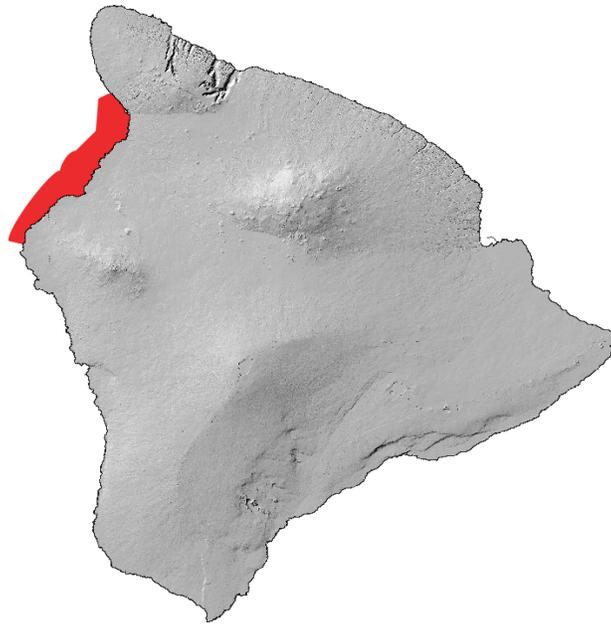


# Hawai'i Coastal Use Mapping Project



## Ocean Uses Map Book

**Results from:  
Participatory Ocean Use Mapping Workshops  
South Kohala & North Kona Districts  
Ka'upulehu Interpretive Center  
September 23-25th, 2010**



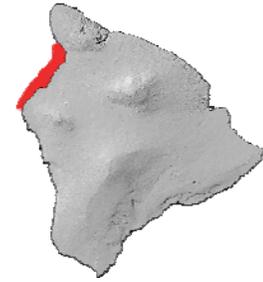
March 2011



# Hawai'i Coastal Use Mapping Project

## Ocean Uses Map Book

### March 2011



#### Introduction

This map book contains cartographic products derived from the Hawaii Coastal Use Mapping workshops conducted at the Ka'ūpūlehu Interpretive Center at Kalaemanō (North Kona) from Thursday, September 23<sup>rd</sup> to Saturday, September 25<sup>th</sup>, 2010. This participatory mapping workshop was designed to gather spatial data on human uses of the coastal and marine environment in the South Kohala and North Kona regions of Northwest Hawai'i.

This effort was undertaken as a partnership between multiple NOAA line offices, including the Office of Ocean and Coastal Resource Management (OCRM), the Pacific Islands Regional Office (PIRO), the Pacific Services Center (PSC), and Pacific Islands Fisheries Science Center (PIFSC), working together with Hawai'i Division of Aquatic Resources (DAR). Primary funding for the project is from NOAA's Coral Reef Conservation Program, with in-kind support from DAR, the Hawaii Chapter of the Nature Conservancy (TNC), and the Ka'ūpūlehu Interpretive Center. Mapping and GIS technology for the workshop was facilitated by NOAA's MPA Center (OCRM). During the workshop, this expert team was shadowed by NOAA and DAR employees from Hawai'i to facilitate a transfer of knowledge and technological skills to Hawai'i based agencies. On Wednesday, September 22, thirteen Hawai'i residents participated in a GIS/facilitator training session led by staff from NOAA's MPA Center.

In total, 48 participants, 13 facilitators, and three observers were involved during the three workshop days. Participants were selected to provide expertise in the various human use activities that were mapped, as well as familiarity with a wide range of locations across the mapped region. Of the 48 participants, most all were Hawai'i Island residents except for one former resident.

#### Targeted Uses

The uses mapped in the workshop included a variety of extractive and non-extractive activities. These uses are defined on the uses list that follows this document. The targeted uses and use descriptions were compiled with assistance from local stakeholders and resource managers.

#### Generalized Workshop Process

At the start of the workshop, all participants were assigned to a work group and an associated mapping station. With guidance from the facilitators, participants were asked to draw use areas based on their knowledge of where this type of activity is known to occur. For some uses, existing data was presented and participants were asked to review and modify the existing data for completeness and accuracy. Each use was explicitly defined (see uses list) and participants were asked to map the general use footprint and dominant use areas, as described below. For some uses, additional areas were drawn to document seasonality, pulse events, temporal variability (day/night) and species-specific use areas. Participants also provided relevant supplemental information on uses (e.g., seasonality, social and cultural significance, historical patterns) that was compiled and added to the final use maps.

- **General Use Footprint :** The general use footprint includes all areas in which the use is *known to occur with some regularity* (over the past 3-5 years), regardless of its frequency or intensity. The general use footprint does not include areas where the use may occur once or twice or where it might *conceivably* occur now or in the future. For this step, all areas drawn will be included in the final data layer.
- **Dominant Use Areas:** Dominant use areas are defined as *ocean areas routinely used by most users most of the time* (within the seasonal patterns for that use). Dominant use areas must be drawn within the general use footprint. Participants worked together to draw dominant use areas as they occur throughout the study region. This step was designed as a group exercise and participants should work together to agree on which areas are dominant use areas and should be included in the final data layer.
- **Supplemental Use Data:** Participants were also asked to provide supplemental information on use patterns both spatially (on the map) and as additional notes collected after the workshop.

## Maps

Data compiled during the workshop were processed to create maps documenting the use patterns as drawn by the workshop participants. The following maps show patterns for each use mapped in the workshops and include the general use footprint and dominant use areas, as well as a compilation of the supplemental data provided by participants throughout the mapping process. After initial data processing was completed, draft maps were presented for review to workshop participants and follow up interviews were conducted to fill any knowledge gaps.

## Contacts

For questions regarding this project or the derived products, please contact either:

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Mimi D'lorio  
NOAA MPA Center  
[Mimi.Diorio@noaa.gov](mailto:Mimi.Diorio@noaa.gov)

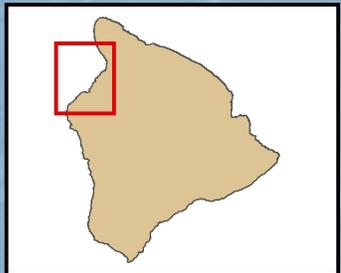
**Non-Extractive / Recreational Ocean Uses**

| <b>Use type</b>                               | <b>Includes</b>  | <b>Excludes</b>   |
|---|--|---|
| <b>Camping</b>                                | All overnight camping for fishing or recreational purposes, as well as homeless encampments, whether permitted or non-permitted  | Fishing-focused overnight use   |
| <b>Charter Boating and Mammal Watching</b>    | Dolphin tours, whale-watching tours, scenic tours, and bare boat rentals   | Non-commercial activities   |
| <b>Charter Diving and Snorkeling</b>          | Diving and snorkeling activities organized through a commercial operator, including vessel and shore-based SCUBA, SNUBA, snorkel, freediving, and kayak snorkel tours, including rentals | Swimming, spearfishing or extractive activities, and non-commercial diving and snorkeling |
| <b>Non-Charter Diving and Snorkeling</b>      | Shore-based and vessel-based SCUBA, snorkel, and free-diving activities that are not for the purpose of fishing or gathering   | Research, spearfishing, extractive activities, trolling, or commercial activities         |
| <b>Non-Motorized, Non-Charter Boating</b>     | Outrigger canoe paddling (individual or team), racing, paddle-driven kayaking, kayak-based snorkeling or freediving, and flatwater stand-up paddleboarding (SUP)                         | Commercial boating activities, use of motorized vessels, and surf-style SUP               |
| <b>Surfing</b>                                | Surfing, surf-style SUP, windsurfing, kite surfing, and boogie-boarding  | Flatwater SUP   |
| <b>Swimming</b>                               | Racing, general exercise, and triathlons (individual or team)  | Freediving, snorkeling, or wading   |
| <b>Thrill Craft and High-Speed Activities</b> | Parasailing tours, use of jet boats, jet skis, motorized kayaks, and coastal off-boarding  | Non-motorized vessels   |

**Extractive Ocean Uses**

| <b>Use type</b>                          | <b>Includes</b>  | <b>Excludes</b>  |
|--|--|--|
| <b>Aquarium Collecting</b>               | All gear types to collect fish and invertebrates for aquarium purposes, as well as shrimp to feed tropical fish    | Collection for species to be eaten and/or sold as food           |
| <b>Gill Nets</b>                         | Fishing using gill net, cross net, barricade net, lay net and drift net  | Aquarium collection, surround net or throw net fishing           |
| <b>Net Fishing from a Boat</b>           | Surround net, 'ōpelu net, bag net, Kona crab net, and lobster net  | Throw nets and gill nets   |
| <b>Pole and Line Fishing from a Boat</b> | Boat-based bottom fishing, trolling, pole and line, and handlining (both commercial and non-commercial operations) | Pole and line fishing from shore                                 |
| <b>Pole and Line Fishing from Shore</b>  | Shore-based dunking, whipping, bamboo, and fly fishing activities (both commercial and non-commercial operations)  | Pole and line fishing from a boat                                |
| <b>Spearfishing</b>                      | Freediving and SCUBA in-water use of spear (gun, 3-prong)  | Shoreline gathering with a spear                                 |
| <b>Shoreline Gathering</b>               | Shoreline gathering of (most) invertebrates and limu   | Harvesting lobsters or diving on the reef                        |
| <b>Throw Nets</b>                        | Any type of throw net  | Aquarium collection, 'ōpelu /akule fishing, and gill or lay nets |

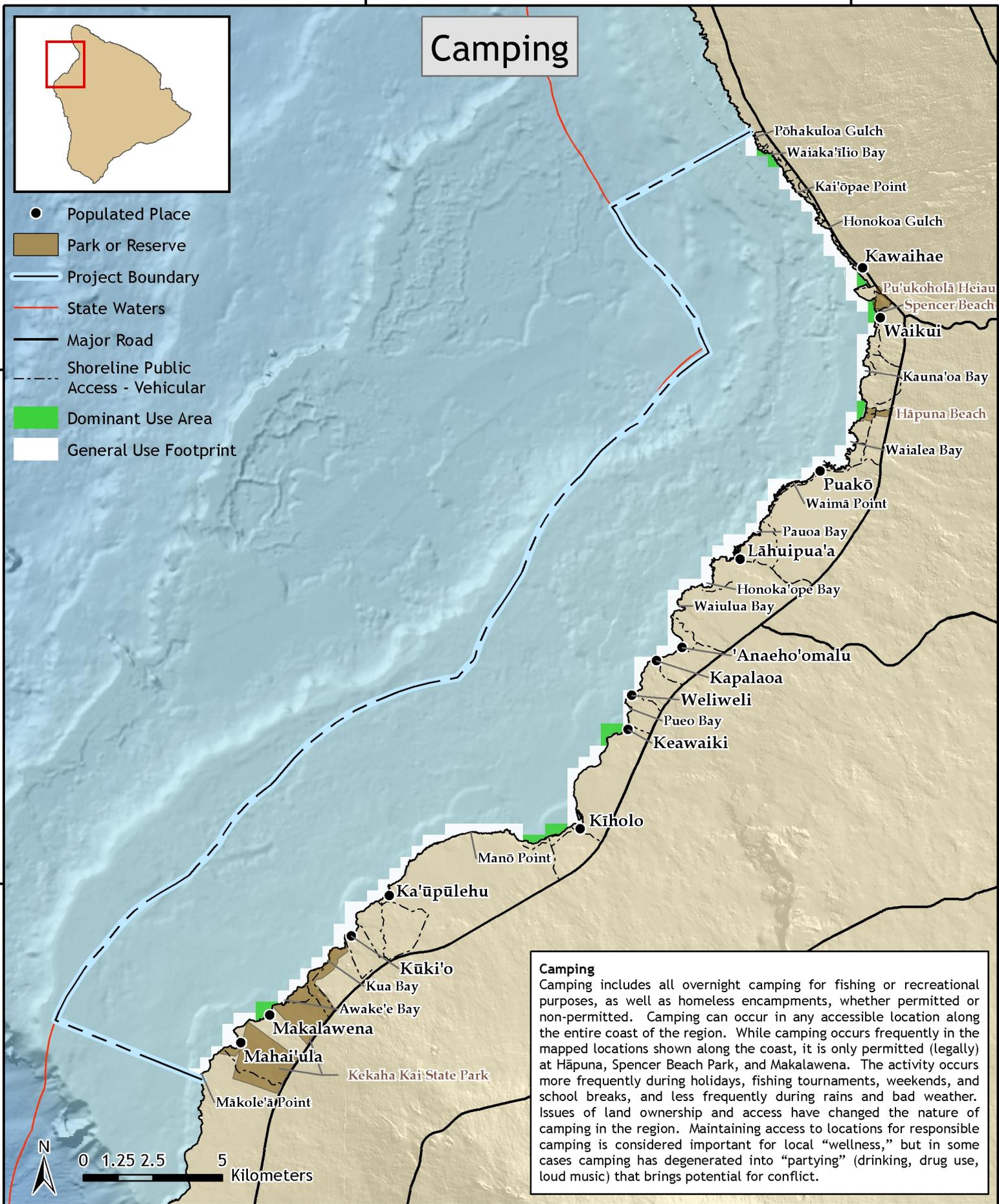
# Camping



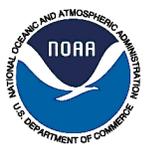
- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint

20°0'0"N

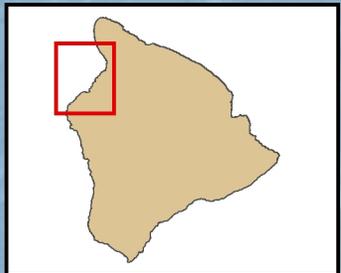
19°50'0"N



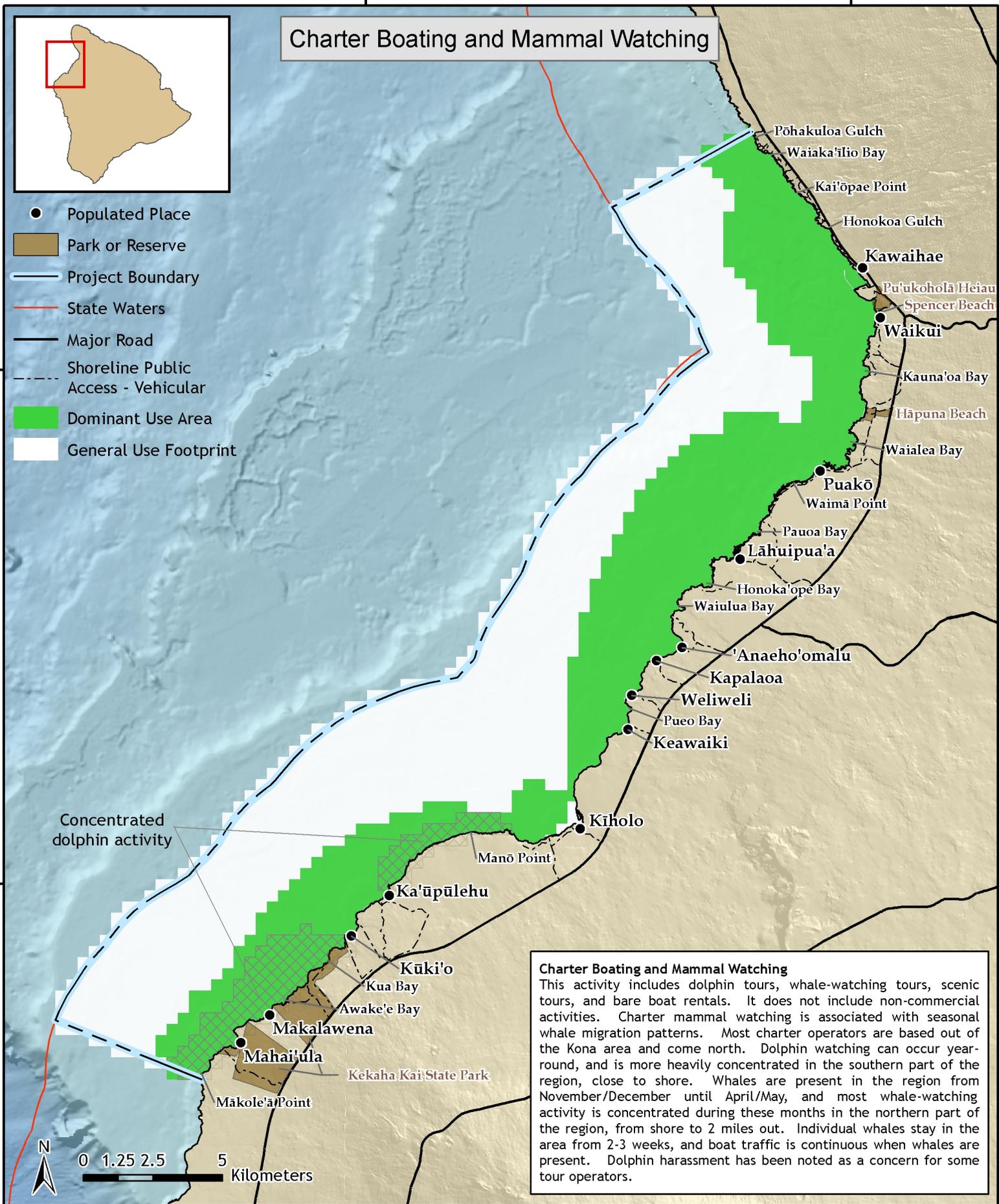
**Camping**  
 Camping includes all overnight camping for fishing or recreational purposes, as well as homeless encampments, whether permitted or non-permitted. Camping can occur in any accessible location along the entire coast of the region. While camping occurs frequently in the mapped locations shown along the coast, it is only permitted (legally) at Hāpuna, Spencer Beach Park, and Makalawena. The activity occurs more frequently during holidays, fishing tournaments, weekends, and school breaks, and less frequently during rains and bad weather. Issues of land ownership and access have changed the nature of camping in the region. Maintaining access to locations for responsible camping is considered important for local "wellness," but in some cases camping has degenerated into "partying" (drinking, drug use, loud music) that brings potential for conflict.



# Charter Boating and Mammal Watching



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint



Concentrated dolphin activity

**Charter Boating and Mammal Watching**  
 This activity includes dolphin tours, whale-watching tours, scenic tours, and bare boat rentals. It does not include non-commercial activities. Charter mammal watching is associated with seasonal whale migration patterns. Most charter operators are based out of the Kona area and come north. Dolphin watching can occur year-round, and is more heavily concentrated in the southern part of the region, close to shore. Whales are present in the region from November/December until April/May, and most whale-watching activity is concentrated during these months in the northern part of the region, from shore to 2 miles out. Individual whales stay in the area from 2-3 weeks, and boat traffic is continuous when whales are present. Dolphin harassment has been noted as a concern for some tour operators.

20°0'0"N

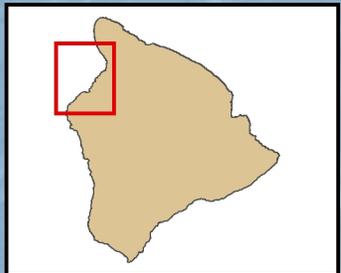
19°50'0"N



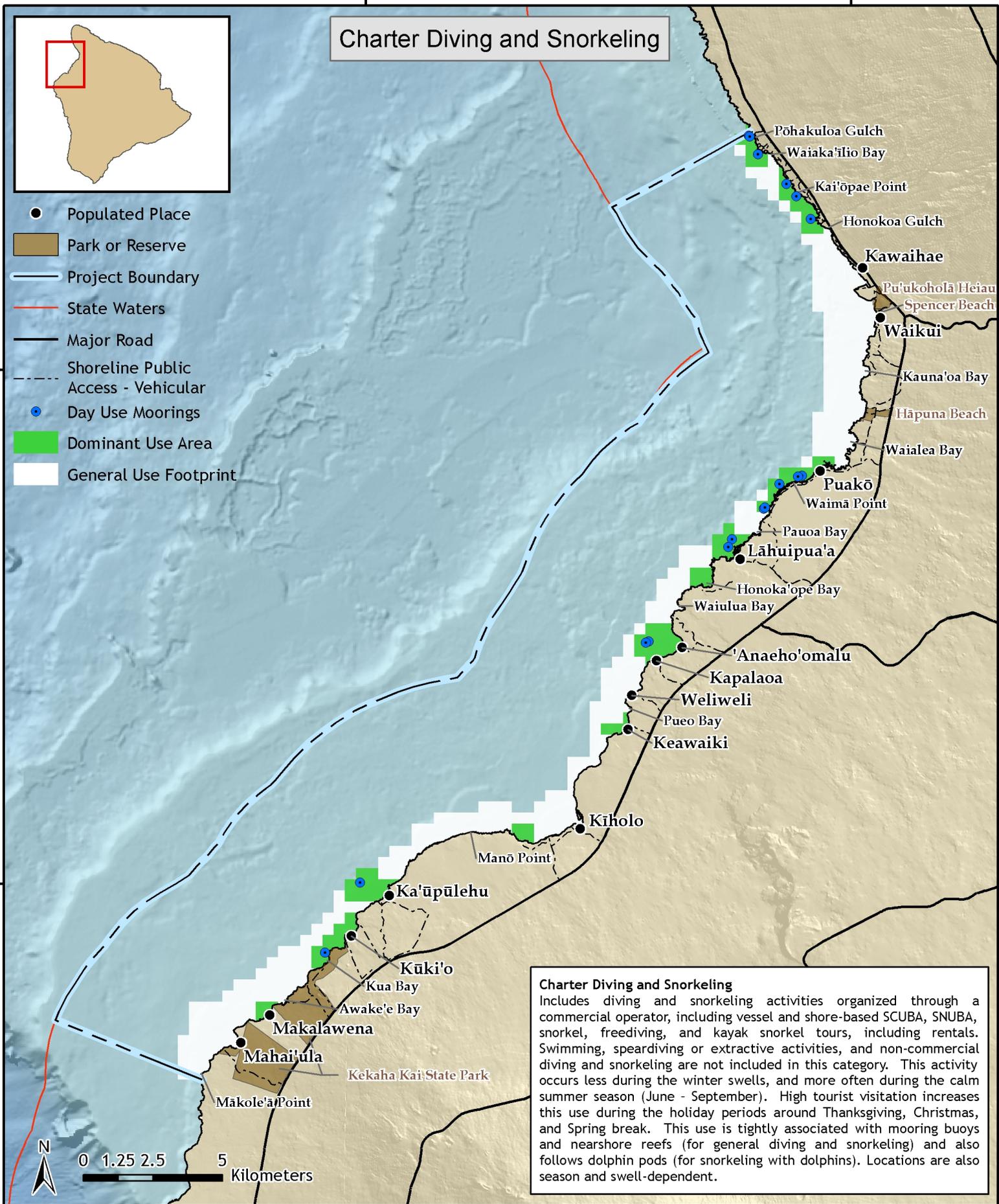
0 1.25 2.5 5 Kilometers



# Charter Diving and Snorkeling



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Day Use Moorings
- Dominant Use Area
- General Use Footprint



**Charter Diving and Snorkeling**  
 Includes diving and snorkeling activities organized through a commercial operator, including vessel and shore-based SCUBA, SNUBA, snorkel, freediving, and kayak snorkel tours, including rentals. Swimming, spearfishing or extractive activities, and non-commercial diving and snorkeling are not included in this category. This activity occurs less during the winter swells, and more often during the calm summer season (June - September). High tourist visitation increases this use during the holiday periods around Thanksgiving, Christmas, and Spring break. This use is tightly associated with mooring buoys and nearshore reefs (for general diving and snorkeling) and also follows dolphin pods (for snorkeling with dolphins). Locations are also season and swell-dependent.

20°0'0"N

19°50'0"N

156°0'0"W

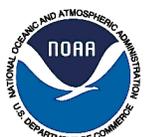
155°50'0"W



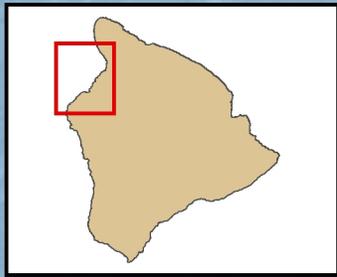
0 1.25 2.5 5 Kilometers



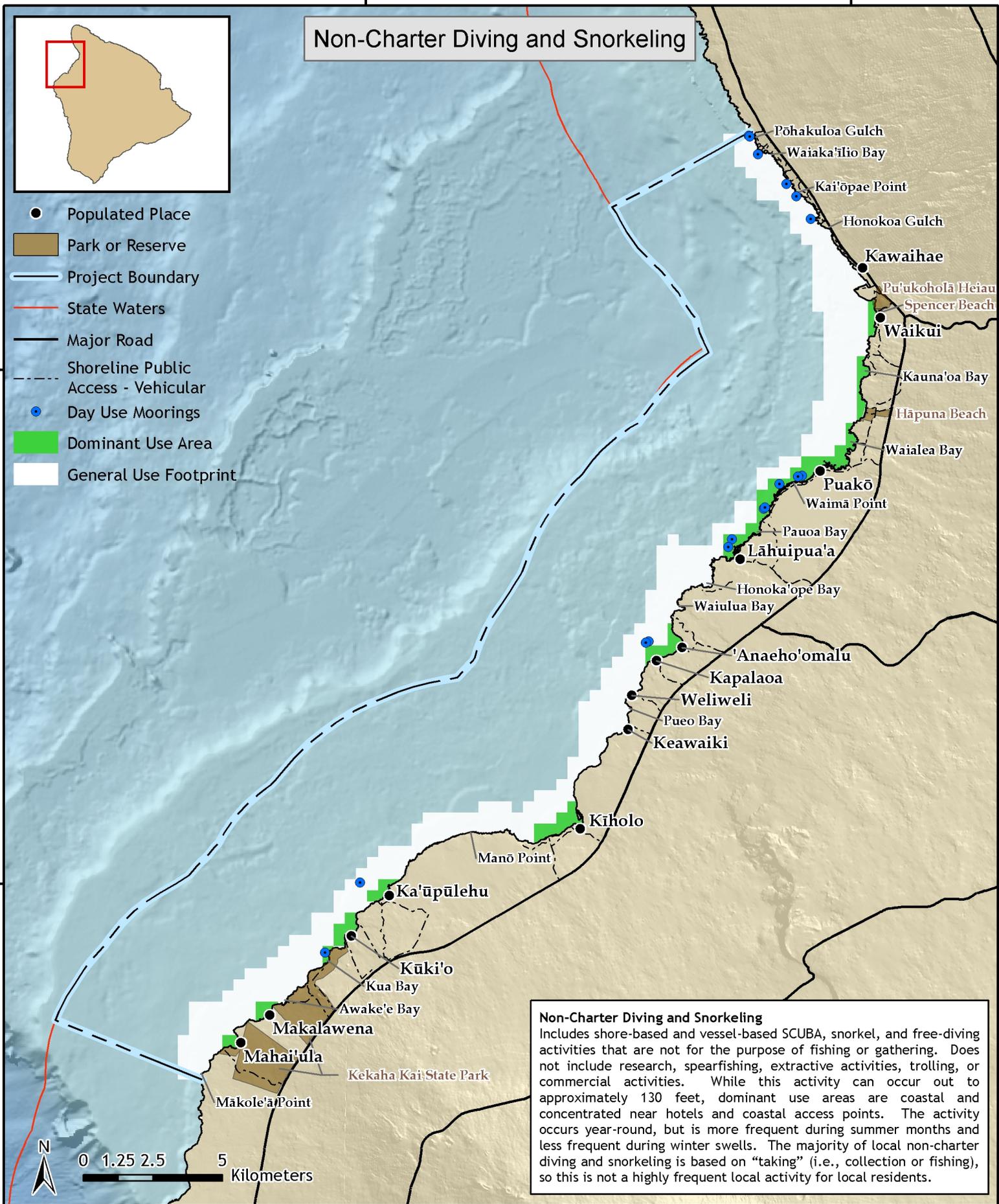
**Hawai'i Coastal Use Mapping Project**  
 North Kona & South Kohala  
 March, 2011



# Non-Charter Diving and Snorkeling



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Day Use Moorings
- Dominant Use Area
- General Use Footprint



20°0'0"N

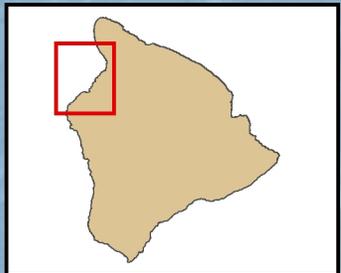
19°50'0"N



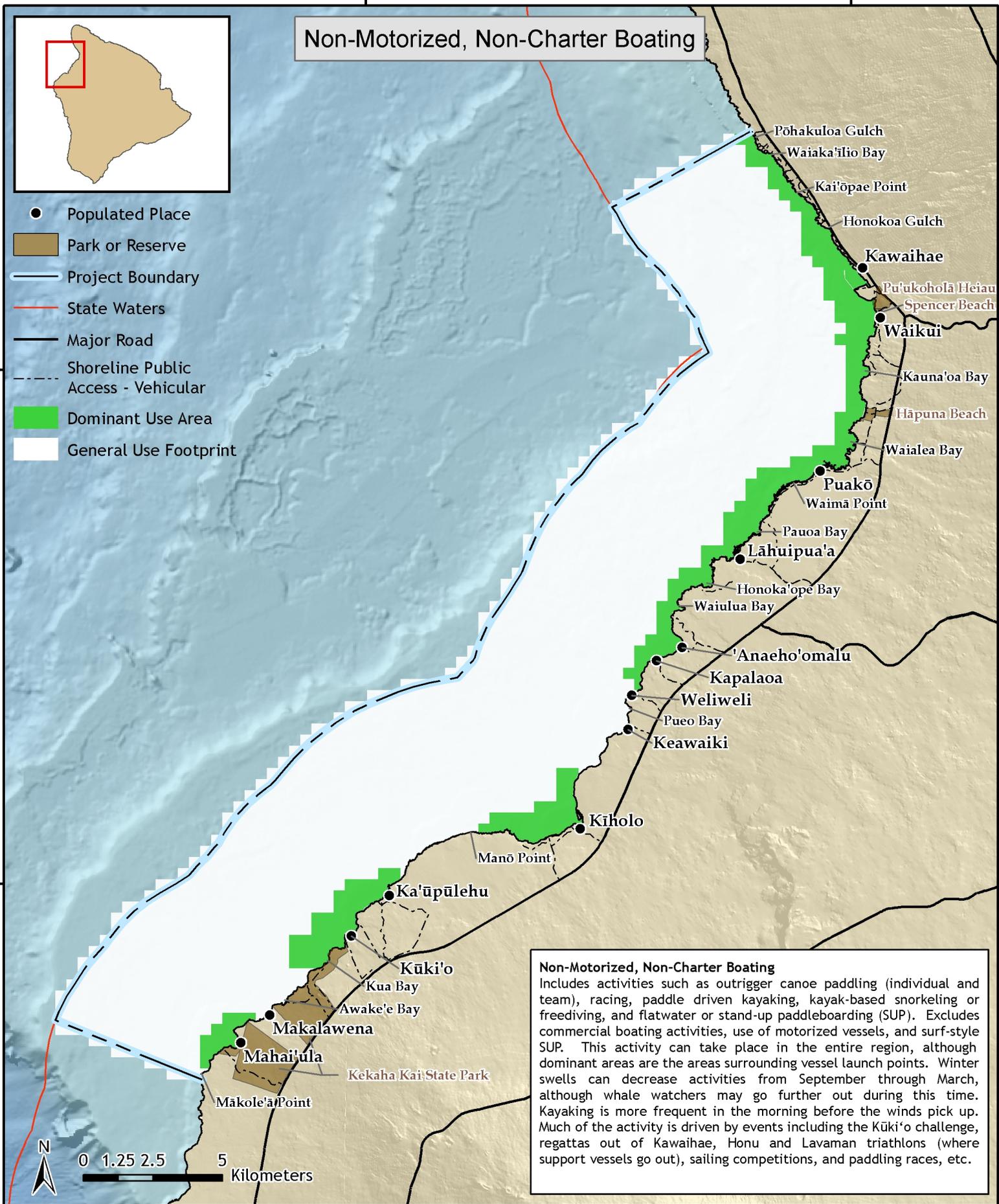
**Non-Charter Diving and Snorkeling**  
 Includes shore-based and vessel-based SCUBA, snorkel, and free-diving activities that are not for the purpose of fishing or gathering. Does not include research, spearfishing, extractive activities, trolling, or commercial activities. While this activity can occur out to approximately 130 feet, dominant use areas are coastal and concentrated near hotels and coastal access points. The activity occurs year-round, but is more frequent during summer months and less frequent during winter swells. The majority of local non-charter diving and snorkeling is based on "taking" (i.e., collection or fishing), so this is not a highly frequent local activity for local residents.



# Non-Motorized, Non-Charter Boating



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint



20°0'0"N

19°50'0"N



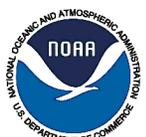
**Non-Motorized, Non-Charter Boating**  
 Includes activities such as outrigger canoe paddling (individual and team), racing, paddle driven kayaking, kayak-based snorkeling or freediving, and flatwater or stand-up paddleboarding (SUP). Excludes commercial boating activities, use of motorized vessels, and surf-style SUP. This activity can take place in the entire region, although dominant areas are the areas surrounding vessel launch points. Winter swells can decrease activities from September through March, although whale watchers may go further out during this time. Kayaking is more frequent in the morning before the winds pick up. Much of the activity is driven by events including the Kūki'o challenge, regattas out of Kawaihae, Honu and Lavaman triathlons (where support vessels go out), sailing competitions, and paddling races, etc.



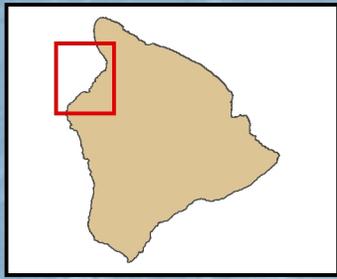
## Hawai'i Coastal Use Mapping Project

### North Kona & South Kohala

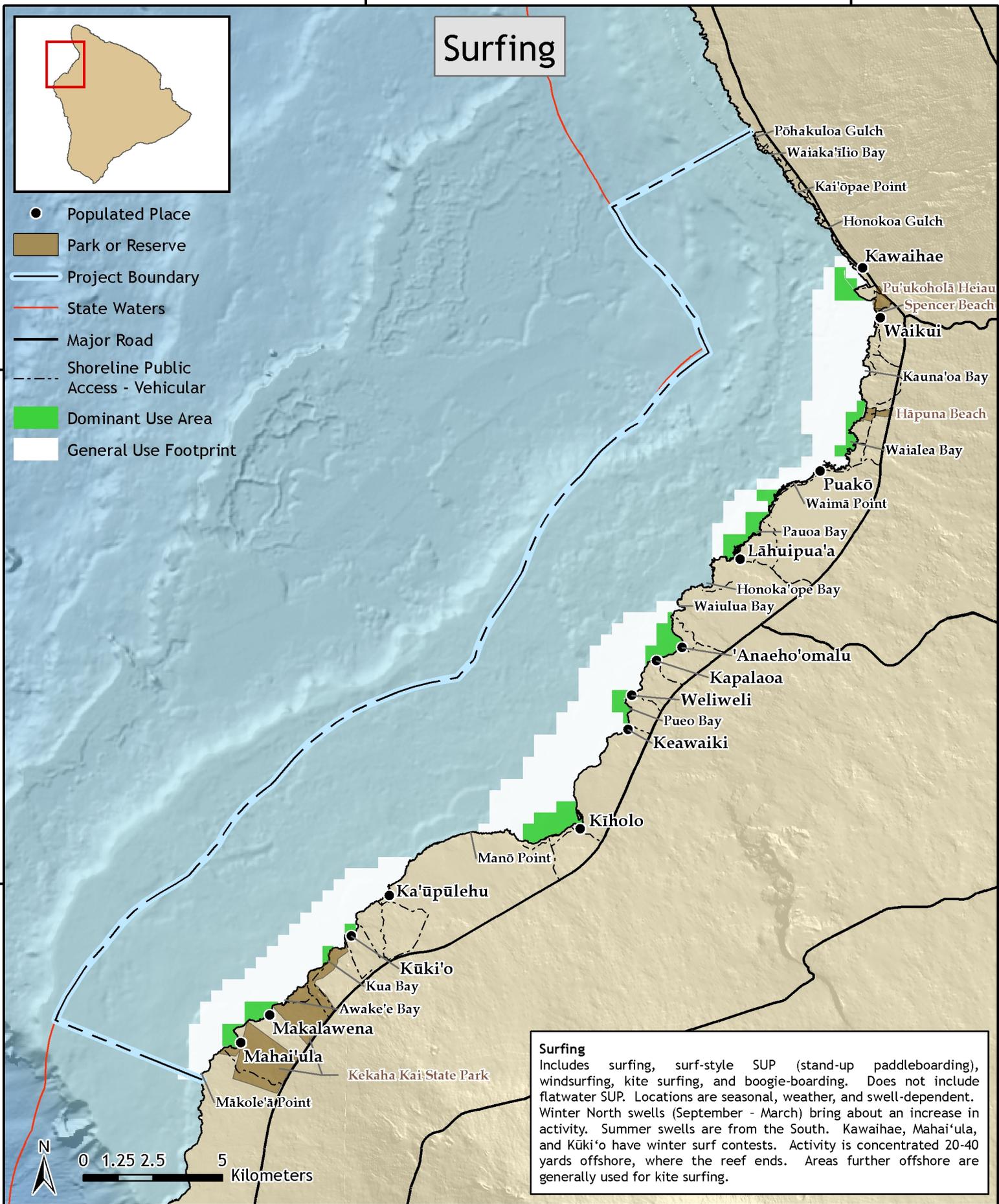
March, 2011



# Surfing



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint



20°0'0"N

19°50'0"N



0 1.25 2.5 5 Kilometers

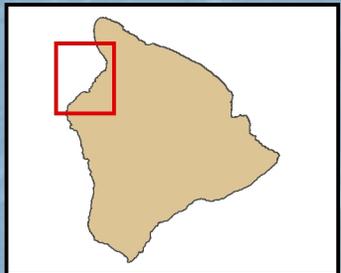
**Surfing**  
 Includes surfing, surf-style SUP (stand-up paddleboarding), windsurfing, kite surfing, and boogie-boarding. Does not include flatwater SUP. Locations are seasonal, weather, and swell-dependent. Winter North swells (September - March) bring about an increase in activity. Summer swells are from the South. Kawaihae, Mahai'ula, and Kūki'o have winter surf contests. Activity is concentrated 20-40 yards offshore, where the reef ends. Areas further offshore are generally used for kite surfing.



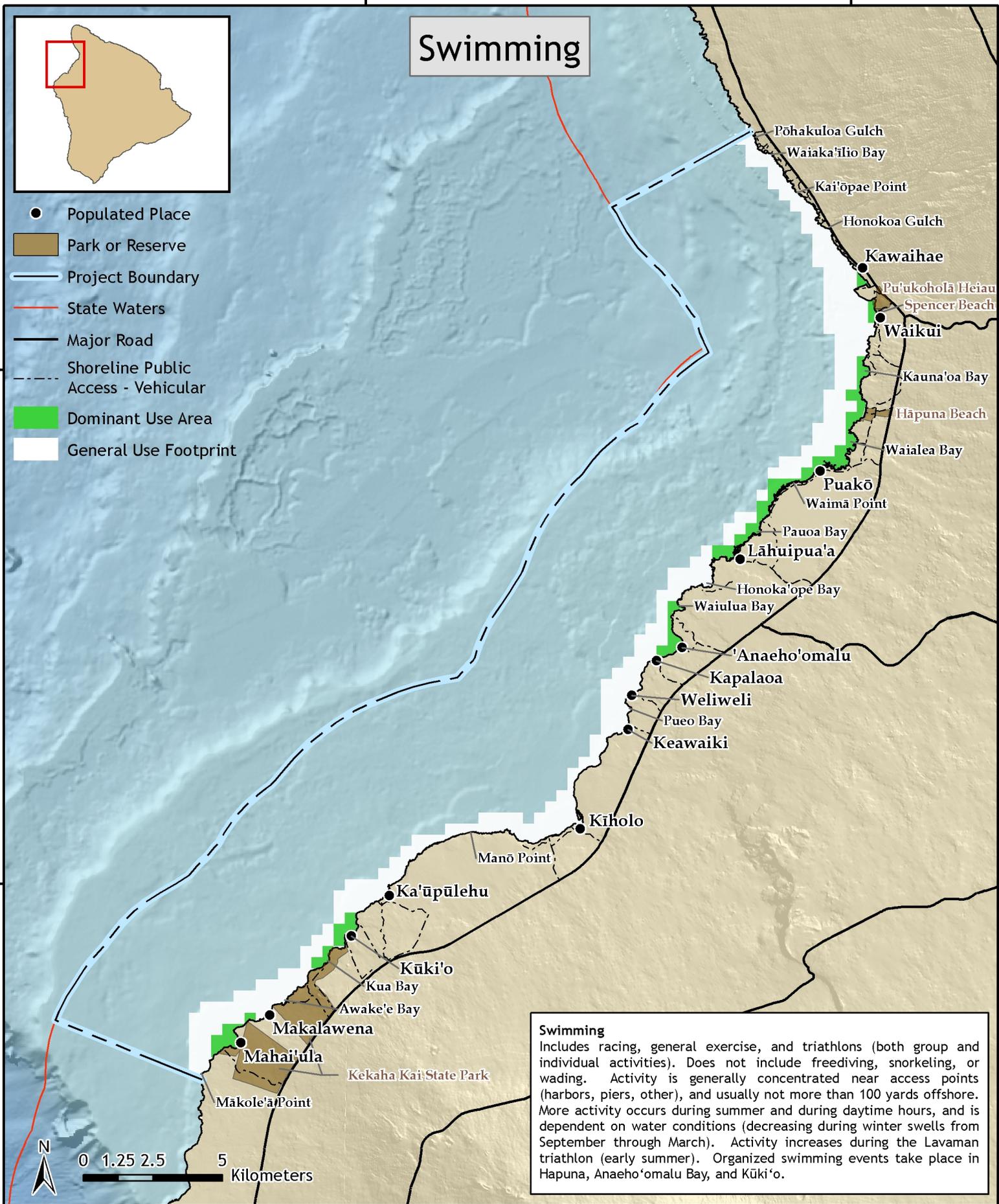
**Hawai'i Coastal Use Mapping Project**  
 North Kona & South Kohala  
 March, 2011



# Swimming



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint



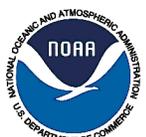
20°0'0"N

19°50'0"N

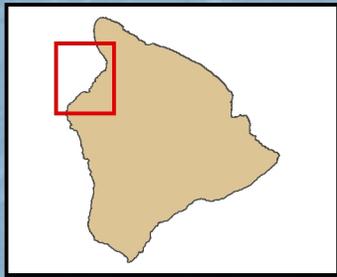


0 1.25 2.5 5 Kilometers

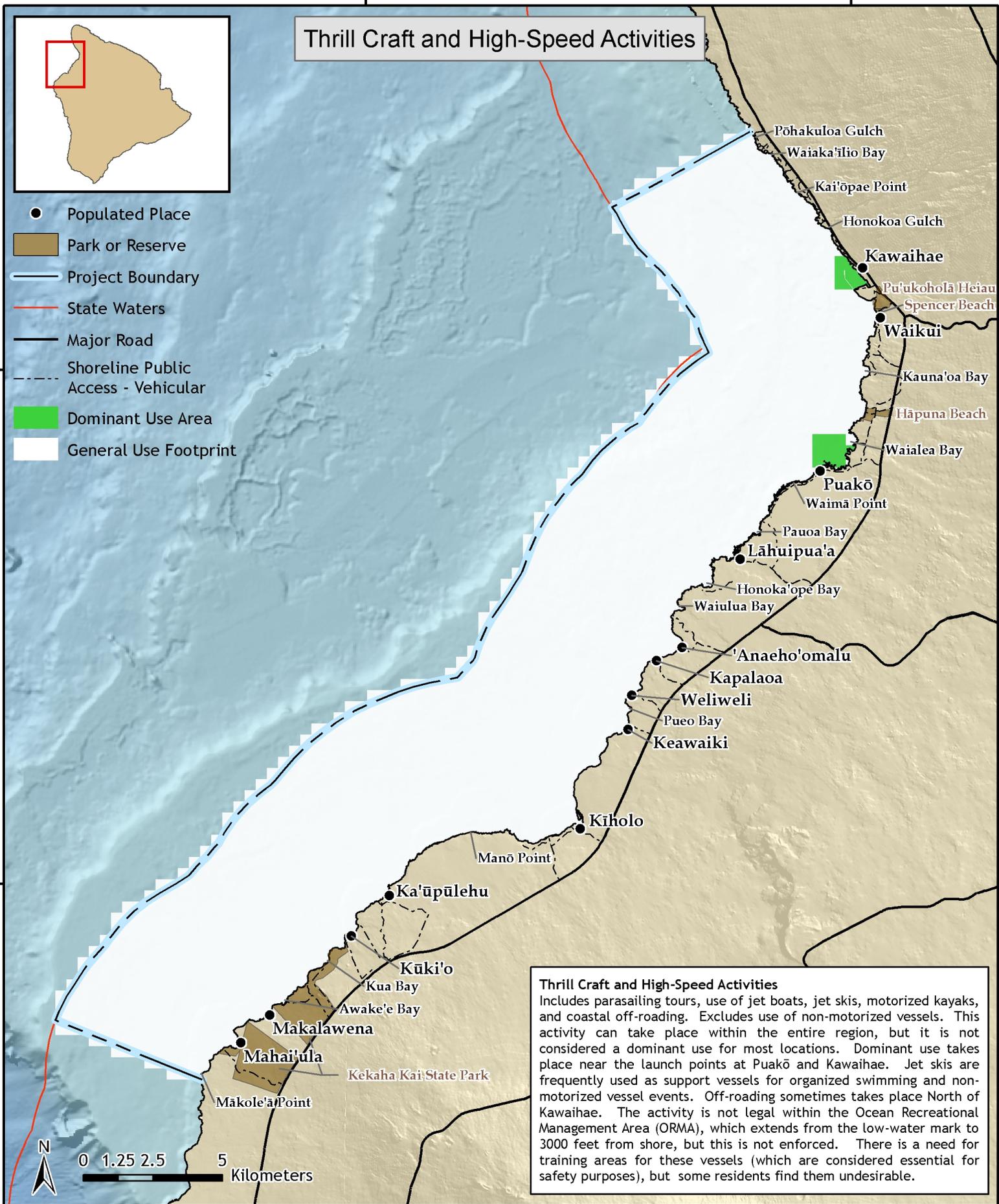
**Swimming**  
 Includes racing, general exercise, and triathlons (both group and individual activities). Does not include freediving, snorkeling, or wading. Activity is generally concentrated near access points (harbors, piers, other), and usually not more than 100 yards offshore. More activity occurs during summer and during daytime hours, and is dependent on water conditions (decreasing during winter swells from September through March). Activity increases during the Lavaman triathlon (early summer). Organized swimming events take place in Hapuna, Anaeho'omalu Bay, and Kūki'o.



# Thrill Craft and High-Speed Activities



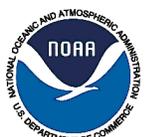
- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint



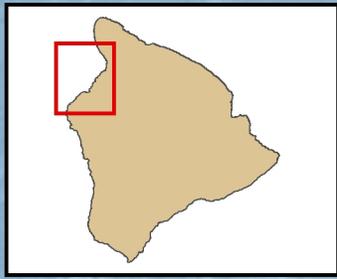
**Thrill Craft and High-Speed Activities**  
 Includes parasailing tours, use of jet boats, jet skis, motorized kayaks, and coastal off-roading. Excludes use of non-motorized vessels. This activity can take place within the entire region, but it is not considered a dominant use for most locations. Dominant use takes place near the launch points at Puakō and Kawaihae. Jet skis are frequently used as support vessels for organized swimming and non-motorized vessel events. Off-roading sometimes takes place North of Kawaihae. The activity is not legal within the Ocean Recreational Management Area (ORMA), which extends from the low-water mark to 3000 feet from shore, but this is not enforced. There is a need for training areas for these vessels (which are considered essential for safety purposes), but some residents find them undesirable.

20°0'0"N

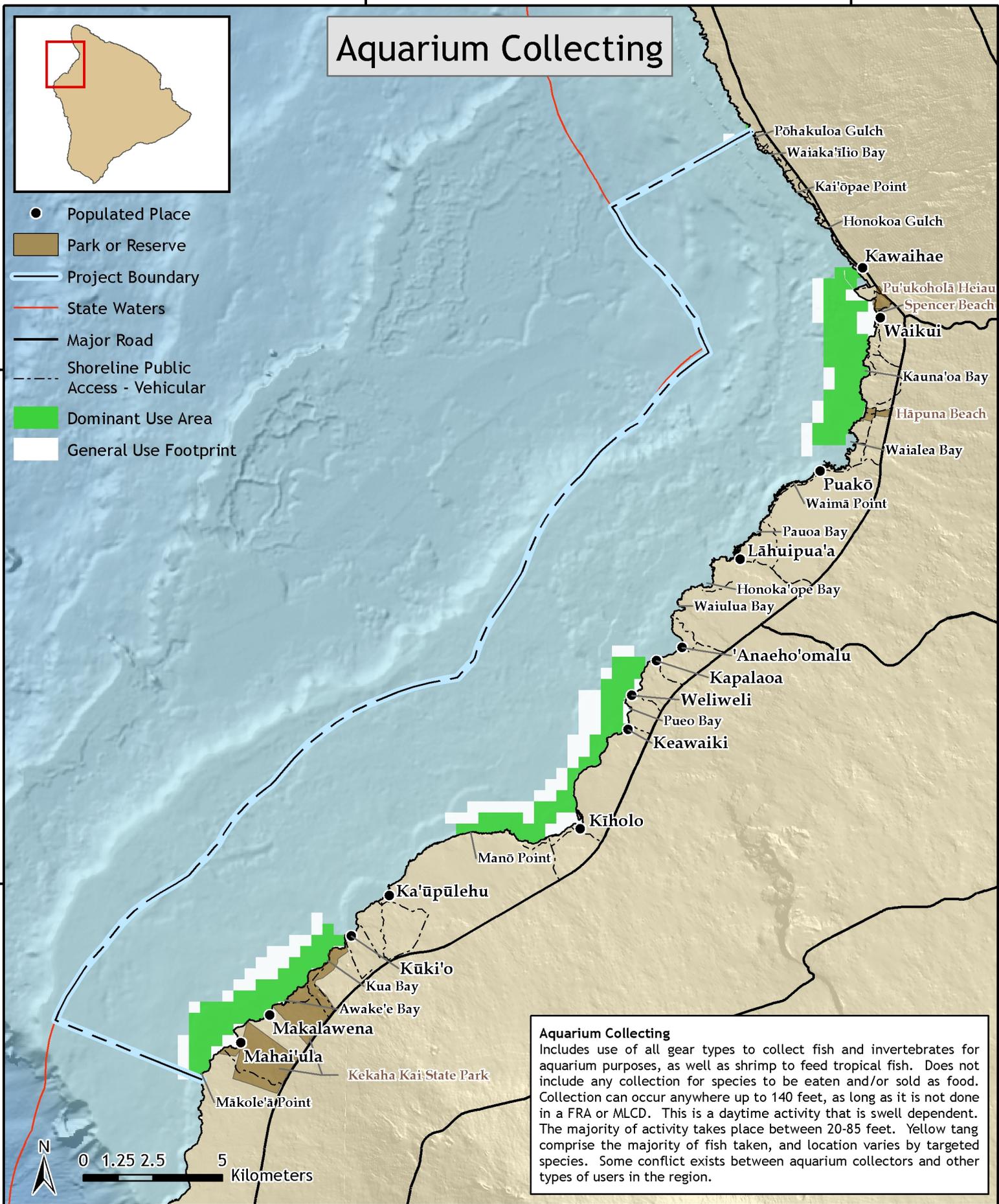
19°50'0"N



# Aquarium Collecting



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint



20°0'0"N

19°50'0"N

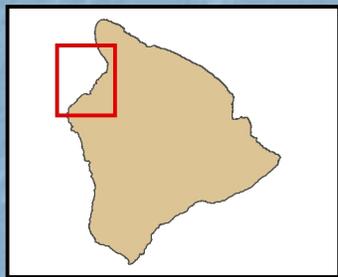


0 1.25 2.5 5 Kilometers

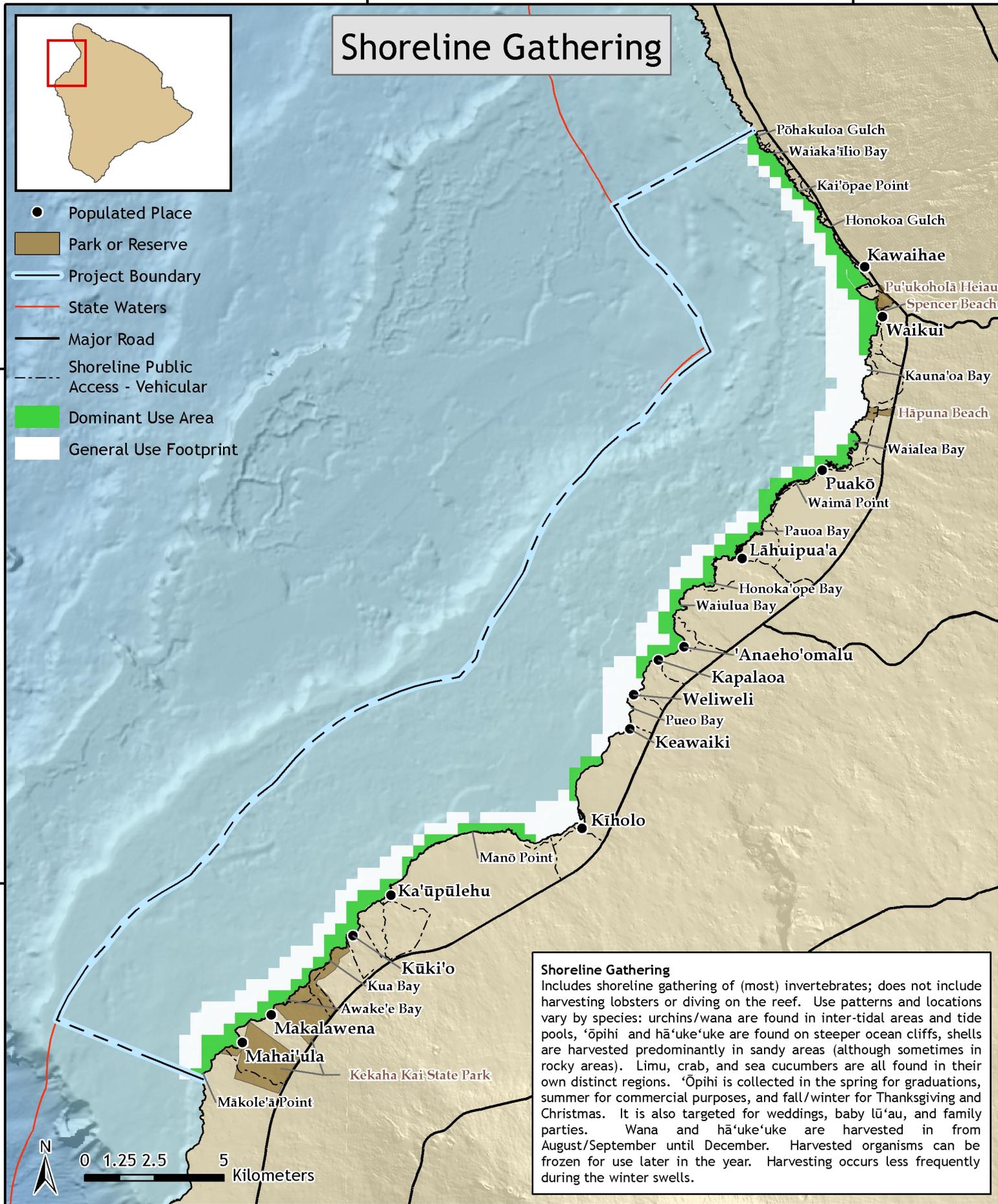
**Aquarium Collecting**  
 Includes use of all gear types to collect fish and invertebrates for aquarium purposes, as well as shrimp to feed tropical fish. Does not include any collection for species to be eaten and/or sold as food. Collection can occur anywhere up to 140 feet, as long as it is not done in a FRA or MLCD. This is a daytime activity that is swell dependent. The majority of activity takes place between 20-85 feet. Yellow tang comprise the majority of fish taken, and location varies by targeted species. Some conflict exists between aquarium collectors and other types of users in the region.



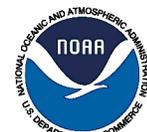
# Shoreline Gathering



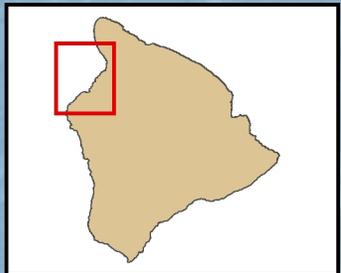
- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint



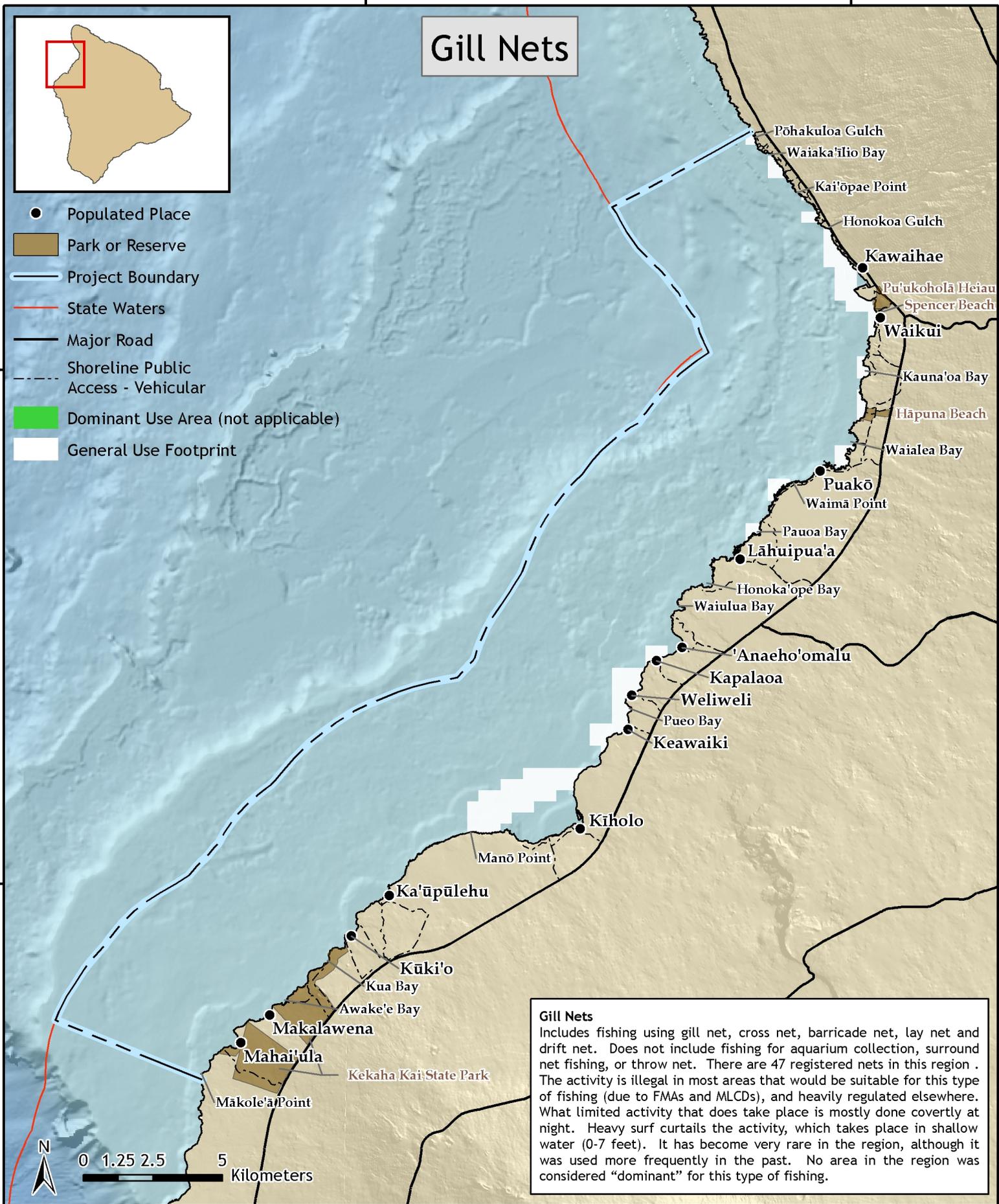
**Shoreline Gathering**  
 Includes shoreline gathering of (most) invertebrates; does not include harvesting lobsters or diving on the reef. Use patterns and locations vary by species: urchins/wana are found in inter-tidal areas and tide pools, 'ōpihi and hā'uke'uke are found on steeper ocean cliffs, shells are harvested predominantly in sandy areas (although sometimes in rocky areas). Limu, crab, and sea cucumbers are all found in their own distinct regions. 'Ōpihi is collected in the spring for graduations, summer for commercial purposes, and fall/winter for Thanksgiving and Christmas. It is also targeted for weddings, baby lū'au, and family parties. Wana and hā'uke'uke are harvested in from August/September until December. Harvested organisms can be frozen for use later in the year. Harvesting occurs less frequently during the winter swells.



# Gill Nets



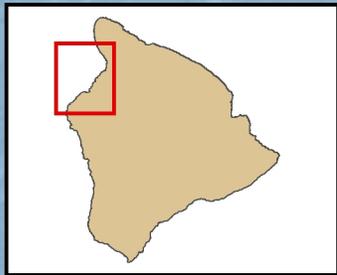
- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area (not applicable)
- General Use Footprint



**Gill Nets**  
 Includes fishing using gill net, cross net, barricade net, lay net and drift net. Does not include fishing for aquarium collection, surround net fishing, or throw net. There are 47 registered nets in this region. The activity is illegal in most areas that would be suitable for this type of fishing (due to FMAs and MLCDs), and heavily regulated elsewhere. What limited activity that does take place is mostly done covertly at night. Heavy surf curtails the activity, which takes place in shallow water (0-7 feet). It has become very rare in the region, although it was used more frequently in the past. No area in the region was considered "dominant" for this type of fishing.



# Net Fishing from a Boat



- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area (not applicable)
- General Use Footprint

Hatched areas are smaller zones of opelu or akule fishing within the larger crab and lobster general footprint

**Net Fishing from a Boat**  
 This includes surround net, 'ōpelu net, bag net, Kona crab net, and lobster net, but excludes throw nets and gill nets. This activity is not considered a "dominant use" in the region as the frequency has decreased over the past 20 years, although fishing for akule and 'ōpelu is still considered culturally significant (current and/or traditional surround-net areas are shown with dashed lines). Akule fishing generally takes place during the spring, whereas 'ōpelu fishing takes place in the fall. These aggregations are usually found in bays with freshwater input, whereas Kona crab and lobster are found further offshore. Kona crab and lobster fishing happens more frequently than fishing for 'ōpelu and akule, but specific fishing locations are considered sensitive information and are generally not revealed.

20°0'0"N

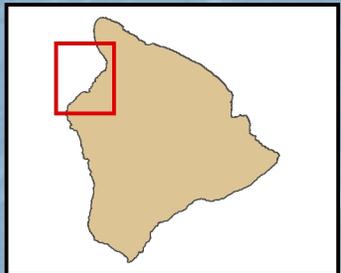
19°50'0"N



0 1.25 2.5 5 Kilometers



# Pole and Line Fishing from a Boat



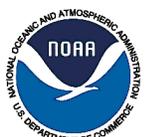
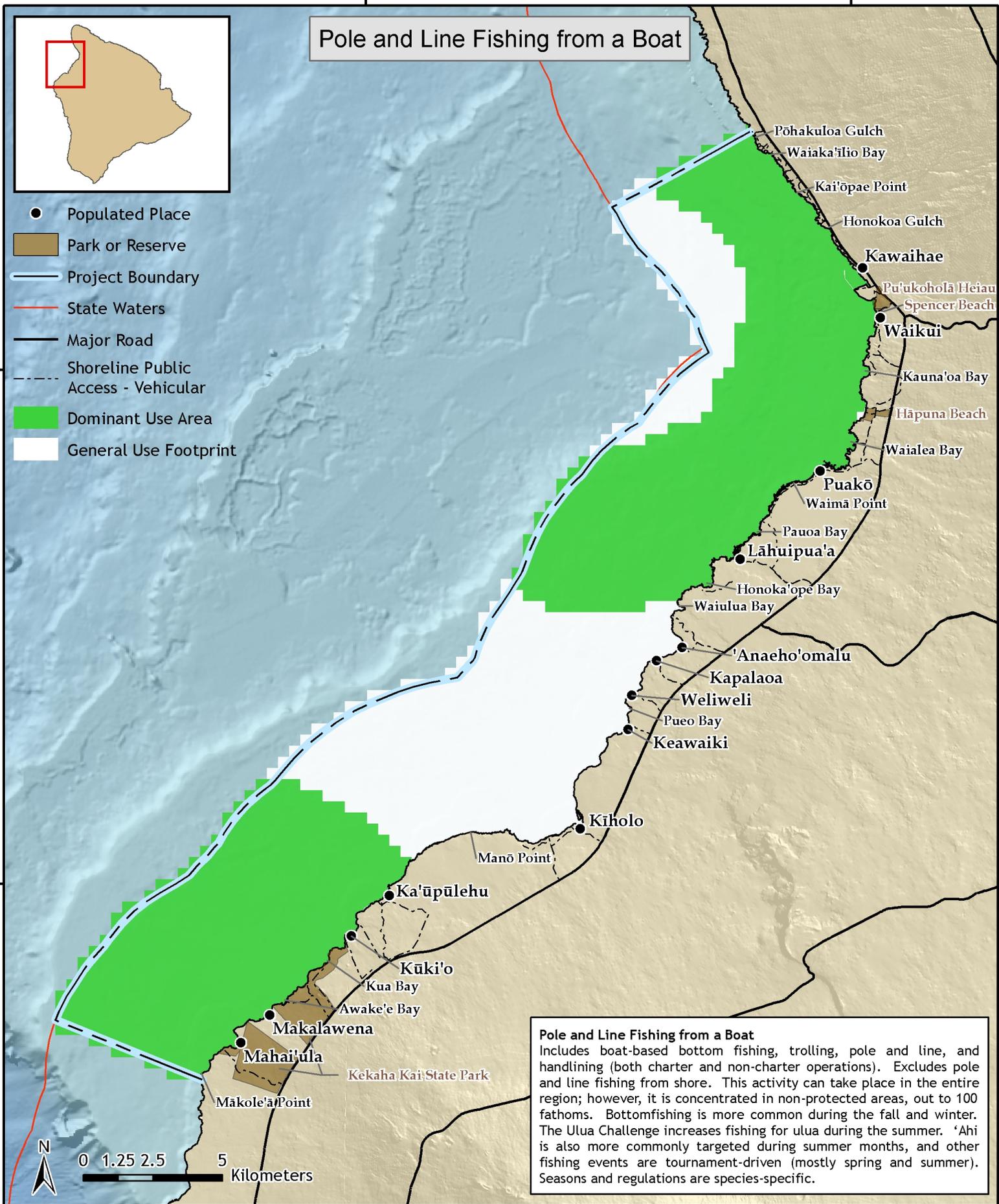
- Populated Place
- Park or Reserve
- Project Boundary
- State Waters
- Major Road
- - - Shoreline Public Access - Vehicular
- Dominant Use Area
- General Use Footprint

20°0'0"N

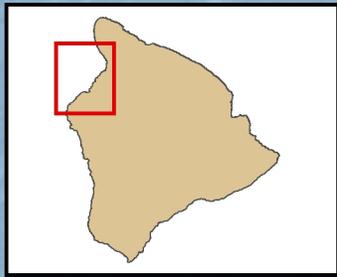
19°50'0"N



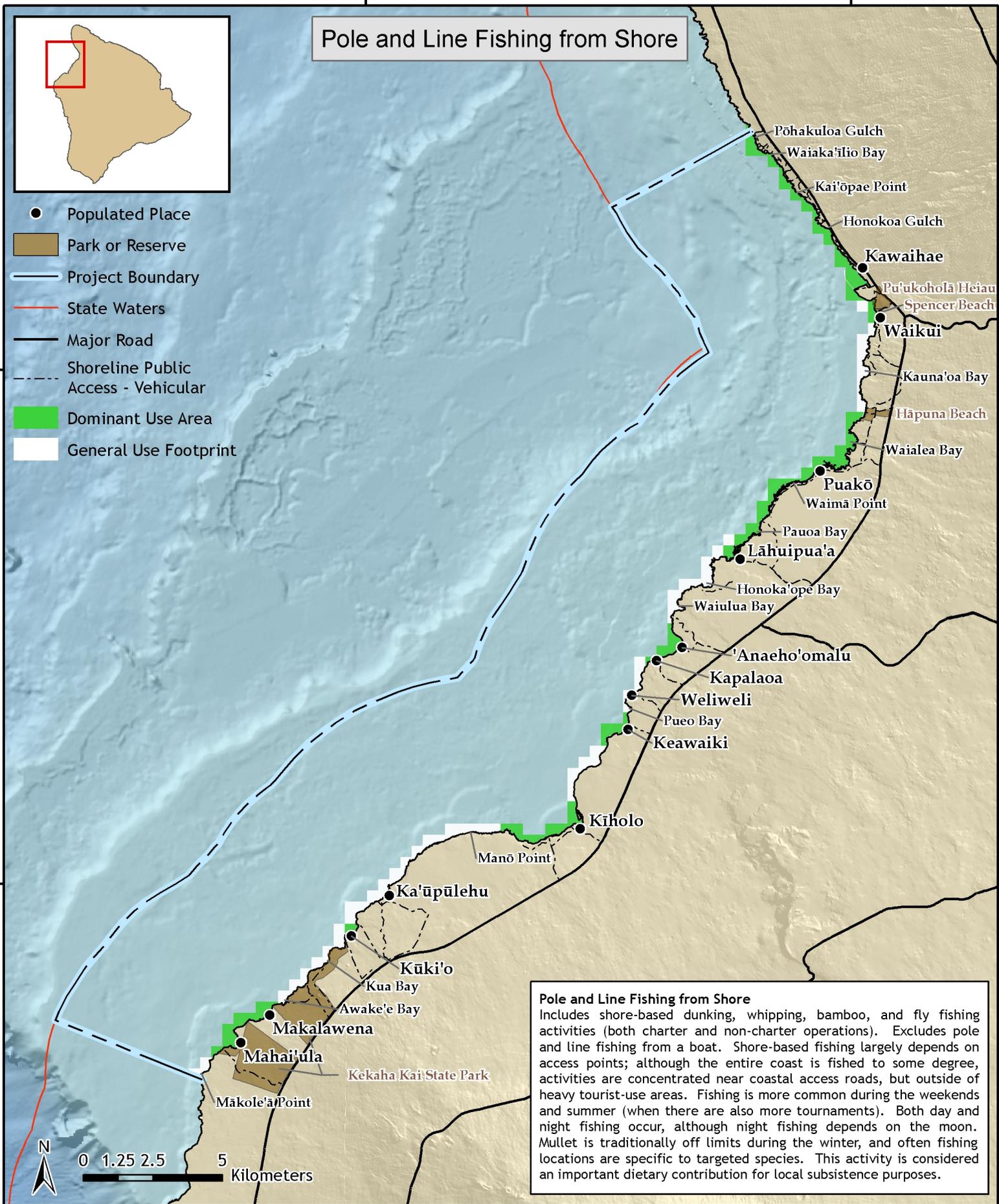
**Pole and Line Fishing from a Boat**  
 Includes boat-based bottom fishing, trolling, pole and line, and handlining (both charter and non-charter operations). Excludes pole and line fishing from shore. This activity can take place in the entire region; however, it is concentrated in non-protected areas, out to 100 fathoms. Bottomfishing is more common during the fall and winter. The Ulua Challenge increases fishing for ulua during the summer. 'Ahi is also more commonly targeted during summer months, and other fishing events are tournament-driven (mostly spring and summer). Seasons and regulations are species-specific.



# Pole and Line Fishing from Shore



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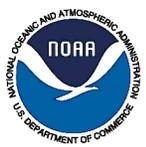


20°0'0"N

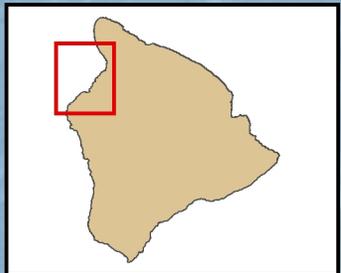
19°50'0"N



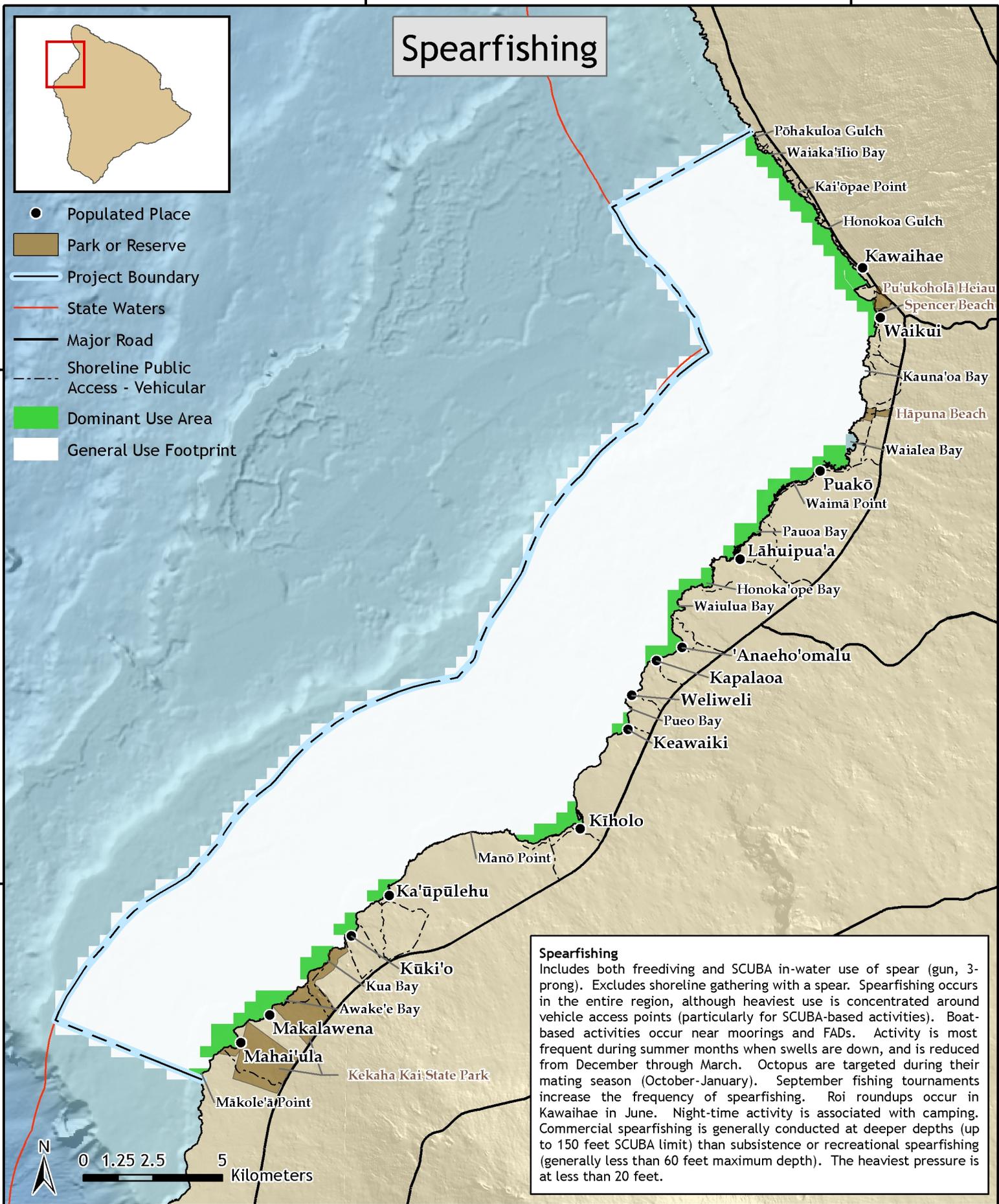
**Pole and Line Fishing from Shore**  
 Includes shore-based dunking, whipping, bamboo, and fly fishing activities (both charter and non-charter operations). Excludes pole and line fishing from a boat. Shore-based fishing largely depends on access points; although the entire coast is fished to some degree, activities are concentrated near coastal access roads, but outside of heavy tourist-use areas. Fishing is more common during the weekends and summer (when there are also tournaments). Both day and night fishing occur, although night fishing depends on the moon. Mullet is traditionally off limits during the winter, and often fishing locations are specific to targeted species. This activity is considered an important dietary contribution for local subsistence purposes.



# Spearfishing



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20°0'0"N

19°50'0"N



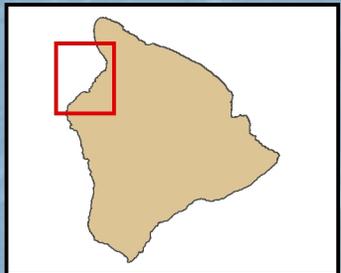
**Spearfishing**  
 Includes both freediving and SCUBA in-water use of spear (gun, 3-prong). Excludes shoreline gathering with a spear. Spearfishing occurs in the entire region, although heaviest use is concentrated around vehicle access points (particularly for SCUBA-based activities). Boat-based activities occur near moorings and FADs. Activity is most frequent during summer months when swells are down, and is reduced from December through March. Octopus are targeted during their mating season (October-January). September fishing tournaments increase the frequency of spearfishing. Roi roundups occur in Kawaihae in June. Night-time activity is associated with camping. Commercial spearfishing is generally conducted at deeper depths (up to 150 feet SCUBA limit) than subsistence or recreational spearfishing (generally less than 60 feet maximum depth). The heaviest pressure is at less than 20 feet.



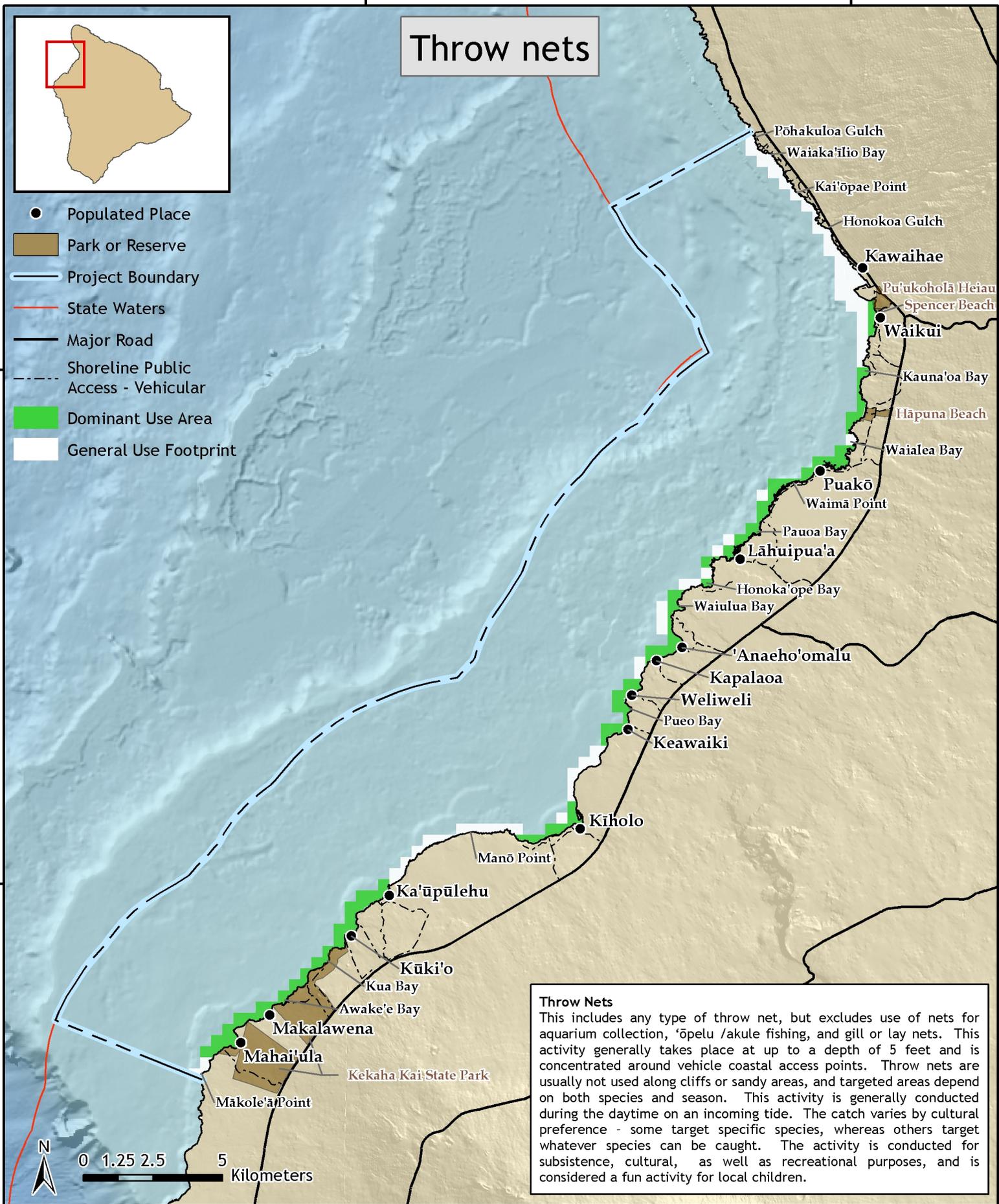
**Hawai'i Coastal Use Mapping Project**  
 North Kona & South Kohala  
 March, 2011



# Throw nets



- Populated Place
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20°0'0"N

19°50'0"N



0 1.25 2.5 5 Kilometers

**Throw Nets**  
 This includes any type of throw net, but excludes use of nets for aquarium collection, 'ōpelu /akule fishing, and gill or lay nets. This activity generally takes place at up to a depth of 5 feet and is concentrated around vehicle coastal access points. Throw nets are usually not used along cliffs or sandy areas, and targeted areas depend on both species and season. This activity is generally conducted during the daytime on an incoming tide. The catch varies by cultural preference - some target specific species, whereas others target whatever species can be caught. The activity is conducted for subsistence, cultural, as well as recreational purposes, and is considered a fun activity for local children.

