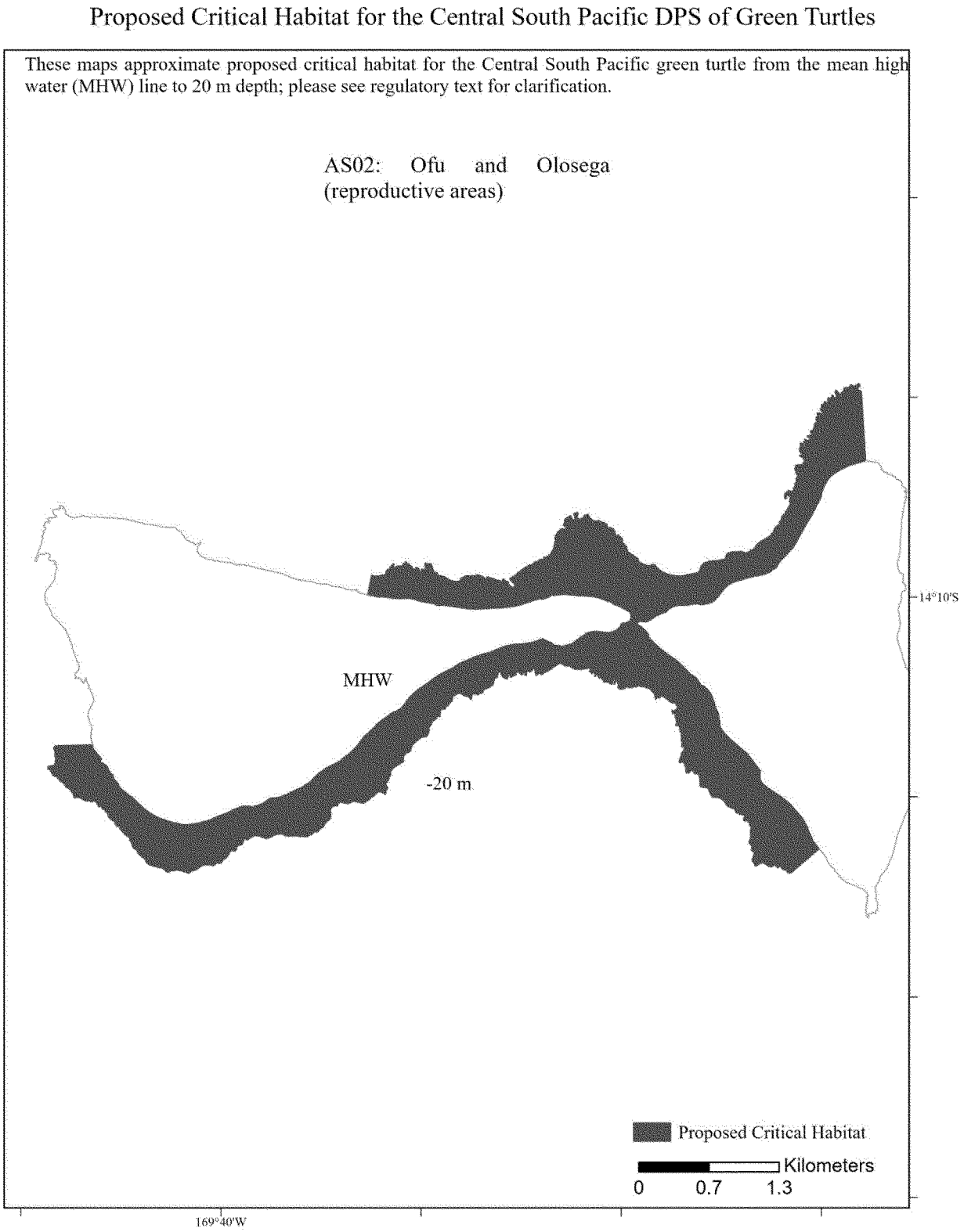
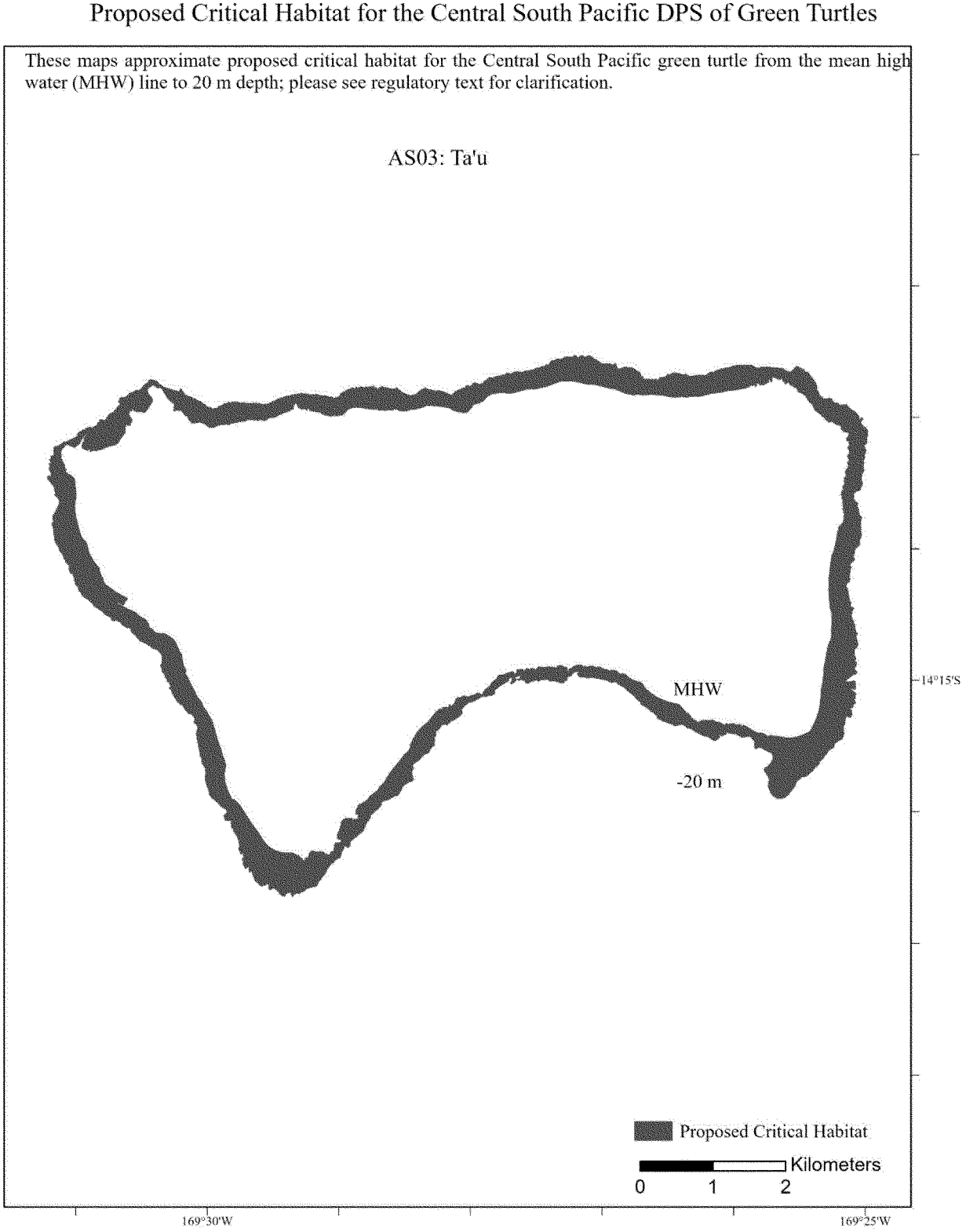


Figure 5c to paragraph (h)(5)



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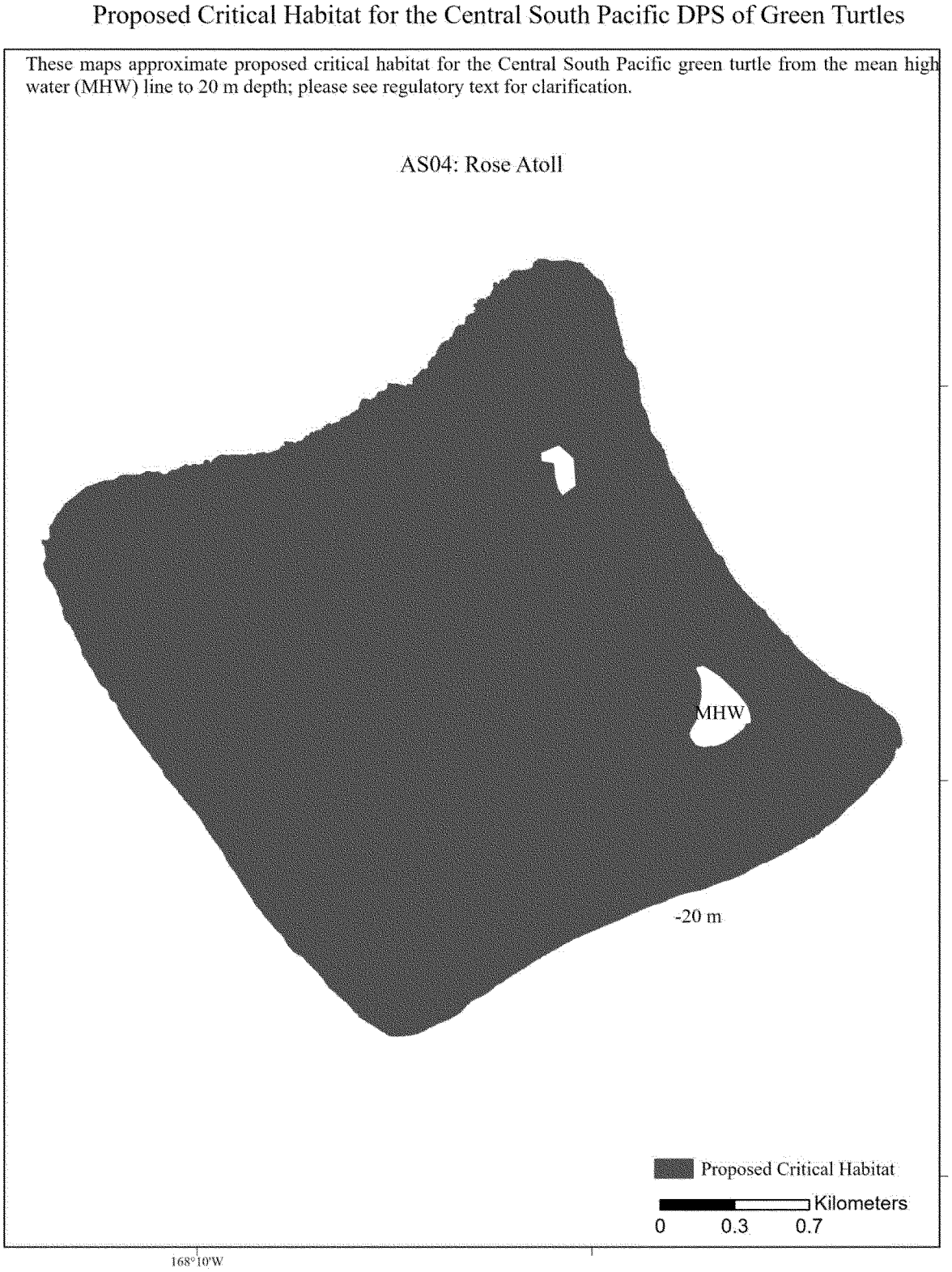

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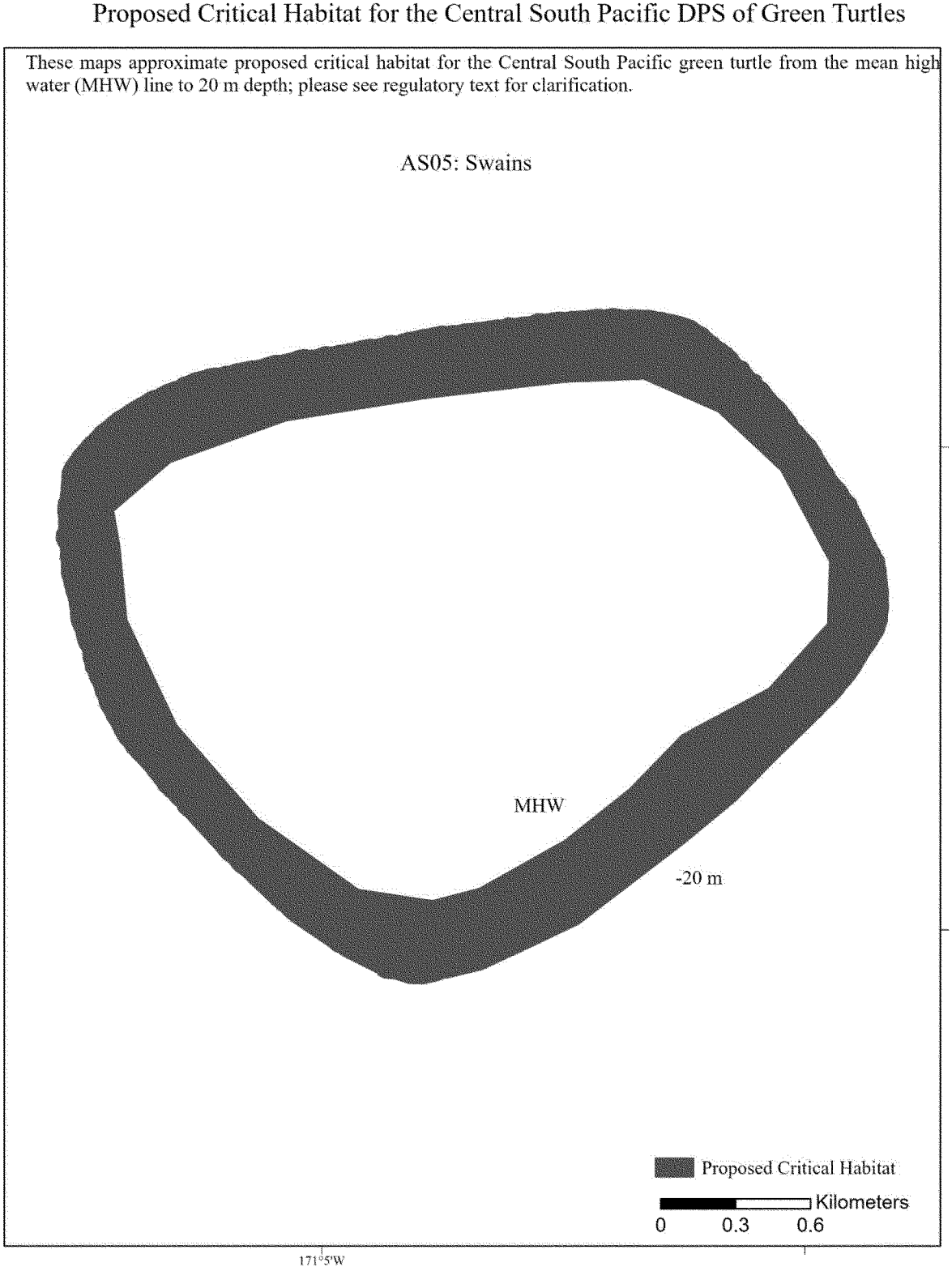

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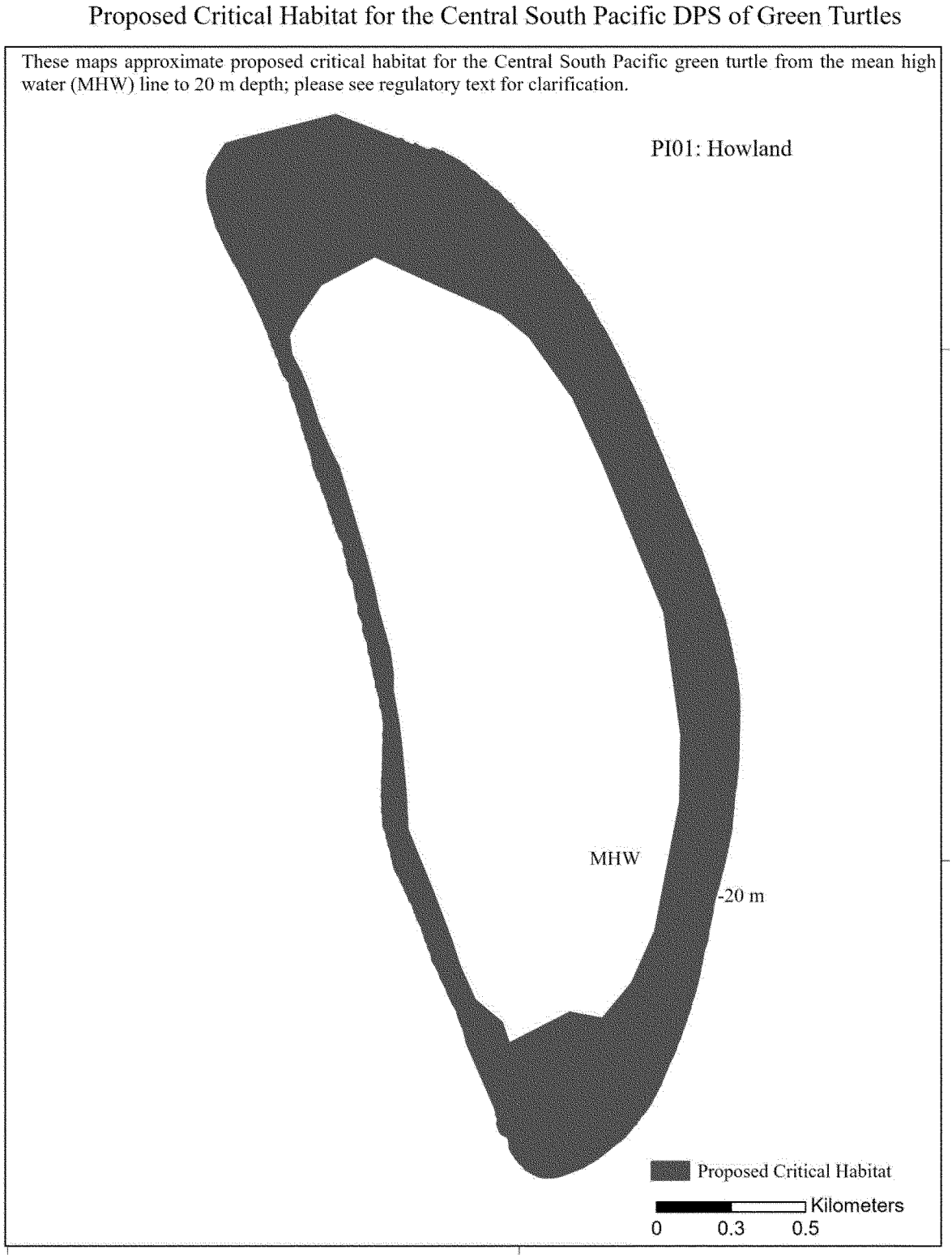

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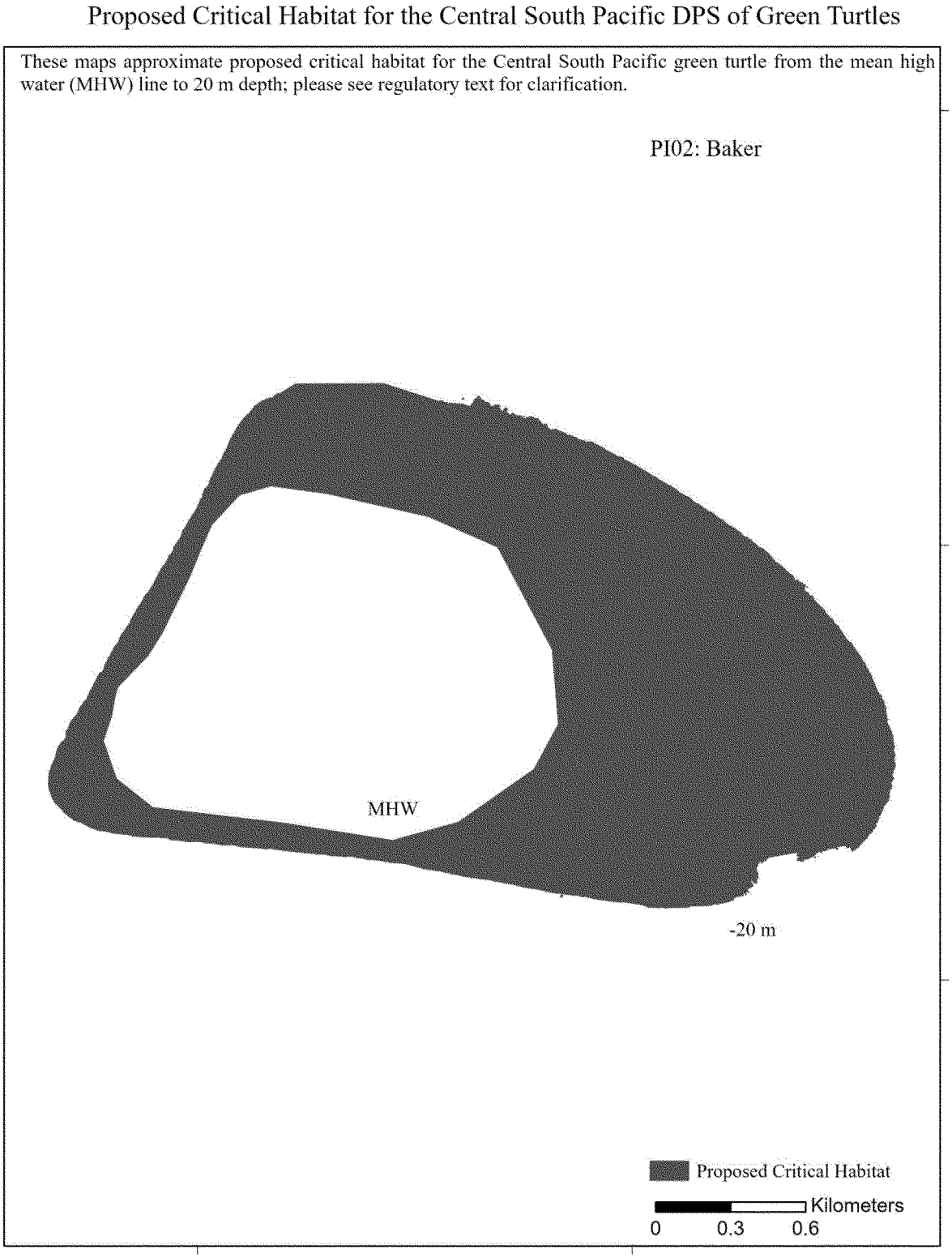

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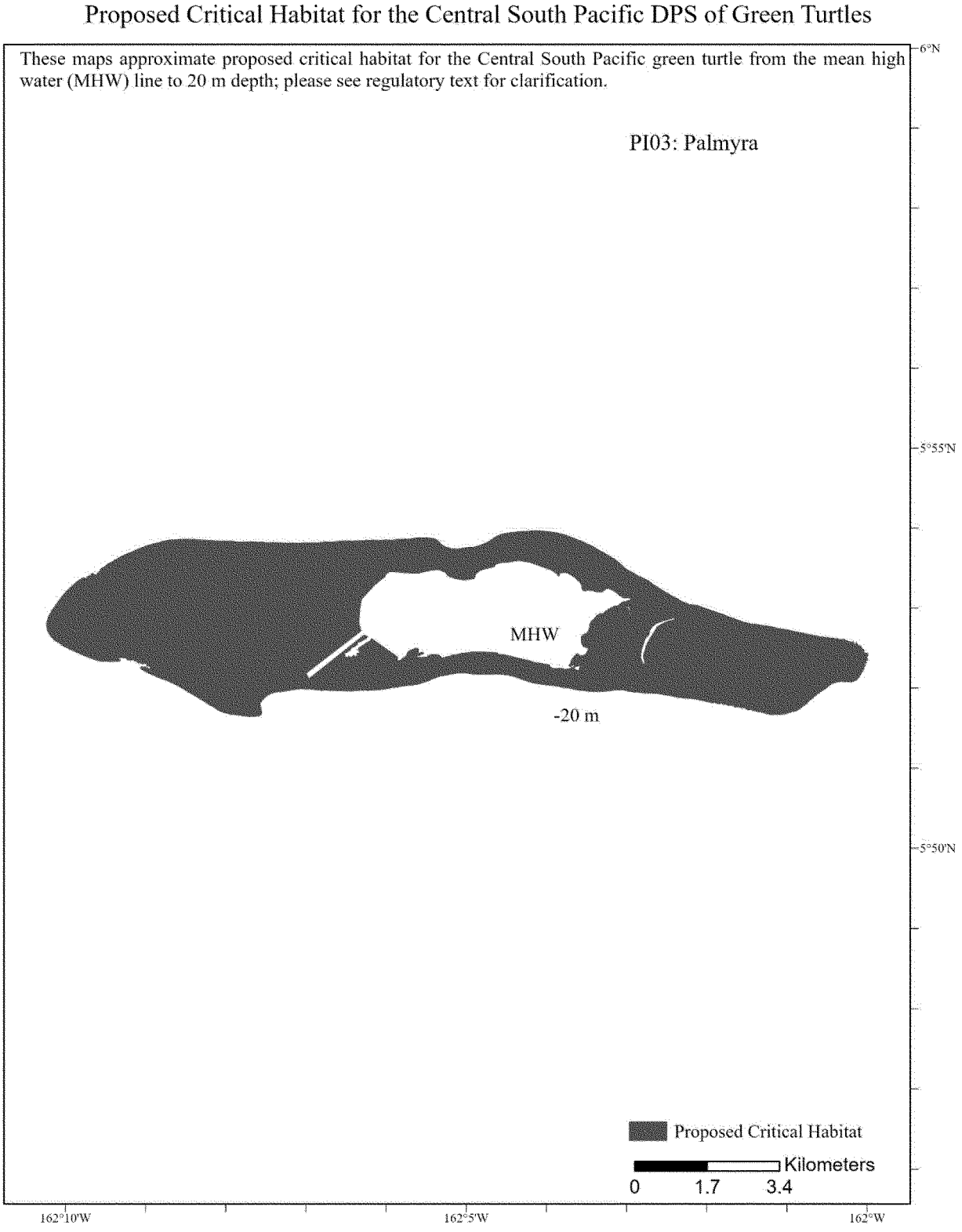


Figure 5i to paragraph (h)(5)

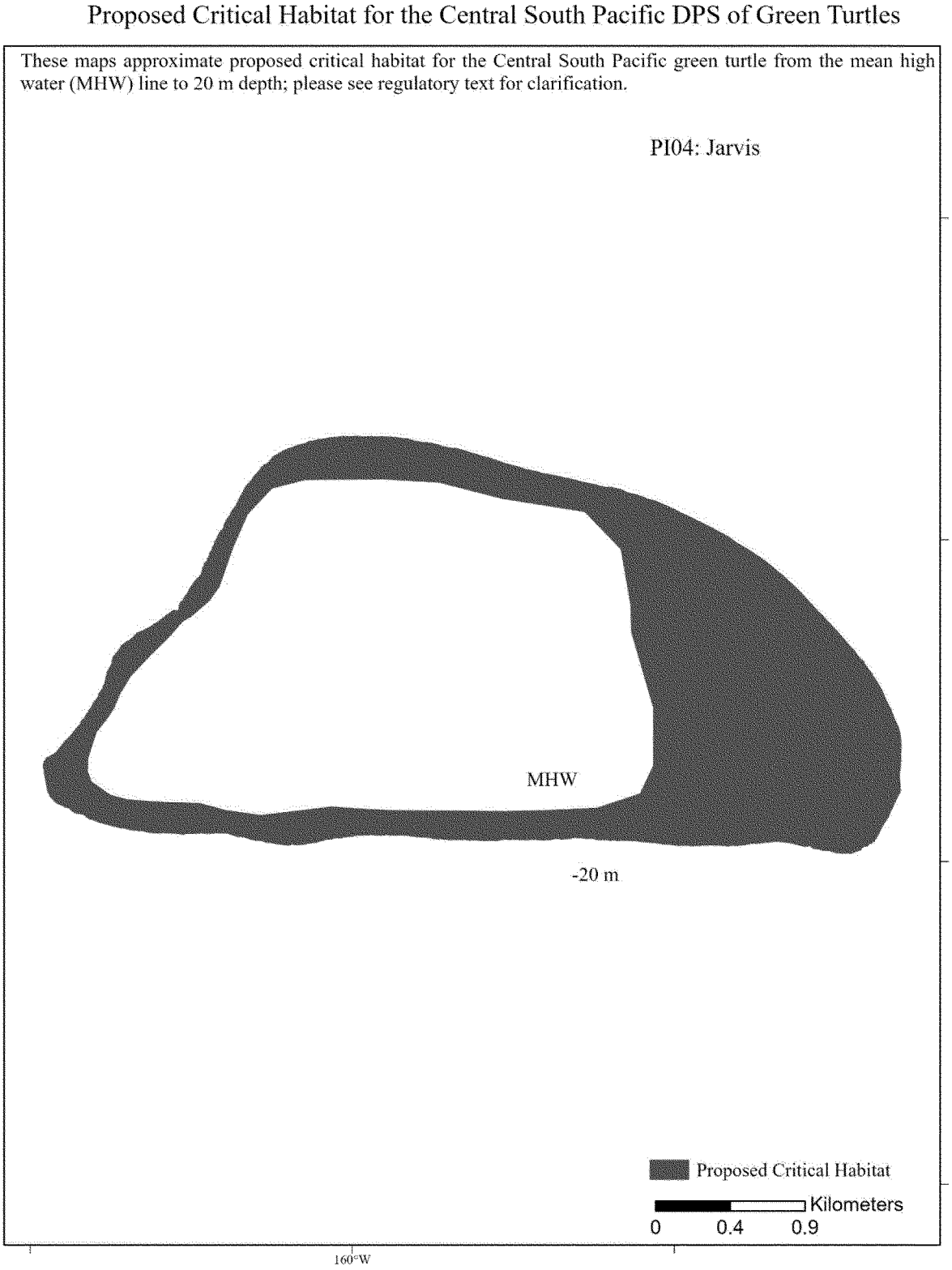


Figure 6 to paragraph (h)(6)

(6) Maps of critical habitat for the Central West Pacific DPS of green turtles.

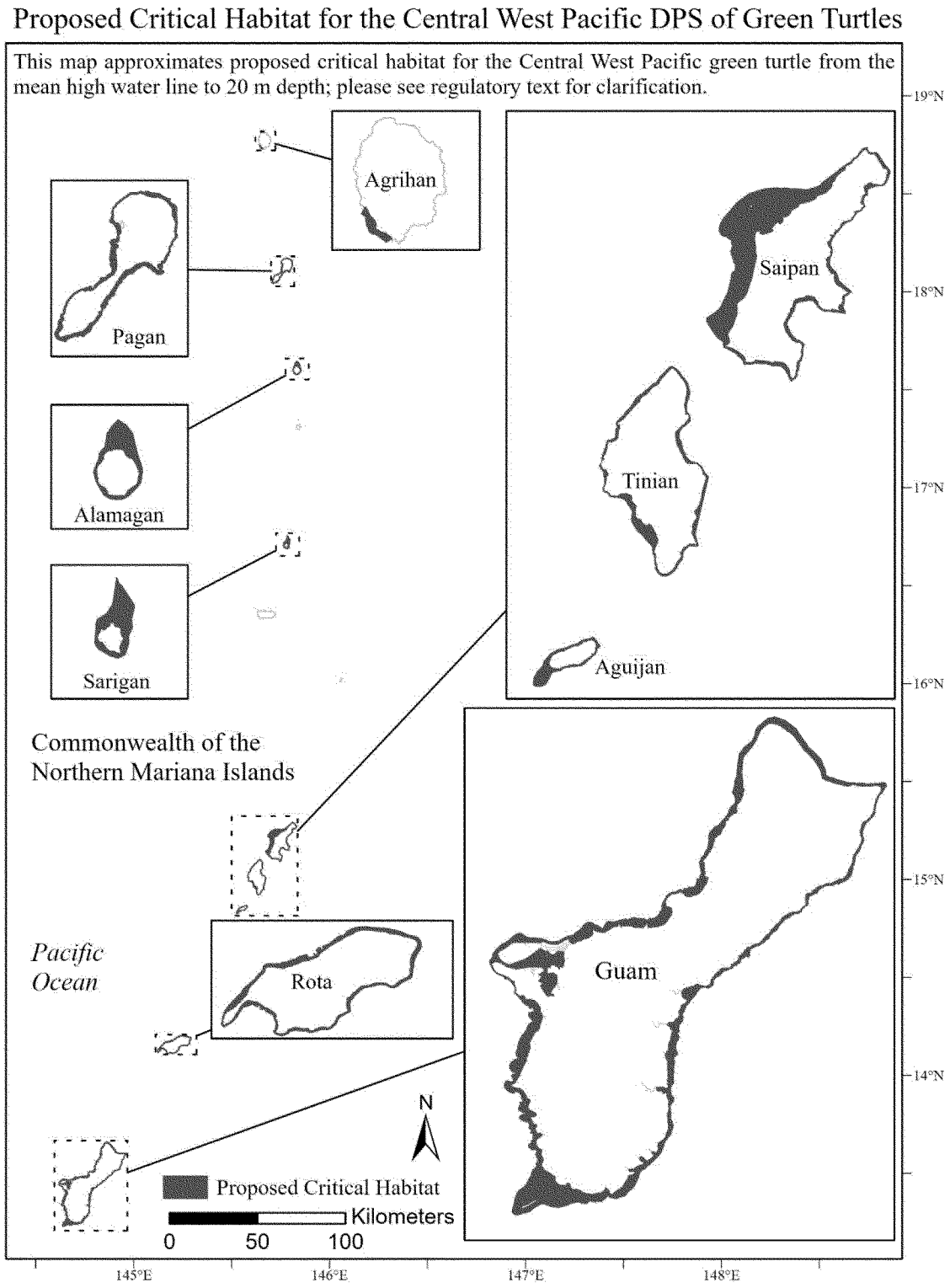


Figure 6a to paragraph (h)(6)

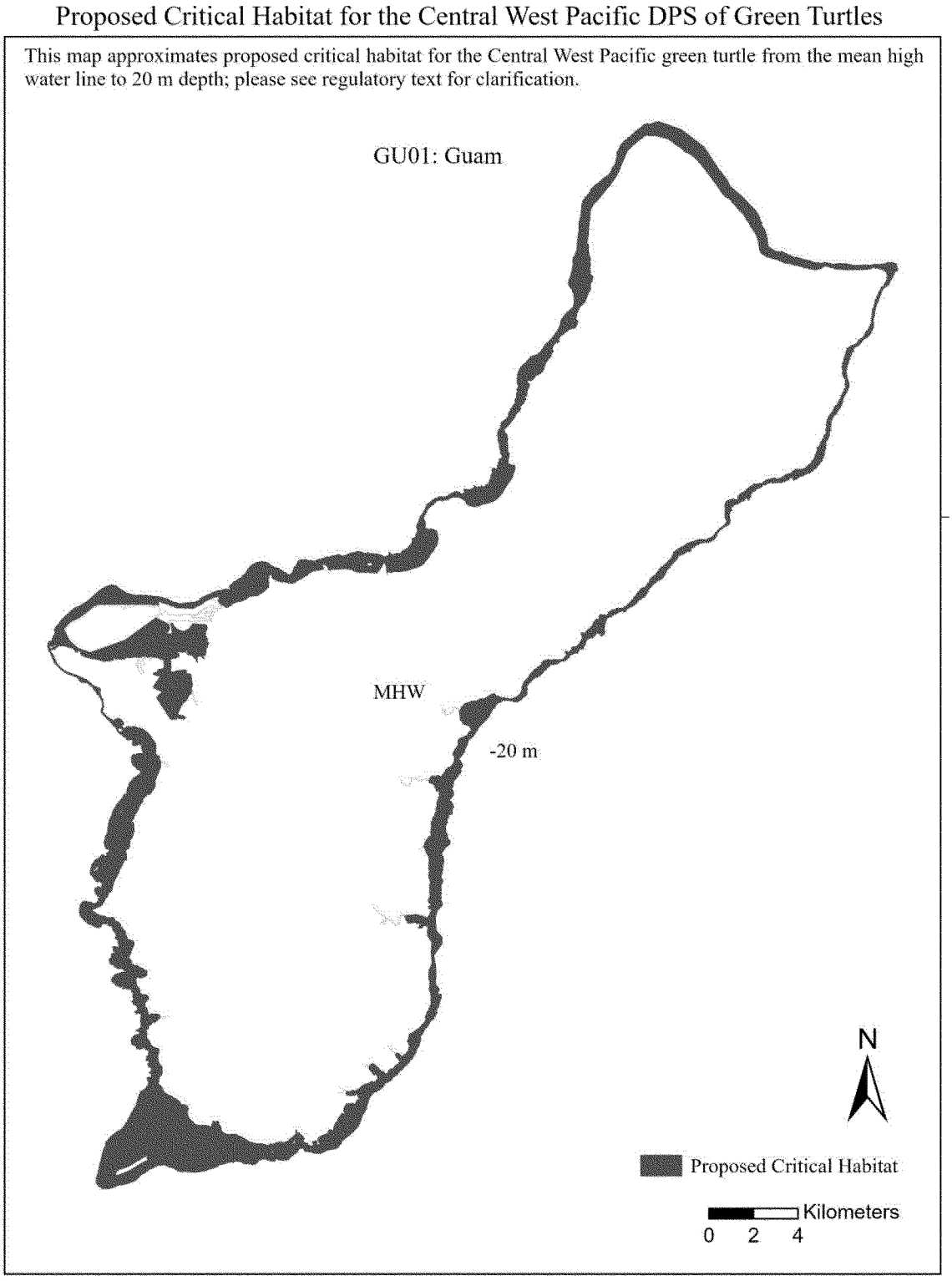


Figure 6b to paragraph (h)(6)

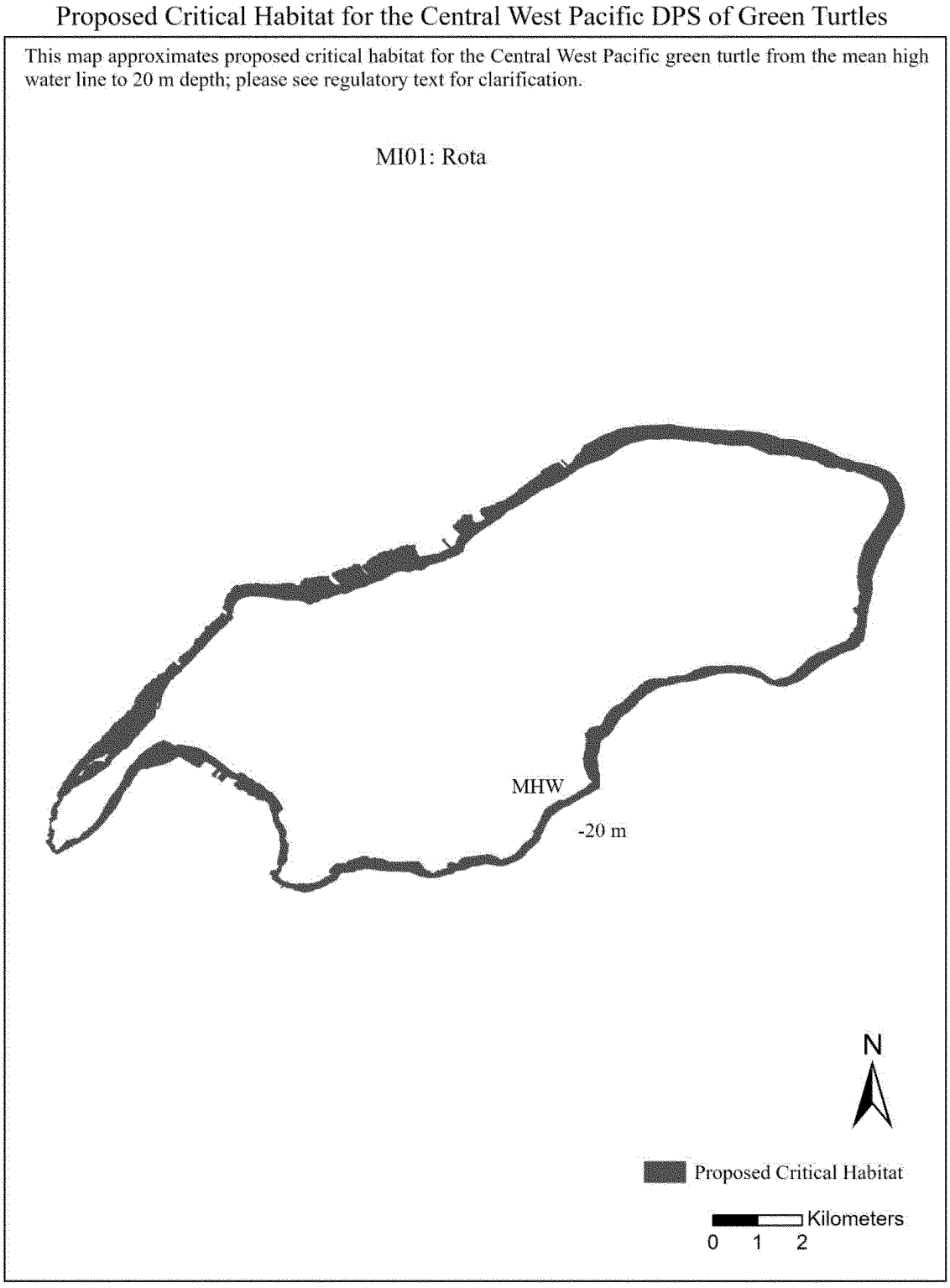
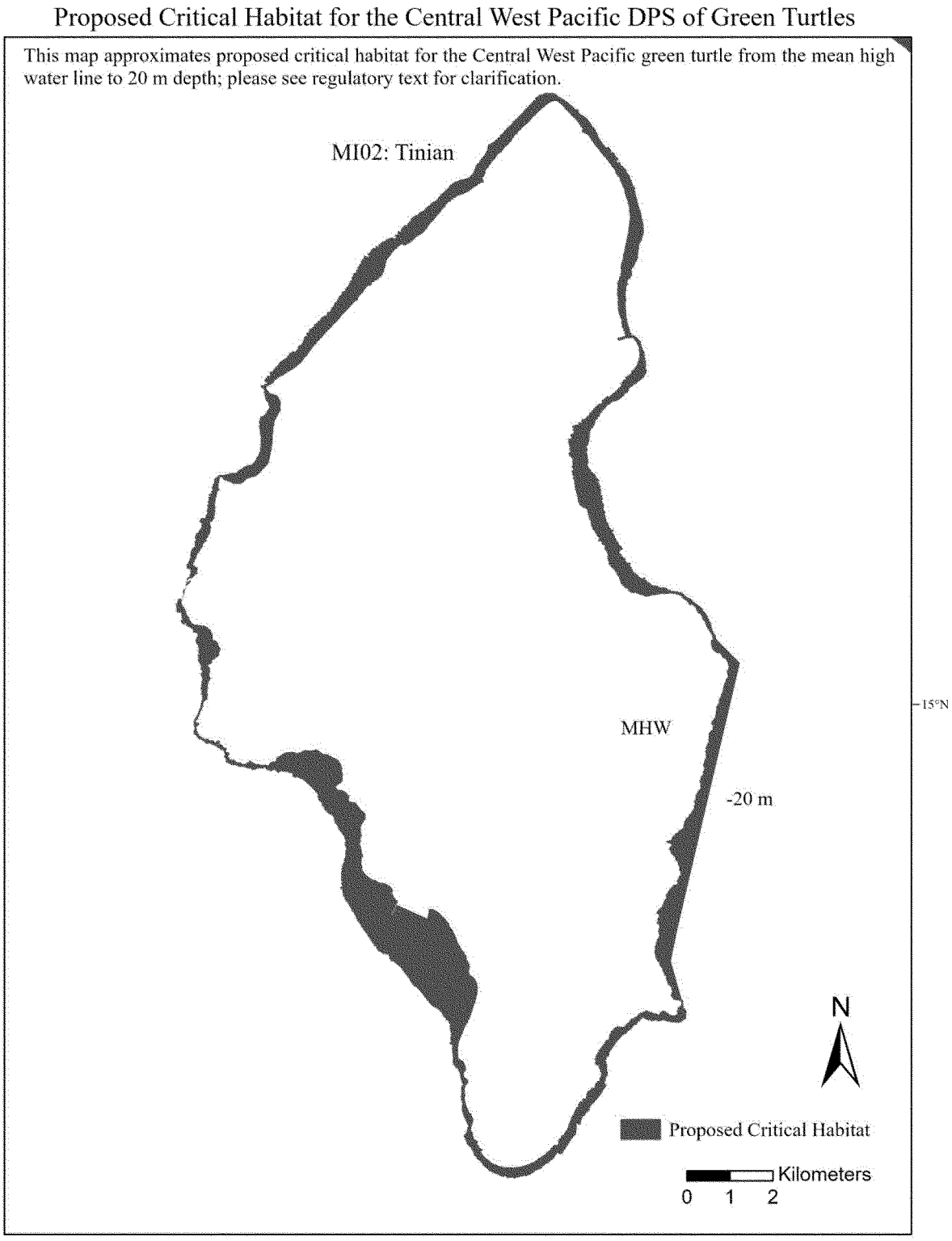


Figure 6c to paragraph (h)(6)



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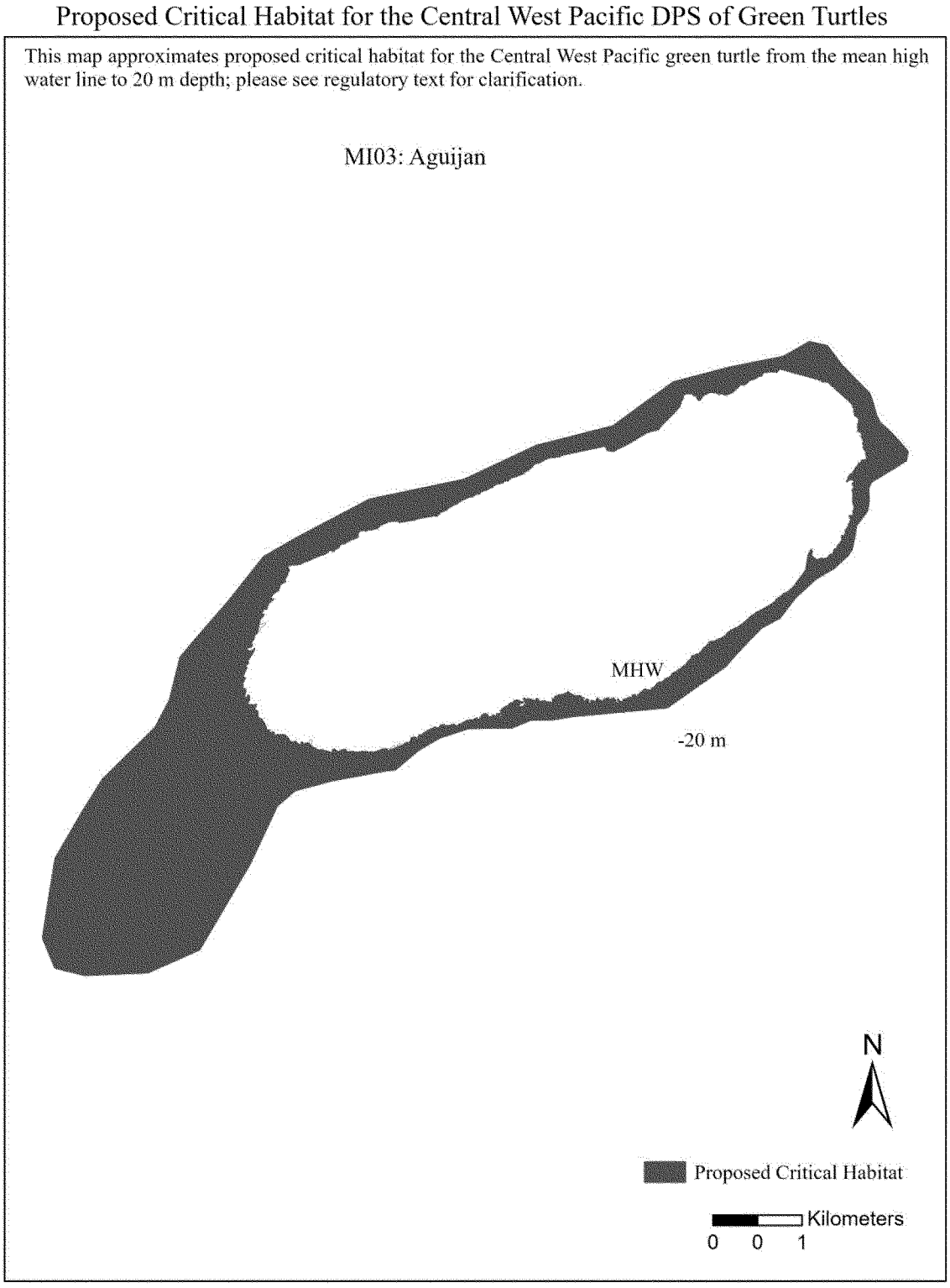

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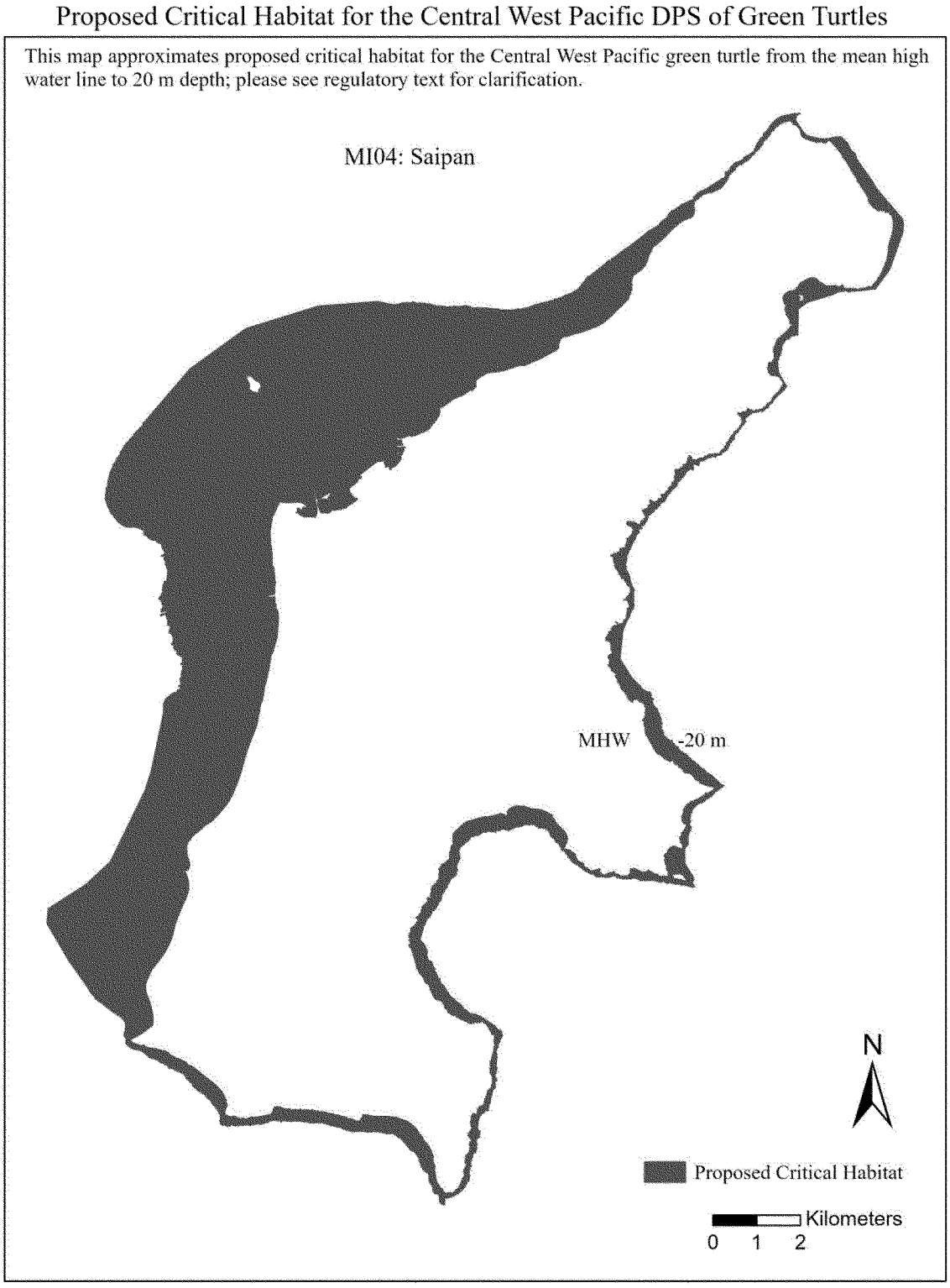

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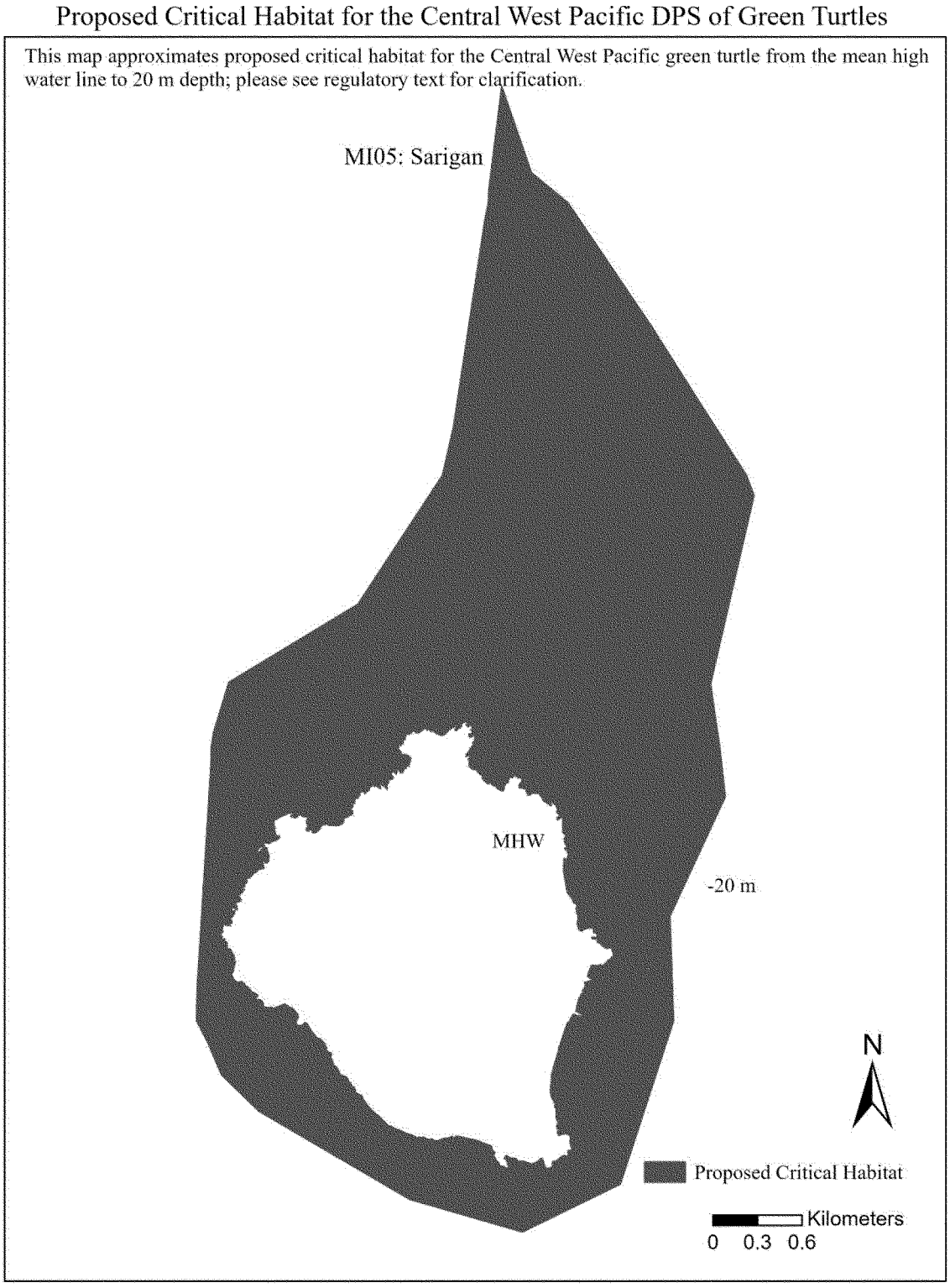


Figure 6g to paragraph (h)(6)

Figure 6h to paragraph (h)(6)

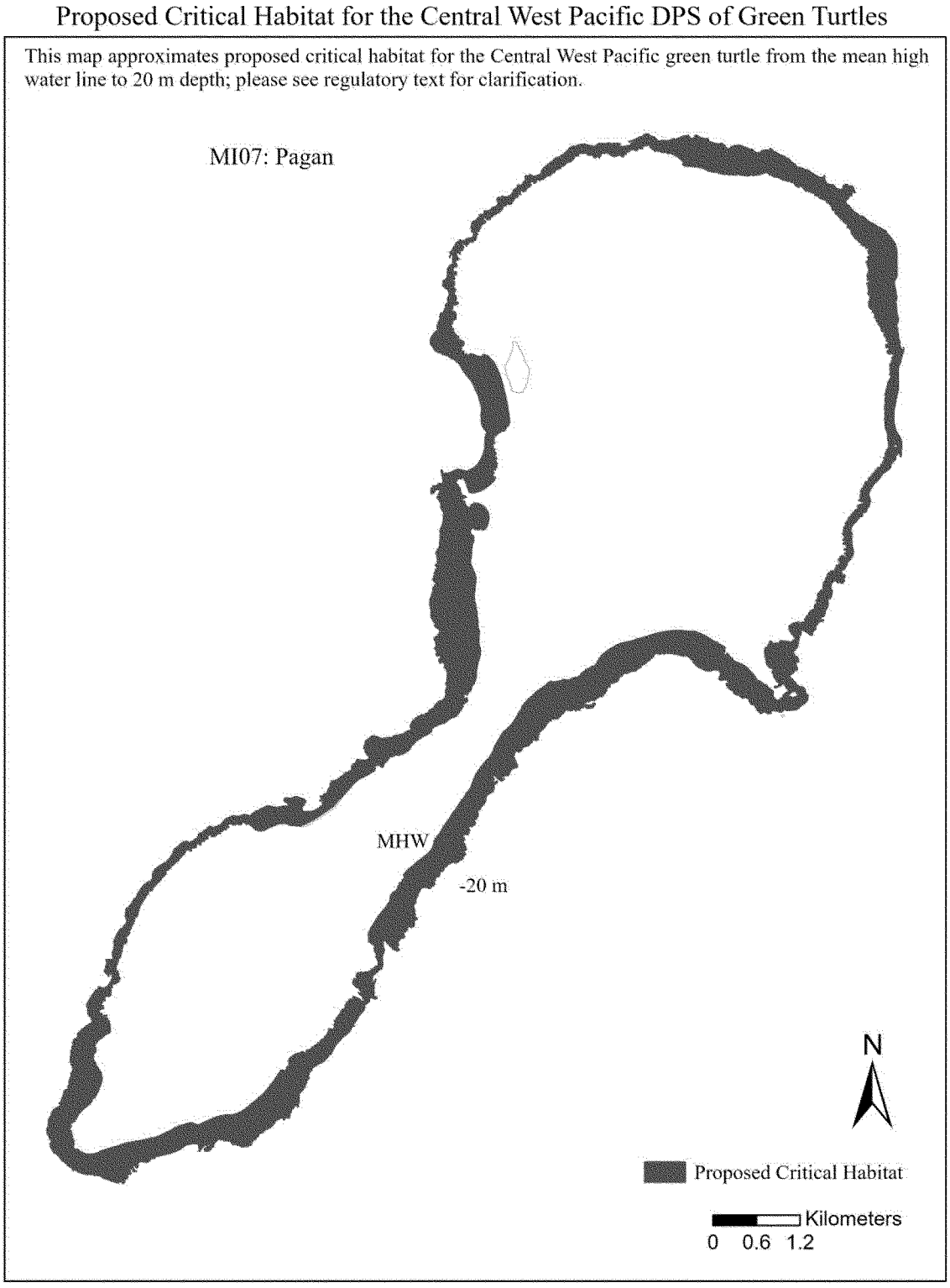
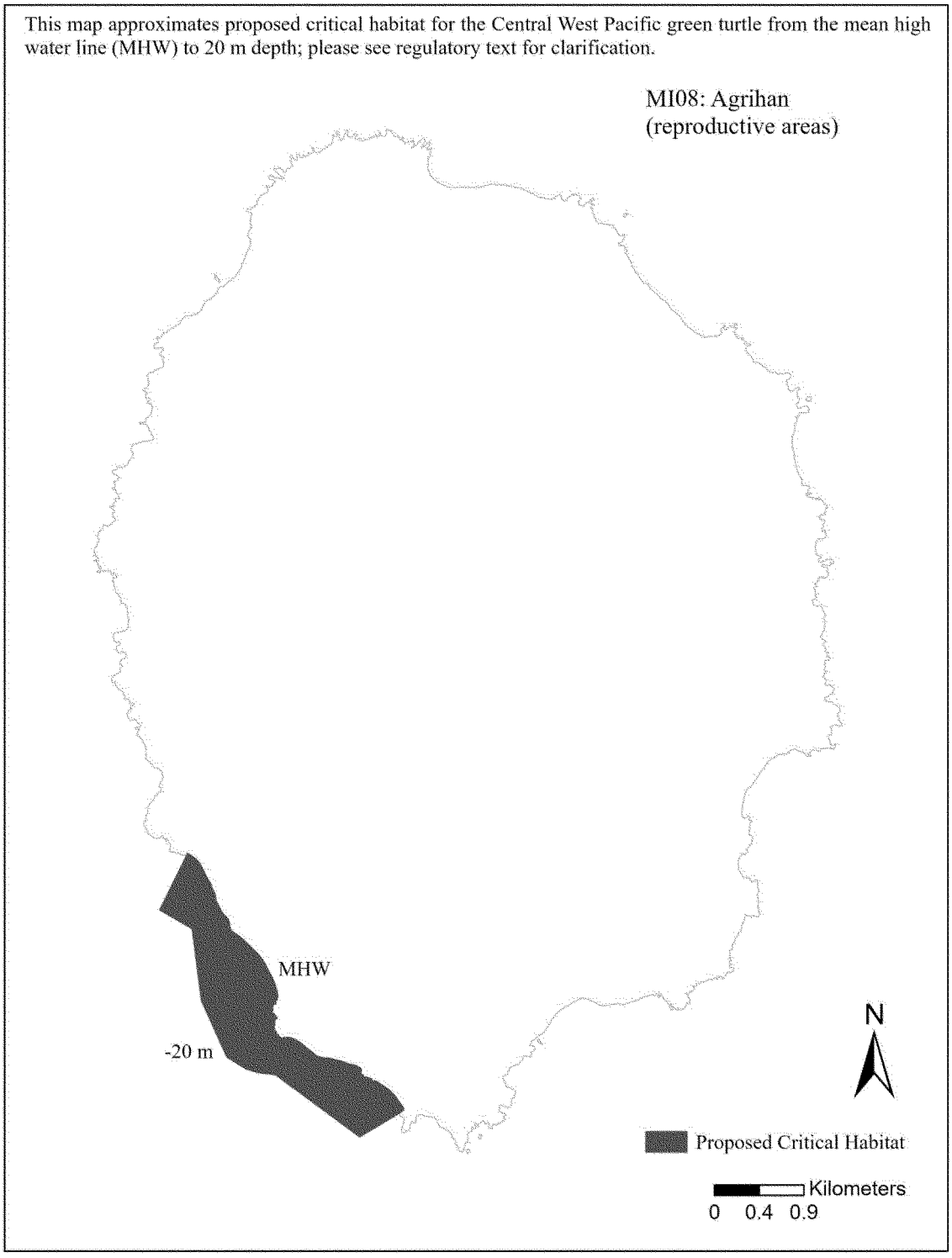


Figure 6i to paragraph (h)(6)

Proposed Critical Habitat for the Central West Pacific DPS of Green Turtles



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