

Sensitivity of Coastal Environments and Wildlife to Spilled Oil

U.S. and BRITISH VIRGIN ISLANDS

ATLAS

National Oceanic and
Atmospheric
Administration

National Ocean Service

Office of Response and Restoration
Hazardous Materials Response
Division

United States
Environmental
Protection Agency

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Coast Guard

U.S. Virgin Islands
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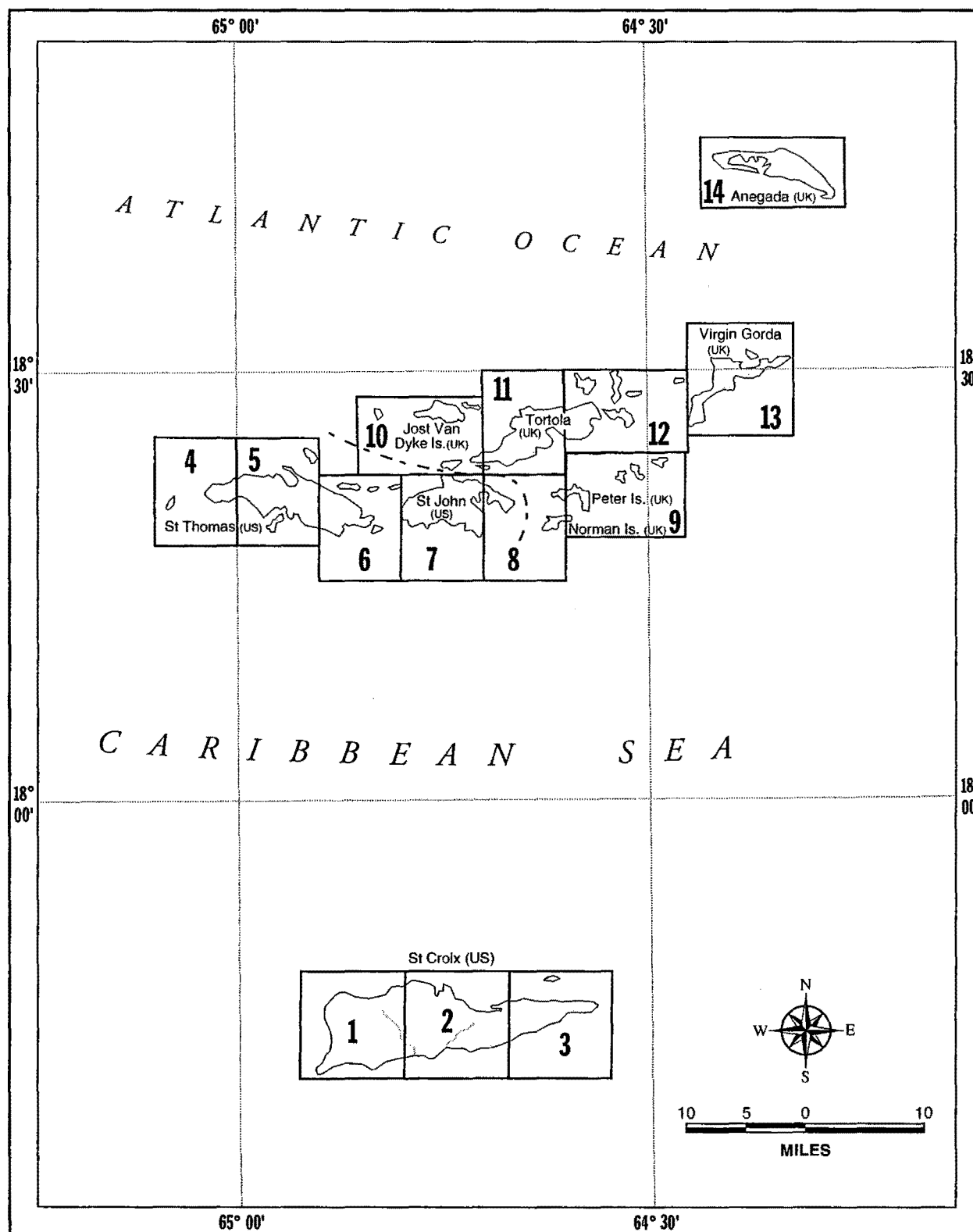
British Virgin Islands
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ENVIRONMENTAL SENSITIVITY INDEX: VIRGIN ISLANDS

INTRODUCTION

Environmental Sensitivity Index (ESI) maps have been developed for the marine and coastal areas of the U.S. and British Virgin Islands (USVI and BVI). Black and white scanned images of the U.S. Geological Survey (USGS) topographic quadrangle maps and topographic maps published by the UK Directorate of Overseas Surveys (UKDOS) are used as a backdrop for the map pages in this atlas. The topographic maps also served as the basemaps upon which most of the data for this project were collected and compiled. The name and date on the bottom right of each map page in this atlas refer to the corresponding topographic map name and its publication or latest photorevision date.

SHORELINE HABITAT MAPPING

The intertidal shoreline habitats of the U.S. Virgin Islands were previously mapped during overflights and ground surveys conducted for the Virgin Islands Resource Management Cooperative and the National Oceanic and Atmospheric Administration (NOAA), published in 1986. For the current project, the original ESI maps were re-examined and fully updated using the sources and methods described below. As a first step, vertical aerial photographs were examined at the offices of the USVI Department of Planning and Natural Resources (DPNR) in St. Thomas and the offices of the BVI Conservation and Fisheries Department (CFD) on Tortola. The initial aerial photograph classification was followed by overflight surveys of the entire study area, flying at elevations of 400-600 feet and slow air speed. Overflights were conducted using U.S. Coast Guard (USCG) helicopters, pilots, and support crew. During this work, an experienced coastal geologist delineated the intertidal shoreline habitats directly onto 1:24,000-scale USGS or 1:25,000-scale UKDOS topographic maps. Where appropriate, multiple habitats were described for each shoreline segment. Data from the National Wetlands Inventory (NWI) for the USVI, published in draft form in 1989 (based on 1:40,000 1983 CIR and 1985 B-W photography), was also used as a supplementary data source, particularly for mangrove areas and tidal flats. In many cases, the depiction of mangroves was modified substantially from the original NWI data, based on the more recent aerial photography and overflights, as well as information provided by expert reviewers. Mangrove polygons for the BVIs were based primarily on digital data from the 1993 Coastal Resource Atlas of the British Virgin Islands produced by the Natural Resources Institute (NRI), Overseas Development Administration (source scale 1:10,000). Mangrove polygons from the NRI data set were generally not altered, although in some cases mangrove areas identified during the overflights and by expert reviewers may have been added or changed slightly.

To determine the sensitivity of a particular intertidal shoreline habitat, the following factors are integrated:

- 1) Shoreline type (substrate, grain size, tidal elevation, origin)
- 2) Exposure to wave and tidal energy
- 3) Biological productivity and sensitivity
- 4) Ease of cleanup

Prediction of the behavior and persistence of oil in intertidal habitats is based on an understanding of the dynamics of the coastal environments, not just the substrate type and grain size. The intensity of energy expended upon a shoreline by wave action, tidal currents, and river currents directly affects the persistence of stranded oil. The need for shoreline cleanup activities is determined, in part, by the slowness of natural processes in removal of oil stranded on the shoreline. The potential for biological injury, and ease of cleanup of spilled oil are also important factors in the ESI ranking. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, and low biological activity rank low on the scale, whereas sheltered areas with associated high biological activity have the highest ranking. The list below includes the shoreline habitats delineated for the Virgin Islands, presented in order of increasing sensitivity to spilled oil.

- 1A) Exposed Rocky Cliffs
- 1B) Exposed, Solid Man-made Structures
- 2A) Exposed Wave-cut Platforms in Bedrock
- 3A) Fine- to Medium-grained Sand Beaches
- 4) Coarse-grained Sand Beaches
- 5) Mixed Sand and Gravel Beaches
- 6A) Gravel Beaches
- 6B) Riprap
- 7) Exposed Tidal Flats
- 8A) Sheltered Rocky Shores
- 8B) Sheltered, Solid Man-made Structures
- 8C) Sheltered Riprap
- 9A) Sheltered Tidal Flats
- 9B) Sheltered, Vegetated Low Banks
- 10D) Mangroves

Each of the shoreline habitats are described on pages 11-21, in terms of their physical description, predicted oil behavior, and response considerations.

SALT PONDS

Salt ponds are another important coastal habitat type shown in this atlas. Salt ponds are former small bays that have been closed in by a berm of coral rubble or sand. Salinity and water levels in the ponds can fluctuate widely depending on season, rainfall, runoff, and surface and groundwater connections to the sea. During the dry season, water in the ponds can evaporate entirely, creating a layer of salt crust on the sediment surface that is locally harvested in some areas. Salt ponds are often mangrove lined, and provide habitat for a wide variety of wildlife and fisheries resources. Bird life can be especially abundant in and around salt ponds. Juvenile life-stages of certain marine fish may also use some salt ponds as nursery areas. Ponds are also important in trapping sediments before they reach reef and seagrass areas. Note that because of the presence of a berm, many salt ponds do not have direct tidal connections to marine surface waters, and thus may not be directly at risk during a marine spill. However, salt ponds often have intermittent tidal connections that could place them at risk. During storms, heavy seas, or periods of high run-off, salt pond berms may be breached or overwashed, allowing entry of marine waters and oil contamination. Run-off from upland areas, including oil from land-based spills, can flow into salt ponds via drainages and guts.

Though not assigned a special symbol or color, salt ponds are mapped as hydrographic (water) features, often located just behind the main shoreline, and often (though not always) assigned a shoreline ESI rank (e.g., 9A, 9B, 10D or some combination thereof, typically 10D/9A for mangroves and sheltered tidal flats). In addition, nearly every salt pond depicted in this atlas has been mapped as a fish and wildlife concentration area, containing resources such as wading birds, shorebirds, waterfowl, gulls and terns, neotropical migrants, fish-eating bats, and a variety of fish and invertebrates, such as land crabs. For a list of the largest and most important salt ponds in the USVI, see Boulon (1999).

OTHER WETLAND HABITATS

In addition to the ESI shoreline habitats and salt ponds, other coastal wetland habitat types from the 1989 NWI data for USVI were also depicted on the maps. Unlike mangroves, these wetland types were not checked or edited extensively as a part of this project, and were not considered part of the detailed ESI classification. In some cases, expert data providers and reviewers provided edits on wetland location and extent. When provided, these changes were incorporated in the atlas. Additional coastal wetland types from NWI depicted in this atlas (for USVI only) include:

- Salt- and Brackish-Water Marshes
- Freshwater Marshes
- Freshwater Swamps
- Freshwater Scrub/Shrub Wetlands

SENSITIVE BIOLOGICAL RESOURCES

Biological information presented in this atlas was collected, compiled, and reviewed with the assistance of biologists and resource managers from the USVI DPNR Division of Fish and Wildlife, BVI CFD, U.S. National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), and several other agencies, organizations, and groups (see acknowledgments). Information collected and depicted on the maps denotes the key biological resources that are most likely at risk in the event of a coastal or marine oil spill. Eight major categories of biological resources are included in this atlas: marine mammals, terrestrial mammals, birds, reptiles, fish, invertebrates, plants, and benthic marine habitats.

The spatial distribution of biological resources on the maps is represented by polygons and lines as appropriate. Associated with each of these representations is an icon depicting the types of species or habitats that are present (icons are not used for benthic marine habitats). Species have been divided into groups and subgroups, based on their behavior, morphology, taxonomic classification, and spill vulnerability and sensitivity. The following icons reflect this grouping scheme. The groups are color coded, and the subgroups are represented by different icons:

MARINE MAMMAL

-  Dolphin
-  Whale

TERRESTRIAL MAMMAL

-  Bat

BIRD

-  Passerine-like Bird
-  Raptor
-  Seabird
-  Shorebird
-  Wading Bird
-  Waterfowl

REPTILE

-  Other Reptiles
-  Turtle

FISH

-  Fish

INVERTEBRATE

-  Bivalve
-  Crab
-  Gastropod
-  Lobster
-  Octopus
-  Shrimp

PLANT

-  Rare Plant

The polygon color and pattern are generally the same for all species in each major group (e.g., birds are green), and match the icon colors. Also associated with each biological polygon or point feature on the map is a resources at risk identification number (RAR#), located under each icon or group of icons. The RAR# references a table on the reverse side of the map with a complete list of species associated with the polygon or line feature, and the state and federal protected status (T&E), concentration, seasonality, and life-history information for each species. T&E status for this atlas always references U.S. federal status and USVI "state" status for each species, even for species locations occurring in the British Virgin Islands.

There are some species that are found throughout specific geographical areas or habitat types on certain maps. Displaying the polygons for these species would cover large areas or would obscure the shoreline, ESI classification, or other biological features, making the maps very difficult to read. Thus, species which occur over the majority of certain geographic areas or habitats are often identified in a small box on the maps which states that they are "Present in ..." (e.g., "Present in Nearshore Waters" or "Present on Sand Beaches"). This approach informs the user of the presence of these species, while maintaining readability of the map. In all instances, data for species listed as "Present in" exist as polygons in the digital data. The use of this strategy is implemented on a map per map basis, depending on the location, size, and number of polygons present on each map.

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each

species. This is particularly important to recognize when considering potential impacts to protected species.

MARINE MAMMALS

Marine mammals depicted in the Virgin Islands atlas include whales and dolphins. Concentration areas and sensitive areas for humpback whales and sperm whales are specifically indicated on the maps. These areas include nearshore humpback migration routes, and humpback and sperm whale breeding and calving areas. It should be recognized that humpback and sperm whales, and other whales and dolphins, can occur throughout nearly all marine waters of the Virgin Islands. For this reason, "whales" and "dolphins" were added to the maps for nearly all marine waters of the Virgin Islands, to cover the potential occurrence of these resources (especially for species not directly addressed on the maps). As an overview of marine mammals that can occur in Puerto Rico and Virgin Islands, the following table was provided by Dr. A. Mignucci-Giannoni, Universidad Metropolitana, San Juan, Puerto Rico (Table 1).

TABLE 1. Recorded marine mammal diversity for Puerto Rico and the Virgin Islands.

Common Name	Status	Typical Seasonality
Caribbean monk seal	endangered (extinct)	n/a
Hooded seal	extralimital records	Jul, Sep
West Indian manatee (P.R. only)	highly endangered	Jan-Dec
Roughtooth dolphin		Feb-Mar, Jun-Aug
Bottlenose dolphin		Jan-Dec
Atlantic spotted dolphin		Jan-Mar, May-Nov
Pantropical spotted dolphin		Feb
Spinner dolphin		Sep-Jul
Striped dolphin		Feb, Sep
Shortsnout saddleback dolphin		Nov-Apr, Jun-Jul
Longsnout saddleback dolphin		
Fraser's dolphin		May, Sep
Risso's dolphin		Jan, Apr, Jun, Sep
Melonhead whale		Aug
Pygmy killer whale		Feb, Sep
Shortfin pilot whale		Jan-Dec
False killer whale		Sep
Killer whale		Feb-Mar, Jun, Dec
Pygmy sperm whale		Dec-Jan, Apr-May, Aug, Oct
Dwarf sperm whale		Jul-Aug, Oct, Dec
Sperm whale	endangered	Sep-Jul
Goosebeak whale		Nov-Sep
Antillean beaked whale		Feb, Sep
Dense beaked whale		Jul
Minke whale		Jan-Feb, May
Bryde's whale		May
Sei whale	endangered	Jan-Mar, Jun, Aug, Oct

Fin whale	endangered	Jan-Mar, Jun, Aug, Oct
Humpback whale	endangered	Nov-May

Marine mammals areas are displayed on the maps as polygons with a brown horizontal hatch pattern. In cases where multiple resource types occupy the same polygon, a black-hatched multi-group pattern is used rather than a brown-hatched polygon. A brown icon with a whale or dolphin silhouette is used to indicate the presence of marine mammals, and is associated with all polygons containing these resources.

The RAR# under the icon (or icon group) on the maps references a table on the reverse side of the map. In this table, the first column gives the species name. The second column indicates whether the species is listed as threatened (T) or endangered (E) on either the state (S = USVI) and/or federal (F = U.S.) lists. The next column provides an estimate of the concentration of the species at the site. Concentration is usually represented as a descriptive term, such as "high," "medium," or "low". Descriptive concentrations are based on the opinion of local resource managers or experts concerning relative concentrations within the study area. In many cases, concentration values have not been used, often at the request of data providers. Note that concentration should not be interpreted as the "level of concern" or "importance" associated with a certain site or particular resource. The seasonality for each species or resource is shown in the next twelve columns, corresponding to the months of the year. If a species is present at a location in a particular month, an "X" is placed in the month column. The final columns list the time periods for sensitive life-history activities, such as mating and calving.

TERRESTRIAL MAMMALS

Terrestrial mammals depicted in this atlas are limited to bats. Bats were generally indicated near salt ponds and certain mangrove-lined bays where fish-eating species may feed, such as the USVI endangered fisherman bat. A few important roosting areas associated with small islands or coastal forests are also indicated. It should be recognized that important bat habitats and occurrence sites not shown on the maps are present in other locations in the Virgin Islands.

Terrestrial mammals are displayed on the maps as polygons with a brown vertical hatch pattern. In cases where multiple resource types occupy the same polygon (such as birds and mammals), a black-hatched multi-group pattern is used rather than a brown-hatched polygon. A brown icon with a bat silhouette is used to indicate the presence of terrestrial mammals, and is associated with all polygons containing these resources.

The RAR# under the icon (or icon group) on the maps references a table on the reverse side of the map. In this table, the first column contains the species common name. The second column indicates whether the species is listed as threatened (T) or endangered (E) on either the state (S = USVI) and/or federal (F = U.S.) lists. The next column provides an estimate of the concentration of the species at the site. Concentration is usually represented as a descriptive term, such as "high," "medium," or "low". Descriptive concentrations are based on the opinion of local resource managers or experts concerning relative concentrations within the study area. In many cases, concentration values have not been used, often at the request of data providers. Note that concentration should not be interpreted as the "level of concern" or "importance" associated with a certain site or particular resource. The seasonality for each species or resource is shown in the next twelve columns, corresponding to the months of the year. If a species or resource is present at a location in a particular month, an "X" is placed in the month column.

BIRDS

Birds in this atlas are divided into several species subgroups based on taxonomy, morphology, behavior, and oil spill vulnerability and sensitivity. The species table lists all the birds included on the maps, sorted by

subgroup. These species are included either because of their likelihood of direct or indirect impact by an oil spill or similar incident, their general rarity or imperilment, or their special protection status as threatened or endangered. Marine, wetland, and aquatic species; nesting sites and colonies; and protected species are especially emphasized. Seabird concentration areas and nesting colonies in this atlas were based mainly on information provided by USVI DPNR Division of Fish and Wildlife and BVI CFD biologists. Concentration areas for wetland and aquatic birds were based mainly on information presented in several USVI DPNR Division of Fish and Wildlife reports, and through discussions with DPNR, USFWS, NPS, and BVI CFD biologists and resource managers.

In several cases, general bird assemblages or groups are depicted on the maps, rather than specific species (Table 2, species list). When used, an assemblage does not imply that all members of the group are present, but that some of them are. Assemblages were used when distinct species occurring at a site were not known, or when the particular species or group of species at a site might be highly variable.

TABLE 2. Bird assemblages used in the Virgin Islands atlas.

Assemblage	Species Examples
Passerine-like Birds	Perching birds and similar species such as doves, pigeons, kingfishers, etc.
Raptors	Falcons, osprey, hawks, etc.
Seabirds	Gulls, terns, pelicans, boobies, frigatebirds, tropicbirds, etc.
Shorebirds	Plovers, sandpipers, stilts, oystercatchers, etc.
Wading Birds	Hérons, egrets, night-herons, etc.
Waterfowl	Ducks, coots, moorhen, grebes, etc.

Birds are shown on the maps as polygons with a green hatch pattern. In cases where multiple resource types occupy the same polygon (such as birds and reptiles), a black-hatched multi-group pattern is used rather than a green-hatched polygon. A green icon (or icons) with the appropriate subgroup silhouette(s) is used to indicate the presence of different bird types (seabirds, waterfowl, raptors, etc.). The appropriate icons are associated with all polygons containing birds.

The RAR# under the icon (or icon group) on the maps references a table on the reverse side of the map. In this table, the first column contains the species common name. The second column indicates whether the species is listed as threatened (T) or endangered (E) on either the state (S = USVI) and/or federal (F = U.S.) lists. The next column provides an estimate of the concentration of the species at the site. Concentration is usually represented as a descriptive term, such as "high," "medium," or "low". For USVI seabird nesting colonies, concentration is listed as the number of nesting pairs, often expressed as a range (e.g., brown pelican, 100-200 nesting pairs). Descriptive concentrations are based on the opinion of local resource managers or experts concerning relative concentrations within the study area. In many cases, concentration values have not been used, often at the request of data providers or when information was not available. Note that concentration should not be interpreted as the "level of concern" or "importance" associated with a certain site or particular resource. The seasonality for each species or resource is shown in the next twelve columns, corresponding to the months of the year. If a species or resource is present at a location in a particular month, an "X" is placed in the month column. The last columns denote the nesting time-period for each species, if nesting occurs in the particular area or site in question. Monthly seasonal presence and nesting months are based on information provided by USVI DPNR biologists for seabirds, and Raffaele *et al.* (1998) for other bird groups. In a few cases, different seasonality and nesting times are used for species at particular sites, based on expert opinion. Therefore, temporal information included in the tables should be considered specific to the map feature that is referenced.

REPTILES

Mapping of sea turtle nesting beaches was emphasized in this atlas. Several known sea turtle in-water concentrations were also mapped, based on expert knowledge. Nearly every sandy beach in the Virgin Islands (including mixed sand and gravel beaches) has documented or potential sea turtle nesting. Accordingly, nesting sea turtles were indicated on most sand beach (ESI = 3A or 4) and mixed sand and gravel beach (ESI = 5) shoreline segments in this atlas. A few shoreline segments mapped as gravel beaches (ESI = 6) were also identified as sea turtle nesting sites. In general, hawksbill nesting can be abundant on beaches throughout the Virgin Islands. Green sea turtles also nest in many areas, although in much lower numbers. Sites with known or potential leatherback sea turtle nesting are less frequent, although the number of leatherbacks nesting in such places can be relatively high. Of particular importance, the beaches at Sandy Point National Wildlife Refuge, on the west end of St. Croix, comprise the most important leatherback nesting site in the U.S. The beaches and surrounding marine waters at Sandy Point are designated as critical habitat for this species under the U.S. Endangered Species Act.

Locations for other rare and protected reptiles in coastal and inland areas (St. Croix ground lizard, Anegada ground iguana, Virgin Islands tree boa, etc.) were based mainly on information provided by experts. Seasonality and life-history information for rare and protected reptiles were derived from expert sources or publications. Note that on St. Thomas, sites mapped for the Virgin Islands tree boa represent the areas with the highest boa concentrations. Boas occur throughout the eastern end of the island where appropriate habitat occurs.

Reptiles are depicted as polygons with a red hatch pattern. In cases where multiple resource types occupy the same polygon, a black-hatched multi-group pattern is used rather than a red hatch polygon. A red icon with a turtle or lizard silhouette is used to indicate the presence of reptiles, and is associated with all polygons containing these resources.

The RAR# under the icon (or icon group) on the maps references a table on the reverse side of the map. In this table, the first column contains the species common name. The second column indicates whether the species is listed as threatened (T) or endangered (E) on either the state (S = USVI) and/or federal (F = U.S.) lists. The next column provides an estimate of the concentration of the species at the site. Concentration is usually represented as a descriptive term, such as "high," "medium," or "low". Descriptive concentrations are based on the opinion of local resource managers or experts concerning relative concentrations within the study area. In many cases, concentration values have not been used, often at the request of data providers. Note that concentration should not be interpreted as the "level of concern" or "importance" associated with a certain site or particular resource. The seasonality for each species or resource is shown in the next twelve columns, corresponding to the months of the year. If a species or resource is present at a location in a particular month, an "X" is placed in the month column. The last columns denote different life-history time-periods for reptiles and amphibians, such as nesting, hatching, juveniles, and adults. For sea turtles, nesting in this atlas refers to the peak time when adults construct nests and deposit eggs. Hatching refers to the peak time when young sea turtles are hatching and emerging from the nests. For some rare and protected species, information on reproductive time-periods was not available, and therefore, only juvenile and/or adult time-periods are indicated.

FISH

Finfish depicted in this atlas include selected marine, estuarine, and diadromous species. Species of commercial, recreational, ecological, and/or conservation interest are emphasized. Major finfish (and invertebrate) distributions were mapped using three major geographic divisions: nearshore and shelf waters, offshore waters, and estuarine areas/back-reef embayments. In a few locations, inland streams or guts with recently documented occurrences of native stream fish (and invertebrates) were mapped. Note that native stream fish are likely to occur in other streams

and guts as well, even though they are not shown on the maps.

Polygons for "nearshore and shelf waters" vs. "offshore waters" were developed based on the location of the insular shelf edge, defined for this project as the 100 fathom contour digitized from 1:100,000 NOAA nautical charts and 1:80,000 U.S. Defense Mapping Agency charts. "Estuarine" and "back-reef embayment" polygons included waters extending from well-defined coastal embayments or stream mouths inland to the extent of polygonal waters. "Estuarine" polygons often included adjacent mangrove areas, other coastal wetlands, lagoons, and salt ponds as well. "Back-reef embayments" were often defined as areas beginning just inside of a reef tract, extending landward to the shoreline, encompassing areas dominated by seagrass beds and patch reefs.

In several cases, general fish assemblages or groups are depicted on the maps, rather than specific species (Table 3). When used, an assemblage does not imply that all members of the group are present, but that many of them or at least some of them are. Assemblages were used when the distributions of species were not well known, or when the full set of species occurring at different sites might be highly variable or not easily defined. The "reef fish" category includes all major taxonomic groups considered part of the "reef fish fishery", as defined in a 1993 amendment to the Fisheries Management Plan (FMP) for the Reef Fish Fishery of Puerto Rico and the U.S. Virgin Islands, prepared by the Caribbean Fishery Management Council (NMFS, 1993). The "pelagic fish" category includes individual species or taxonomic groups included in the Draft FMP for Coastal Migratory Pelagic Resources (Centaur Associates Inc., 1983), the Draft Highly Migratory Species FMP for Atlantic Tunas, Swordfish, and Sharks, Volume I and II (NMFS, 1998a), and Draft Amendment 1 to the Atlantic Billfish FMP (NMFS, 1998b). The "nursery fish" group was generated from several sources, including Essential Fish Habitat (EFH) reports (CFMC and NOAA SEA Division, 1998) and several reports provided by the USVI DPNR Division of Fish and Wildlife.

TABLE 3. Fish assemblages used in the Virgin Islands atlas.

Assemblage	Species Examples
Reef Fish	Morays, snake eels, lizardfish, frogfish, batfish, squirrelfish, trumpetfish, pipefish and seahorses, flying gurnards, scorpionfish, seabasses and groupers, basslets, bigeyes, cardinalfish, tilefish, jacks, snappers, grunts, porgies, drums, goatfish, spadefish, butterflyfish, angelfish, damselfish, hawkfish, wrasses, parrotfish, jawfish, gobies, surgeonfish, flounders, soles, leatherjackets, boxfish, puffers
Pelagic Fish	Mackerels, barracuda, dolphin, jacks, wahoo, tunas, swordfish, billfish, sharks
Nursery Fish	Important species from the above groups (incl. groupers, snappers, and grunts), snook, tarpon, bonefish, ladyfish, and other species that use estuarine, mangrove, seagrass, and back-reef habitats as nursery areas

In addition to the major geographic divisions and fish assemblages depicted on the maps, specific concentration areas for a few individual species were mapped as well. Some of the more important of these areas are the major reef fish spawning aggregations, especially those for red hind, mutton snapper, and other species. These areas are typically associated with unique, high relief, shelf-edge reef formations. Several of these areas occur at the edge or just beyond the extent of the maps included in this atlas. Aggregations beyond the bounds of the hardcopy maps are provided in full in the digital ESI database.

Three seasonal fishery closure areas (one for mutton snapper, two for red hind) correspond to reef fish spawning aggregations off the coasts of St. Croix and St. Thomas (offshore of maps 1, 3, 4, and 5). The mutton snapper site is closed to fishing from March 1 through June 30 each year. The red hind sites are closed to fishing from

December 1 through February 28 each year. Because these sites occur beyond the maps included in the atlas, their bounding coordinates are provided below (Table 5). The Hind Bank, offshore of the southwest coast of St. Thomas has also been formally designated as a Marine Conservation District, a type of marine reserve.

TABLE 5. Red Hind and Mutton Snapper Spawning Aggregations and Fishery Closures for the U.S. Virgin Islands (NMFS, 1993; NMFS, 1996).

Spawning & Seasonal Closure Areas	Bounding Coordinates
SW of St. Croix (mutton snapper)	A...17° 37.8' N, 64° 53.0' W B...17° 39.0' N, 64° 53.0' W C...17° 39.0' N, 64° 50.5' W D...17° 38.1' N, 64° 50.5' W E...17° 37.8' N, 64° 52.5' W
Lang Bank, E of St. Croix (red hind)	A...17° 50.2' N, 64° 27.9' W B...17° 50.1' N, 64° 26.1' W C...17° 49.2' N, 64° 25.8' W D...17° 48.6' N, 64° 25.8' W E...17° 48.1' N, 64° 26.1' W F...17° 47.5' N, 64° 26.9' W
Hind Bank, S of St. Thomas (red hind)	A...18° 13.2' N, 65° 06.6' W B...18° 13.2' N, 64° 59.0' W C...18° 11.8' N, 64° 59.0' W D...18° 10.7' N, 65° 06.6' W

As a result of the 1996 reauthorization of the Fishery Conservation and Management Act (Magnuson-Stevens Act) and the subsequent identification of essential fish habitat (EFH) by the Caribbean Fishery Management Council and the National Marine Fisheries Service (CFMC and NOAA SEA Division, 1998; NMFS, 1998a, 1998b), many of the estuarine and marine habitats and their dependent fisheries which are depicted on the ESI maps are now subject to the conservation and consultation provisions of the Magnuson-Stevens Act. EFH for species covered by four Caribbean fishery management plans includes: salt marsh, mangroves, intertidal flats/salt ponds, soft bottom lagoons, mud flats, sandy beaches, rocky shores, live bottoms, geologic features, algal plains, coral reefs, non-vegetated bottoms, seagrass, and marine water column. Especially sensitive or vulnerable habitats, identified as Habitat Areas of Particular Concern, include estuaries, and nearshore reefs and hard bottoms.

Fish are shown on the maps as polygons with a blue hatch pattern. Native fish in streams that were too small to be depicted as polygons were depicted as linear features. In cases where multiple resource types occupy the same polygon (such as fish and invertebrates), a black-hatched multi-group pattern is used rather than a blue-hatched polygon. A blue icon with a fish silhouette is used to indicate the presence of fish. This icon is associated with all polygons or line features containing fish.

The RAR# under the icon (or icon group) on the maps references a table on the reverse side of the map. In this table, the first column contains the species common name. The second column indicates whether the species is listed as threatened (T) or endangered (E) on either the state (S = USVI) and/or federal (F = U.S.) lists. The next column provides an estimate of the concentration of the species at the site. Concentration is usually represented as a descriptive term, such as "high," "medium," or "low". Descriptive concentrations are based on the opinion of local resource managers or experts concerning relative concentrations within the study area. In many cases, concentration values have not been used, often at the request of data providers. Note that concentration should not be interpreted as the "level of concern" or "importance" associated with a certain site or particular resource. The seasonality for each species or resource is shown in the next twelve columns, corresponding to the months of the year. If a species or resource is present at a location in a particular month, an "X" is placed in the month column. The last columns denote different life-history time-periods for fish, including spawning, eggs, larvae, juveniles, and adults.

INVERTEBRATES

Invertebrates depicted in this atlas include selected marine, estuarine, and diadromous species. Species of commercial, recreational, ecological, and/or conservation interest are emphasized. Major invertebrate (and finfish) distributions were mapped using three major geographic divisions: nearshore and shelf waters, offshore waters, and estuarine areas/back-reef embayments. In a few locations, inland streams or guts with recently documented occurrences of native stream shrimp were mapped. Note that native stream shrimp are likely to occur in other streams and guts as well, even though they are not shown on the maps.

Polygons for "nearshore and shelf waters" vs. "offshore waters" were developed based on the location of the insular shelf edge, defined for this project as the 100 fathom contour digitized from 1:100,000 NOAA nautical charts and 1:80,000 U.S. Defense Mapping Agency charts. "Estuarine" and "back-reef embayment" polygons included waters extending from well-defined coastal embayments or stream mouths inland to the extent of polygonal waters. "Estuarine" polygons often included adjacent mangrove areas, other coastal wetlands, lagoons, and salt ponds as well. "Back-reef embayments" were often defined as areas beginning just inside of a reef tract, extending landward to the shoreline, encompassing areas dominated by seagrass beds and patch reefs.

Invertebrates are shown on the maps as polygons with an orange hatch pattern. Native shrimp streams that were too small to be depicted as polygons are shown as linear features. In cases where multiple resource types occupy the same polygon (such as fish and invertebrates), a black-hatched multi-group pattern is used rather than a blue hatch polygon. An orange icon with the appropriate silhouette is used to indicate the presence of different types of invertebrates (shrimp, crabs, lobsters, etc.). This icon (or icon group) is associated with all polygons or line features containing invertebrates.

The RAR# under the icon (or icon group) on the maps references a table on the reverse side of the map. In this table, the first column contains the species common name. The second column indicates whether the species is listed as threatened (T) or endangered (E) on either the state (S = USVI) and/or federal (F = U.S.) lists. The next column provides an estimate of the concentration of the species at the site. Concentration is usually represented as a descriptive term, such as "high," "medium," or "low". Descriptive concentrations are based on the opinion of local resource managers or experts concerning relative concentrations within the study area. In many cases, concentration values have not been used, often at the request of data providers. Note that concentration should not be interpreted as the "level of concern" or "importance" associated with a certain site or particular resource. The seasonality for each species or resource is shown in the next twelve columns, corresponding to the months of the year. If a species or resource is present at a location in a particular month, an "X" is placed in the month column. The last columns denote different life-history time-periods for invertebrates, including spawning, eggs, larvae, juveniles, and adults.

PLANTS

Threatened and endangered (T&E) plants for both coastal and inland areas are shown in this atlas. T&E plants were mapped based on information and maps provided primarily by the University of the Virgin Islands Cooperative Extension Service and the USDA Natural Resources Conservation Service. Information and edits from other individuals and groups were used as well. Note that marine and estuarine seagrass beds were not mapped with this group of resources. Seagrasses were mapped as benthic marine habitats (discussed in the next section).

Plants are depicted as polygons shaded with a purple hatch pattern. In cases where multiple resource types occupy the same polygon (such as plants and birds), a black-hatched multi-group pattern is used rather than a purple-hatched polygon. A purple icon with a plant silhouette is used to indicate the presence of T&E plants.

This icon (or icon group) is associated with all polygons containing plants.

The RAR# under the icon (or icon group) on the maps references a table on the reverse side of the map. In this table, the first column contains the species common name. The second column indicates whether the species is listed as threatened (T) or endangered (E) on either the state (S = USVI) and/or federal (F = U.S.) lists. The next column provides an estimate of the concentration of the species at the site. Concentration is usually represented as a descriptive term, such as "high," "medium," or "low". Descriptive concentrations are based on the opinion of local resource managers or experts concerning relative concentrations within the study area. In many cases, concentration values have not been used, often at the request of data providers. Note that concentration should not be interpreted as the "level of concern" or "importance" associated with a certain site or particular resource. The seasonality for each species or resource is shown in the next twelve columns, corresponding to the months of the year. If a species or resource is present at a location in a particular month, an "X" is placed in the month column. All plant resources are shown as present all year in this atlas.

BENTHIC MARINE HABITATS

Four types of benthic marine habitats are depicted in the Virgin Islands atlas: 1) coral reefs, 2) hardbottoms, 3) seagrass beds, and 4) algae. These resources were mapped using a variety of data sources and methods. Geographic sources mainly included: digital Rapid Ecological Assessment (REA) and similar data for St. John and St. Croix (draft) from the University of the Virgin Islands, Eastern Caribbean Center, Virgin Islands Conservation Data Center (VICDC); hardcopy Sediment Reduction Program "blue-line" habitat maps for St. Thomas provided by the USVI DPNR CZM office (BC&E/CH2M Hill, 1979); and the digital Coastal Resource Atlas of the British Virgin Islands produced by the Natural Resources Institute (NRI), Overseas Development Administration, provided by the BVI CFD. Because coral reef and hardbottom habitats were not differentiated in the data provided by the VICDC for St. John and St. Croix, hardcopy maps provided by the USVI DPNR CZM office were used to identify the types of benthic features mapped. More detailed and specific information can be obtained by contacting the VICDC. In addition to these main sources, benthic habitat features were also depicted based on expert information or other hardcopy data sources.

Coral reefs depicted in this atlas include the following features: coral patch reef, coral fringing reef, shelf-edge reef, etc. Shelf-edge reef was mapped as a separate category, but was combined with coral reef for depiction on the maps. Hardbottom habitats shown in this atlas include: carbonate pavement, hardground, soft coral substrate, rock reef, etc. Seagrass beds can include different species of seagrass, as well as mixed-species beds. Density or cover of seagrasses is not differentiated in this atlas. The algae category includes areas where macroalgae beds or calcareous algae predominate.

In addition to the benthic habitats described above, St. Croix (and perhaps other areas) has several "algal ridges", which were too small to depict in this atlas. Algal ridges are important linear features oriented parallel to the shoreline and reef tract that occur just inshore of reef flats and Elkhorn coral reef zones. On the East End of St. Croix, the following algal ridges are present (listed west to east along the northern shore, and then east to west along the southern shore): Boiler Bay Ridge, Lamb Incipient Ridge, East Point Ridge, Isaac's Ridge, Jack Incipient Ridge, Beach Ridge, Robin Ridge, Robin Bay Incipient Ridges, Fancy Ridge, and Fancy Incipient Ridge. Other ridges may be present in other areas as well.

Benthic marine habitats are represented on the maps as polygons using a light purple-gray solid pattern for coral reefs, and a light tan solid pattern for hardbottoms. Seagrass habitats are depicted using a dark purple "simplified-wetland" pattern that would not obscure other habitat types, such as coral patch reefs or hardground, that seagrasses might co-occur with. Algae habitats are depicted using a dark purple "dense-wetland" pattern. No

icons or RAR#s are used for the benthic habitats, in order to simplify the maps.

HUMAN-USE RESOURCES

Most human-use resources in this atlas are mapped as point features, indicated by a black and white icon. Management areas such as national parks, wildlife refuges, wildlife sanctuaries, designated critical habitats, etc. are mapped as polygons, with the boundaries indicated as a black dot-dash line with the corresponding icon placed near the center of the polygon. Where the feature is a known point location (e.g., water intake, boat ramp, marina), the exact location is shown as a small black dot and a leader line is drawn from it to the icon. Fishing sites, recreational beaches, dive sites, etc. are indicated by an icon placed in the general area, without any points or polygons, since the boundaries for these resources are not readily defined.

	Airport		Dive Site
	Aquaculture		Ferry
	Archaeological/ Historical Site		Marina
	Artisanal/ Commercial Fishing		Recreational Beach
	Boat Ramp		Recreational Fishing
	BVI National Park		Special Fisheries Management Area
	Coast Guard		U.S. National Park
	Dam		Water Intake
	Designated Critical Habitat		Wildlife Refuge/ Reserve/Sanctuary

Airport—Location of airports, airfields, landing strips, helipads, etc., whether they are manned or unmanned.

Aquaculture—Location of aquaculture sites and facilities. When known, the site name, owner/manager, and contact information are provided on the data tables for each map.

Archaeological/Historical Site—Location of archaeological and historic sites for coastal areas. These resources include known archaeological sites and historic sites for the USVI, and historic sites for the BVI. The exact location and extent of most of these sites are not represented on the maps due to their sensitivity to disturbance and vandalism, instead, sites are depicted on the maps with an icon placed in the general vicinity of the site (or group of sites). In contrast, several specific sites managed by the National Park Service and the USFWS National Wildlife Refuge (NWR) program have been shown at the request of resource managers. For more specific site information and guidance during planning and response operations in the USVI, please contact the State Historic Preservation Officer at 340/774-3320 or 340/775-5706. For NPS and NWR properties, the appropriate resource manager(s) should also be contacted.

Artisanal/Commercial Fishing—General areas where artisanal and commercial fishing take place, as noted by resource experts. Note that fishing activities, including harvest of queen conch, lobsters, octopus, reef fish, pelagic fish, etc. may take place throughout the study area, including areas not identified in this atlas.

Boat Ramp—Location of boat ramps.

Coast Guard—Location of Coast Guard facilities.

Dam—Locations of dams, mainly on the few streams where native fish or shrimp were noted.

Designated Critical Habitat—Areas managed or regulated by the USFWS or NMFS as critical habitat for federally listed threatened and endangered species, under authority of the U.S. Endangered Species Act as amended. The species involved, responsible agency, and contact information are provided on the data tables for each map.

Dive Site—Location of popular recreational SCUBA diving and snorkeling sites.

Ferry—Location of major ferry landings.

Marina—Location of marinas. Boat ramps, hoists, and other facilities and support services may be present at certain marinas as well.

U.S. National Park—Areas managed by the National Park Service in the U.S., including national parks, national historic sites, national monuments, etc. Site names and contact information are provided on the data tables for each map.

BVI National Park—Areas in the BVI managed by the National Parks Trust as national parks and national marine parks. Site names and contact information are provided on the data tables for each map.

Recreational Beach—Location of recreational beaches used for activities such as swimming, sun-bathing, etc.

Recreational Fishing—General areas where recreational fishing takes place, as noted by resource experts and other sources. Note that a variety of fishing activities may take place throughout the study area, including areas not identified in this atlas.

Special Management Area—Sites designated as special management areas for fisheries or other aquatic resources. In this atlas, this category was used for Fisheries Priority Areas managed by the BVI CFD.

Water Intake—Location of surface water intakes. When known, the site name, owner/manager, and telephone number are provided on the data tables for each map.

Wildlife Refuge/Reserve/Sanctuary—Areas managed by the USFWS as National Wildlife Refuges, USVI DPNR as Marine Reserves and/or Wildlife Sanctuaries, and BVI CFD as Bird Sanctuaries. The Ramsar Site on Anegada Island was also included in this category. Site names and contact information are provided on the data tables for each map.

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At Research Planning, Inc. (RPI), numerous scientific, GIS, and graphics staff were involved with different phases of the project. Shoreline habitat mapping was conducted by Miles O. Hayes. Scott Zengel, Carrie Headley, and Chris Lord collected and compiled the biology and human-use information. Mark White, William Holton, Joanne Halls, Zach Nixon, Anna Robertson, Chris Locke, Vermell Simon, Lori Hendricks, and Derrell Rice entered, processed, and produced the GIS data and hardcopy atlas. Joe Holmes provided graphic arts support. Becky Cox prepared the final text documents and metadata.

APPROPRIATE USE OF ATLAS AND DATA

This atlas and the associated GIS database were developed to provide summary information on sensitive natural and human-use resources for the purposes of oil and chemical spill planning and response. Although the atlas and database should be very useful for other environmental and natural resource planning purposes, it should not be used in place of data held by the USVI DPNR, BVI CFD, USFWS, NPS, USGS-BRD, NMFS, U.S. Army Corps of Engineers, USEPA, the VICDC, the USVI State Historic Preservation Office, or other agencies or organizations. Likewise, information contained in the atlas and database cannot be used in place of consultations with natural and cultural resource agencies, or in place of field surveys. Also, this atlas should not be used for navigation.

Information shown on the maps and in the database represents known concentration areas or occurrences for natural, cultural, and human-use resources, but does not necessarily represent the full distribution or range of each species or resource. This is particularly important to recognize when considering potential impacts to protected species and resources, such as endangered species, wetlands, archaeological sites, etc.

SPECIES LIST	
Common Name	Species Name
MARINE MAMMALS	
DOLPHINS	
Dolphins	-
WHALES	
Humpback whale	<u>Megaptera novaeangliae</u>
Sperm whale	<u>Physeter catodon</u>
Whales	-
TERRESTRIAL MAMMALS	
BATS	
Bats	-
Cave bat	<u>Brachyphylla cavernarum</u>
Fisherman bat	<u>Noctilio leporinus</u>
Red fruit bat	<u>Stenoderma rufum</u>
BIRDS	
PASSERINE-LIKE BIRDS	
Belted kingfisher	<i>Ceryle alcyon</i>
Common ground-dove	<i>Columbina passerina</i>
Neotropical migrants	-
Northern waterthrush	<i>Seiurus noveboracensis</i>
Passerine birds	-
Scaly-naped pigeon	<i>Columba squamosa</i>
White-crowned pigeon	<u><i>Columba leucocephala</i></u>
Zenaida dove	<i>Zenaida aurita</i>
RAPTORS	
Osprey	<i>Pandion haliaetus</i>
Peregrine falcon	<i>Falco peregrinus</i>
SEABIRDS	
<u>Audubon's shearwater</u>	<u><i>Puffinus lherminieri</i></u>
Bridled tern	<i>Sterna anaethetus</i>
Brown booby	<i>Sula leucogaster</i>
Brown noddy	<i>Anous stolidus</i>
<u>Brown pelican</u>	<u><i>Pelecanus occidentalis</i></u>
Gulls	-
Laughing gull	<i>Larus atricilla</i>
<u>Least tern</u>	<u><i>Sterna antillarum</i></u>
Magnificent frigatebird	<i>Fregata magnificens</i>
Masked (blue-faced) booby	<i>Sula dactylatra</i>
Red-billed tropicbird	<i>Phaethon aethereus</i>
Red-footed booby	<i>Sula sula</i>
<u>Roseate tern</u>	<u><i>Sterna dougallii</i></u>
Royal tern	<i>Sterna maxima</i>
Sandwich tern	<i>Sterna sandvicensis</i>
Seabirds	-
Sooty tern	<i>Sterna fuscata</i>
Terns	-
<u>White-tailed tropicbird</u>	<u><i>Phaethon lepturus</i></u>
SHOREBIRDS	
American oystercatcher	<i>Haematopus palliatus</i>
Black-necked stilt	<i>Himantopus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Shorebirds	-
<u>Snowy plover</u>	<u><i>Charadrius alexandrinus</i></u>
<u>Willet</u>	<u><i>Catoptrophorus</i></u> <u><i>semipalmatus</i></u>
Wilson's plover	<i>Charadrius wilsonia</i>
WADING BIRDS	
Cattle egret	<i>Bubulcus ibis</i>
<u>Great blue heron</u>	<u><i>Ardea herodias</i></u>
<u>Great egret</u>	<u><i>Ardea alba</i></u>
Greater flamingo	<i>Phoenicopterus ruber</i>
Little blue heron	<i>Egretta caerulea</i>
<u>Snowy egret</u>	<u><i>Egretta thula</i></u>
Sora	<i>Porzana carolina</i>
Tricolored heron	<i>Egretta tricolor</i>
Wading birds	-
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>

SPECIES LIST*	
Common Name	Species Name
BIRDS, cont.	
WATERFOWL	
American coot	<i>Fulica americana</i>
Blue-winged teal	<i>Anas discors</i>
<u>Caribbean coot</u>	<u><i>Fulica caribaea</i></u>
Common moorhen	<i>Gallinula chloropus</i>
Green-winged teal	<i>Anas crecca</i>
<u>Least grebe</u>	<u><i>Tachybaptus dominicus</i></u>
Pied-billed grebe	<i>Podilymbus podiceps</i>
<u>Ruddy duck</u>	<u><i>Oxyura jamaicensis</i></u>
Waterfowl	-
<u>White-cheeked pintail</u>	<u><i>Anas bahamensis</i></u>
Birds (see Table 2; page 3)	
REPTILES	
LIZARDS	
<u>Anegada ground iguana</u>	<u><i>Cyclura pinguis</i></u>
Rare lizard	-
<u>St. Croix ground lizard</u>	<u><i>Ameiva polops</i></u>
SNAKES	
<u>Virgin Islands tree boa</u>	<u><i>Epicrates monensis granti</i></u>
TURTLES	
<u>Green sea turtle</u>	<u><i>Chelonia mydas</i></u>
<u>Hawksbill sea turtle</u>	<u><i>Eretmochelys imbricata</i></u>
<u>Leatherback sea turtle</u>	<u><i>Dermochelys coriacea</i></u>
FISH	
DIADROMOUS	
Mountain mullet	<i>Agonostomus monticola</i>
Native stream fish	-
MARINE/ESTUARINE	
Bonefish	<i>Albula vulpes</i>
Butterfly fish	<i>Chaetodon sp.</i>
Common snook	<i>Centropomus undecimalis</i>
Damselfish	<i>Chromis sp.</i>
Dwarf herring (blue fry)	<i>Jenkinsia lamprotaenia</i>
Forage fish	-
Great barracuda	<i>Sphyrnaena barracuda</i>
Groupers	-
Grunts	-
Jacks	-
Mangrove molly	<i>Poecilia orri</i>
Mojarras	<i>Diapterus spp.</i>
Mullet	<i>Mugil spp.</i>
Nursery fish	-
Parrotfish	-
Pelagic fish	-
Permit	<i>Trachinotus falcatus</i>
Red hind	<i>Epinephelus guttatus</i>
Reef fish	-
Snappers	-
Tarpon	<i>Megalops atlanticus</i>
Tiger shark	<i>Galeocerdo cuvier</i>
Wrasses	-
Fish (see Table 3; page 4)	
INVERTEBRATES	
BIVALVES	
Bivalves	-
Mussels	-
CRABS	
Blue crabs	<i>Callinectes spp.</i>
Freshwater crab	<i>Epilobocera sinuatifrons</i>
Land crabs	-

* Threatened and endangered species are designated by underlining.

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SPECIES LIST*

Common Name	Species Name
INVERTEBRATES, cont.	
GASTROPODS	
Queen conch	<i>Strombus gigas</i>
West Indian topsnail (whelk)	<i>Cittarium pica</i>
LOBSTERS	
Caribbean spiny lobster	<i>Panulirus argus</i>
OCTOPUS	
Octopus	<i>Octopus</i> spp.
SHRIMP	
Southern pink shrimp	<i>Penaeus notialis</i>
Native stream shrimp	-
PLANTS	
RARE PLANTS	
-	<u><i>Zanthoxylum thomasianum</i></u>
-	<u><i>Brassavola cucullata</i></u>
-	<u><i>Psychilis macconelliae</i></u>
-	<u><i>Schoepfia schreberi</i></u>
-	<u><i>Malpighia</i> sp.</u>
-	<u><i>Byrsonima</i> sp.</u>
-	<u><i>Eugenia</i> sp.</u>
-	<u><i>Malpighia infestissima</i></u>
-	<u><i>Solanum mucronatum</i></u>
-	<u><i>Ilex urbaniana</i></u>
-	<u><i>Malpighia linearis</i></u>
-	<u><i>Galactia eggersii</i></u>
-	<u><i>Erythrina eggersii</i></u>
-	<u><i>Peperomia myrtifolia</i></u>
-	<u><i>Psidium</i> sp.</u>
-	<u><i>Mammillaria nivosa</i></u>
-	<u><i>Nashia inaguensis</i></u>
-	<u><i>Agave eggersiana</i></u>
-	<u><i>Maytenus cymosa</i></u>
-	<u><i>Catesbaea melanocarpa</i></u>
-	<u><i>Guajacum officinale</i></u>
-	<u><i>Machaonia woodburyana</i></u>
-	<u><i>Manilkara bidentata</i></u>
-	<u><i>Tillandsia lineatispica</i></u>
-	<u><i>Malpighia woodburyana</i></u>
-	<u><i>Buxus vahlii</i></u>
-	<u><i>Calyptranthes thomasiana</i></u>
-	<u><i>Cypselea humifusa</i></u>
BENTHIC MARINE HABITATS	
BENTHIC MARINE HABITATS	
Algal beds	-
Coral reef	-
Hardbottom	-
Seagrass	-

* Threatened and endangered species are designated by underlining.

SHORELINE DESCRIPTIONS

EXPOSED ROCKY CLIFFS

ESI = 1A

DESCRIPTION

- Steep intertidal zone (usually greater than 30 degree slope), with very little width
- Regularly exposed to high wave energy, with strong wave reflection patterns
- Sediment accumulations are uncommon and usually ephemeral, because waves quickly remove debris slumped from eroding cliffs
- As a result of the high energy setting, attached organisms are hardy and accustomed to strong hydraulic impacts and pressures
- Impermeable substrate with no potential for subsurface penetration
- Seldom found in combination with another shoreline type, however they are often interspersed along the shore with wave-cut platforms and gravel beaches
- Very common throughout the study area

PREDICTED OIL BEHAVIOR

- Oil is held offshore by waves reflecting off the steep cliffs
- Any oil that is deposited is rapidly removed from exposed faces by wave action
- Most resistant oil remains as a patchy band at or above the high-tide line
- Impacts to intertidal communities are expected to be of a short-term duration, an exception being where heavy concentrations of a light refined product comes ashore very quickly

RESPONSE CONSIDERATIONS

- Cleanup usually not required
- Access can be difficult and dangerous



EXPOSED, SOLID MAN-MADE STRUCTURES

ESI = 1B

DESCRIPTION

- Typically composed of concrete or metal bulkheads
- Regularly exposed to high wave energy, with strong wave reflection patterns
- Organisms, such as barnacles and algae, may be common on the lower levels, whereas biota along the upper intertidal zone is sparse
- As a result of the high energy setting, attached organisms are hardy and accustomed to strong hydraulic impacts and pressures
- Occur sparsely throughout the islands to provide protection to residential and industrial developments where these structures are threatened by beach erosion

PREDICTED OIL BEHAVIOR

- Much of the oil will be held offshore by wave reflection
- Oil could percolate between the joints of the structures.
- Under heavy accumulations, oil may coat the intertidal area and biota present would be impacted

RESPONSE CONSIDERATIONS

- High-pressure spraying may be required in order to:
 - remove oil
 - prepare substrate for re-colonization of epifaunal communities
 - minimize aesthetic damage
 - prevent the chronic leaching of oil from the structure



EXPOSED WAVE-CUT PLATFORMS IN BEDROCK

ESI = 2A

DESCRIPTION

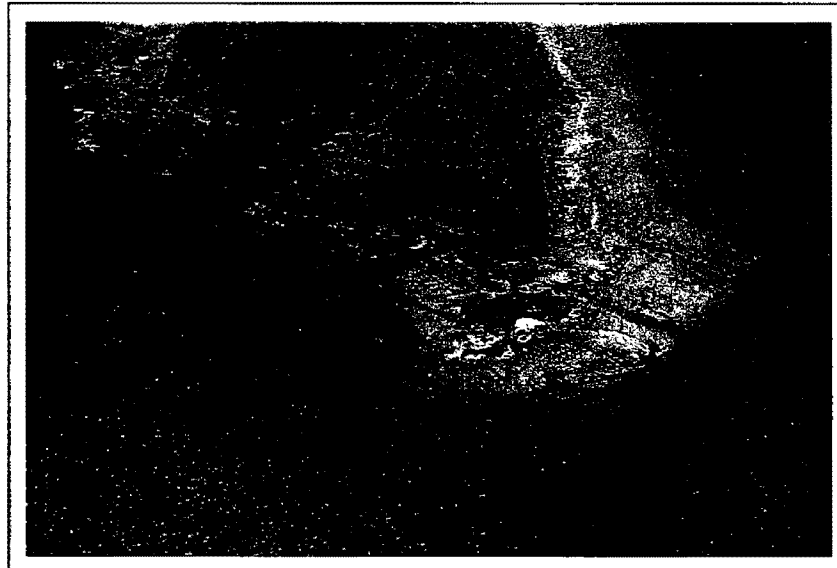
- Regular exposure to high wave energy, with strong wave reflection patterns
- Intertidal zone a flat rock bench of highly variable width
- Rock can consist of both bedrock and biologically or chemically precipitated, calcareous beach rock
- Attached organisms are hardy and used to strong hydraulic impacts and pressures
- May be backed by a steep scarp or low bluff
- Perched beach of sand- to boulder-sized sediments may be present at base of the scarp
- Substrate is impermeable with no potential for subsurface penetration over much of intertidal zone, except in the ephemeral beach sediments
- Surface is irregular and tidal pools may be present
- Small accumulations of gravel, shells, or coral rubble can be found in the tidal pools and crevices in the platform.
- May support large populations of encrusting animals and plants, with rich tidal pool communities
- Common throughout the more exposed shorelines of all the islands, typically interspersed along the shore with rocky cliffs and gravel beaches

PREDICTED OIL BEHAVIOR

- Oil will not adhere to the rock platform, but rather be transported across the platform and accumulate along the high-tide line, where it can penetrate in beach sediments, if present
- Persistence of oiled sediments is usually short-term, except in wave shadows or larger sediment accumulations at the landward edge of the platform, where oil can persist for up to several weeks to months
- Biological impacts can be immediate and severe, particularly if fresh oil slicks cover tidal pool communities

RESPONSE CONSIDERATIONS

- Cleanup is usually not required, because oil is quickly removed by wave action
- Access may be difficult and dangerous
- Where the high-tide area is accessible, it may be feasible to remove heavy oil accumulations and oiled debris in areas of high recreational use or in order to protect a nearshore marine resource, such as marine birds



FINE- TO MEDIUM-GRAINED SAND BEACHES

ESI = 3A

DESCRIPTION

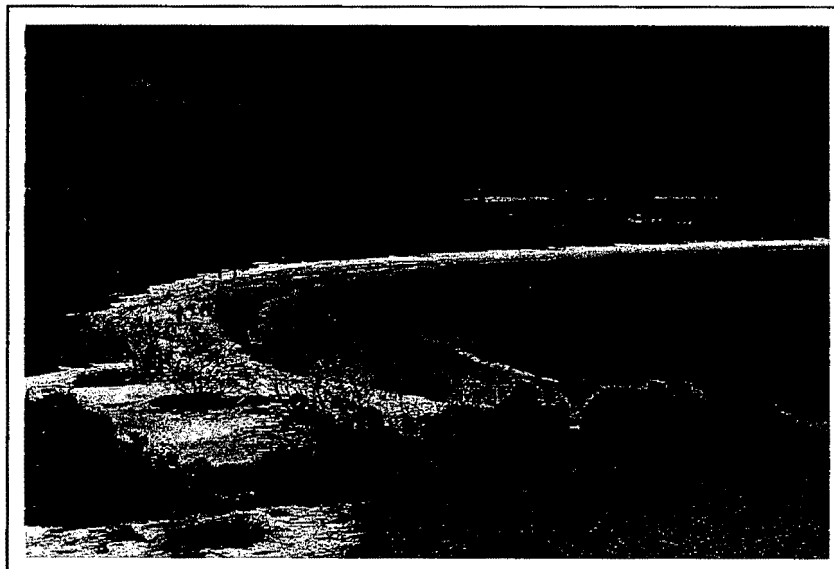
- Generally flat (less than 5 degree slopes), wide, and hard-packed
- Rate of sediment mobility is relatively low, thus rapid, dramatic changes in the beach profile are not common
- Surface sediments subject to regular reworking by waves
- Beach fauna can vary in type and density; mobile surface, burrowing, and interstitial forms are typical
- Sea turtle nesting, eggs, and hatchlings can be expected on nearly all sand beaches
- Occur more commonly in partially sheltered bays and pocket beaches
- In places, they occur at the upper intertidal zone on wave-cut platforms

PREDICTED OIL BEHAVIOR

- Light oil accumulations deposited as oily swashes or bands along the upper intertidal zone
- Heavy oil accumulations cover entire beach surface; the oil will be lifted off the lower beach with the rising tide.
- Maximum penetration of oil is about 10 cm into fine-grained sand and 15 cm into medium-grained sand
- Burial of oiled layers by clean sand can occur within hours on these microtidal beaches, but the maximum burial will typically occur along the upper beach face to depths less than 30 cm
- Organisms living in the beach may be killed by smothering or lethal oil concentrations in interstitial water
- Direct and indirect impacts to sea turtle nests, eggs, and hatchlings can be severe

RESPONSE CONSIDERATIONS

- The easiest beach type to clean, because hard substrate can support vehicular and foot traffic and depths of oil burial and penetration are minimal
- After all oil has come ashore, cleanup activities should concentrate at first on the removal of oil from the upper swash zone
- Vehicular traffic and walking through oiled areas and dunes should be limited, to prevent contamination of clean areas and disturbance of dune vegetation
- Vehicular and foot traffic, and mechanical or manual beach cleanup, should be carefully planned and monitored in sea turtle nesting areas to avoid disturbance and destruction of nesting turtles, eggs, and young
- Manual cleanup, rather than road graders and front-end loaders, is advised where feasible to minimize the volume of sand removed from the shore
- Prevent the mixture of oil deeper into the sediments by vehicular and foot traffic



DESCRIPTION

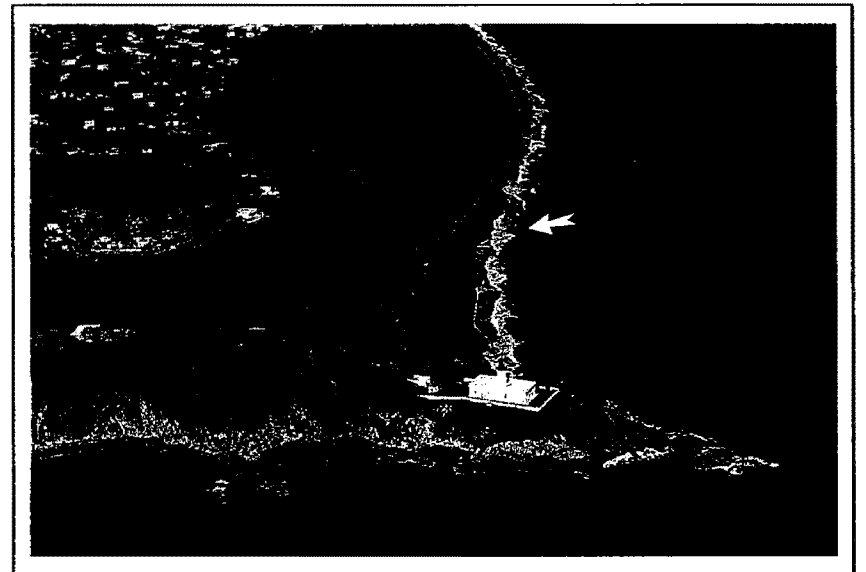
- Sediments are soft, with low trafficability
- Moderate to steep beachface slopes, typically between 5 and 15 degrees
- Substrate is highly permeable
- The rate of sediment mobility is relatively high, with the vertical accumulation of up to 20 cm of sediments possible within a single tidal cycle
- Beach fauna can vary in type and density; mobile surface, burrowing, and interstitial forms are typical
- Sea turtle nesting, eggs, and hatchlings can be expected on nearly all sand beaches
- Occur most frequently along the exposed outer coast, where they may be backed by dunes, rocky cliffs, or man-made structures such as seawalls and riprap

PREDICTED OIL BEHAVIOR

- During small spills, oil is deposited primarily as a band along the high-tide line
- Under very heavy accumulations, oil may spread across the entire intertidal zone, though it will be lifted off the lower part of the beach during the rising tide
- Penetration up to 25 cm possible
- Burial of oiled layers by clean sand can be rapid, to depths of 1 m or more if the oil comes ashore at the start of a depositional period
- Organisms living in the beach may be killed by smothering or lethal oil concentrations in interstitial water
- Direct and indirect impacts to sea turtle nests, eggs, and hatchlings can be severe

RESPONSE CONSIDERATIONS

- Cleanup more difficult than for finer-grained beaches, because equipment tends to grind oil into the substrate due to the loosely packed and permeable nature of these coarser-grained sediments; therefore, special care must be exercised at all times while using heavy equipment in order to prevent mixing oil deeper into the beach sediment
- Use of heavy equipment for oil/sand removal may also result in the export of excessive amounts of sand; therefore, where feasible and for smaller amounts of oil, manual cleanup may be desirable
- Vehicular traffic and walking through oiled areas and dunes should be limited, to prevent contamination of clean areas and disturbance of dune vegetation
- Vehicular and foot traffic, and mechanical or manual beach cleanup, should be carefully planned and monitored in sea turtle nesting areas to avoid disturbance and destruction of nesting turtles, eggs, and young
- Removal of sediment should be limited as much as possible to avoid erosion problems on the beach in the future; however, the common occurrence of multiple buried oil layers in these types of beaches increases the amount of sediment to be handled and disposed of
- Mechanical reworking of the sand into the surf zone (surf washing) may be used under optimal conditions to release the oil without sediment removal



DESCRIPTION

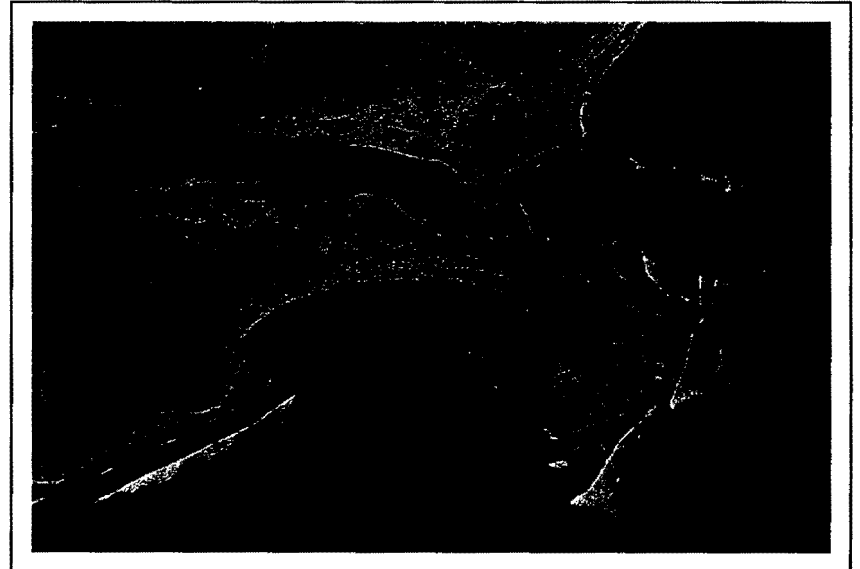
- Moderately sloping beach (8-15 degrees) composed of a mixture of sand and at least 20 percent gravel
- Soft sediments with low trafficability
- Sediment mobility is very high during storms, but considerably less than sand beaches during normal conditions
- Spatial variations in the distribution of grain sizes may be significant, with separate zones of pure sand, pebbles, or cobbles, in addition to the mixed zones
- Gravel can be composed of a variety of materials, including bedrock, coral rubble, shells, and other calcium carbonate materials
- Substrate has medium-to-high permeability
- Beach fauna can vary in type and density; mobile surface, burrowing, and interstitial forms are typical
- Sea turtle nesting, eggs, and hatchlings can be expected on outer coast mixed sand and gravel beaches, particularly those dominated by sand and smaller-sized gravel
- Occur on all the islands, most typically in transition zones between rocky/gravel areas and sand beaches

PREDICTED OIL BEHAVIOR

- During small spills, oil will be deposited along the high-tide swash line
- During large spills, oil will be spread across the entire intertidal area
- Oil penetration into the beach sediments may be up to 50 cm; however, the sand fraction can be quite mobile, and if the sand fraction exceeds about 40 percent, oil behavior is similar to that described for sand beaches
- Significant amounts of oil can be eroded away during storms
- Burial of oil may be deep (up to 1 m) if oil comes ashore while the beach is recovering from storm conditions
- In sheltered pockets on the beach, such as in the lee of large boulders, pavements of asphalted sediments can form if there is no removal of heavy oil accumulations, and, once formed, these pavements can persist for many years
- Organisms living in the beach may be killed by smothering or lethal oil concentrations in interstitial water
- Direct and indirect impacts to sea turtle nests, eggs, and hatchlings can be severe

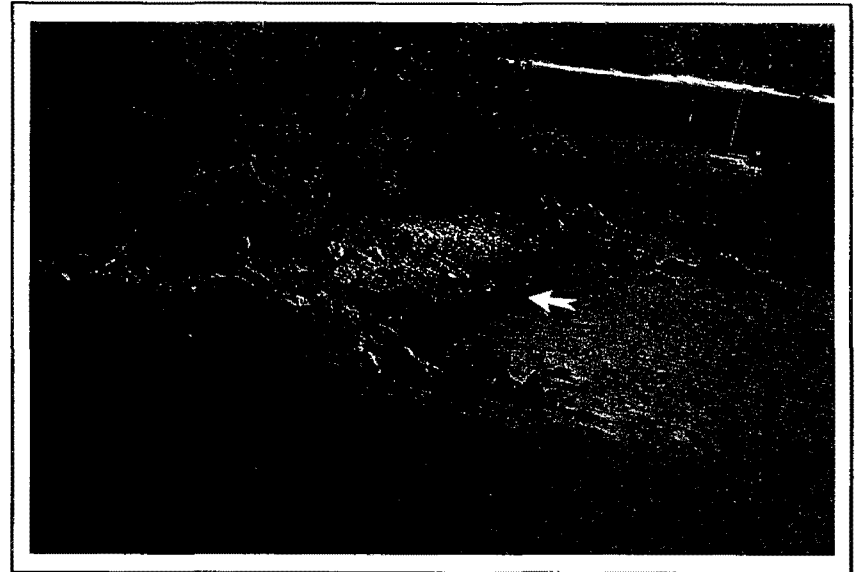
RESPONSE CONSIDERATIONS

- Remove heavy accumulations of pooled oil as quickly as possible
- All oiled debris should be removed
- Vehicular traffic and walking through oiled areas should be limited, to prevent contamination of clean areas
- Vehicular and foot traffic, and mechanical or manual beach cleanup, should be carefully planned and monitored in sea turtle nesting areas to avoid disturbance and destruction of nesting turtles, eggs, and young
- Sediment removal should be limited as much as possible, because of potential beach erosion problems in the future
- Low-pressure flushing can be used to remove heavy oil where collection of the flushed oil is feasible, but high-pressure flushing should be avoided, because of the potential for transporting contaminated finer sediments (sand) to the lower intertidal or subtidal zones
- Mechanical reworking of oiled sediments from the high-tide zone to the upper intertidal zone for wave reworking (berm relocation) can be effective in areas subject to significant wave action
- In-place tilling may be used to expose deeply buried oil layers to wave reworking in areas subject to significant wave action



DESCRIPTION

- Composed of sediments larger than 2 mm (granules, pebbles, cobbles and boulders) that may be made up of bedrock fragments, coral rubble, shells and other calcium carbonate materials
- Most permeable of all beach sediments
- Lowest trafficability of all beach types
- Rapid erosion and/or burial of shallow oil possible during storms
- Slope is intermediate to steep (between 10-20 degrees), with multiple, wave-built berms usually forming the upper beach
- Sediment replenishment rates are the lowest of all beach types
- Attached animals and plants are usually restricted to the lowest parts of the beach, where the sediments are less mobile
- Common adjacent to cliffs and wave-cut rock platforms throughout the islands



PREDICTED OIL BEHAVIOR

- Deep penetration and rapid burial of stranded oil is likely; penetration of 10s of cm (over 1 m possible) can extend oil to depths below where it cannot be reworked by any natural process except extreme storms
- Therefore, long-term persistence will be controlled by the depth of penetration versus the depth of routine reworking by storm waves
- Oil may be carried over the normal high-tide line and storm berms during high-water events, where it can pool and persist above the normal zone of wave wash
- In the more sheltered areas, formation of asphalt pavements is likely if oil accumulations are heavy

RESPONSE CONSIDERATIONS

- Because of the low trafficability, and the rapid rates of burial and deep penetration of the oil, this is the most difficult of all the beach types to clean
- Heavy accumulations of pooled oil should be removed quickly
- All oiled debris should be removed
- Because of the slow sediment replenishment rates of these beaches, sediment removal should be limited as much as possible
- Flushing with ambient water can be used to remove some of the oil from the sediments, provided adequate oil recovery is possible
- Mechanical reworking of oiled sediments from the high-tide line to the upper intertidal zone (berm relocation) can be effective in areas regularly exposed to wave activity (as evidenced by storm berms)
- In-place tilling may be used to expose deeply buried oil layers to wave reworking on beaches with high wave activity

RIPRAP

ESI = 6B

DESCRIPTION

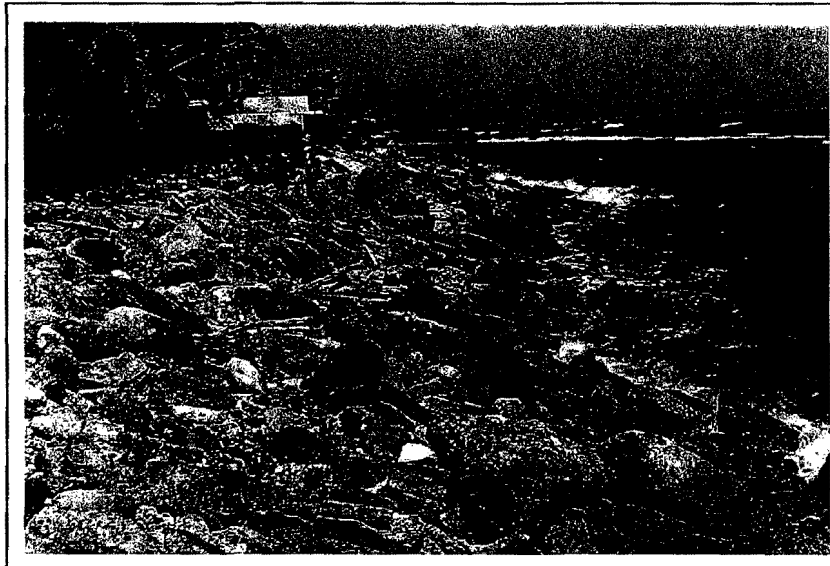
- Composed of cobble- to boulder-sized rock fragments
- Used for shoreline protection and inlet stabilization
- Attached mid- and low-intertidal zone biota may be plentiful and varied
- Relatively common in all the developed areas of the islands

PREDICTED OIL BEHAVIOR

- Deep penetration of oil because of the high permeability of the riprap
- Oil adheres readily to the rough rock surfaces
- If left uncleaned, oil may cause chronic leaching (weeks to months) until it turns to asphalt
- Resident fauna and flora may be killed by the oil

RESPONSE CONSIDERATIONS

- Flushing can be effective for removing mobile oil, but large amounts of residue can remain after flushing, particularly for heavy oil
- Scrapping and/or hot-water spraying of residual heavy oils may be required in areas of high recreational value



EXPOSED TIDAL FLATS

ESI = 7

DESCRIPTION

- Flat (less than three degrees) intertidal areas, composed primarily of sand and mud (sand dominant), that vary in width from a few to hundreds of meters
- The presence of sand indicates that tidal or wind-driven currents and waves are strong enough to mobilize the sediments
- Usually associated with another shoreline type on the landward side of the flat
- Sediments usually remain water-saturated, with only the topographically higher ridges drying out during low tide
- Sediments are generally too soft for vehicular traffic
- Biological utilization can be very high, with large numbers of infauna, and heavy use by birds for roosting and foraging
- Most common in areas that are partially shielded from wave action

PREDICTED OIL BEHAVIOR

- Oil does not usually adhere to the surface of exposed tidal flats, but rather moves across the flat and accumulates at the high-tide line
- Deposition of oil on the flat may occur on a falling tide if concentrations are heavy
- Oil does not typically penetrate these water-saturated sediments, except on the top of sand bars and into animal burrows if they dry out at low tide; thus, oil penetration is limited to a maximum of a few cm
- Because of the high biological use, impacts can be significant to benthic invertebrates that are smothered or exposed to the water-accommodated fraction of the oil

RESPONSE CONSIDERATIONS

- In most cases, the best response is to let the oil, which is primarily on the surface of the flat, be removed naturally
- Natural removal tends to happen rather quickly in this habitat, because of its exposure to waves and tidal currents
- Cleanup is very difficult, because of the potential for mixing the oil deeper into the sediments
- If cleanup is attempted, the use of heavy machinery should be restricted in order to prevent contamination of the subsurface sediments, with manual removal being preferred; however, heavy foot traffic can also result in oiling of the deeper sediments



SHELTERED ROCKY SHORES

ESI = 8A

DESCRIPTION

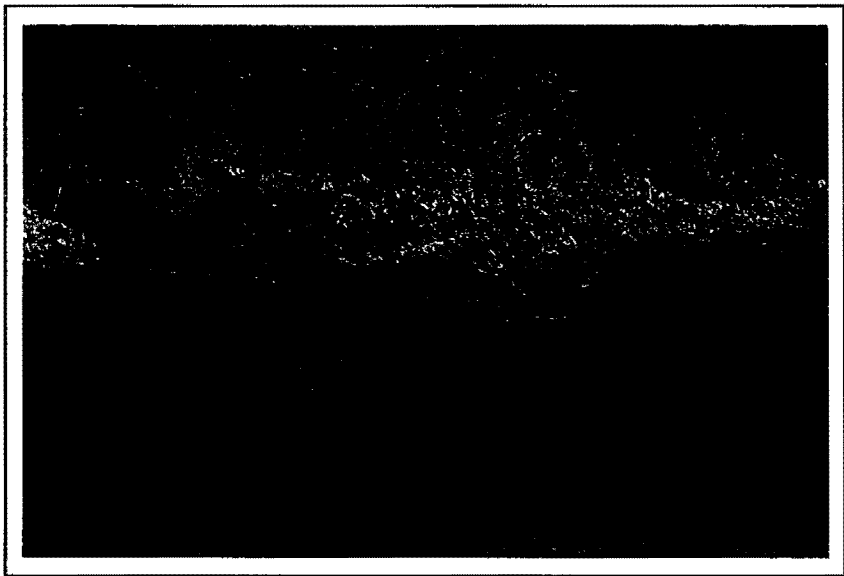
- Bedrock shores of variable slope (from vertical cliffs to wide, rocky ledges) that are sheltered from exposure to most wave and tidal energy
- Attached biota may be plentiful and varied, especially in lower and mid-intertidal zones
- Sheltered rocky shores are rare in the islands, occurring in only a few bays and coves

PREDICTED OIL BEHAVIOR

- Oil will adhere readily to the rough rocky surface, particularly along the high-tide line, forming a distinct oil band
- Oil can remain for a long time (months to years) because of the low energy setting
- Where surface sediments are abundant, oil will penetrate into the crevices formed by the surface rubble and pool at the contact of the sediments and the rock surface
- Where the rubble is loosely packed, oil will penetrate deeply, causing long-term contamination of the subsurface sediments
- Impacts to attached organisms can be severe
- Asphalt pavements can form in the cracks and services

RESPONSE CONSIDERATIONS

- Cleanup is often required because natural removal rates are slow
- Water flushing at ambient water temperatures is most effective when the oil is fresh
- All pooled oil and oiled debris should be removed as soon as possible
- Weathered asphalt pavements can be removed manually



SHELTERED, MAN-MADE STRUCTURES

ESI = 8B

DESCRIPTION

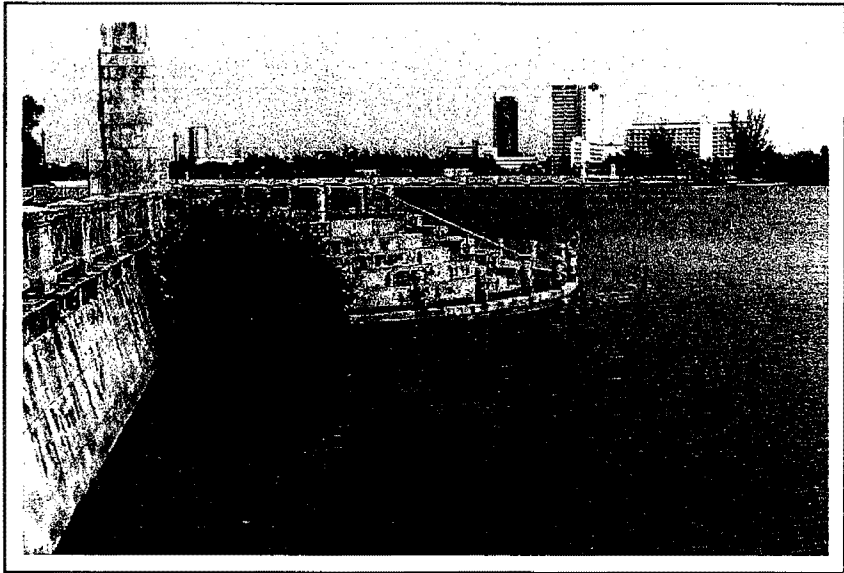
- Include revetments, seawalls, piers, and docks typically constructed of impermeable materials such as concrete and wood
- Found inside harbors and bays in highly developed areas sheltered from direct exposure to waves
- Attached biota may be plentiful and varied, especially in lower and mid-intertidal zones
- Common in bays and harbors of developed areas throughout the islands

PREDICTED OIL BEHAVIOR

- On impermeable surfaces, the oil will form a band at the high-tide line
- If the oil is not removed, it may cause chronic leaching until the oil hardens into an asphalt deposit
- Impacts to attached organisms can be severe

RESPONSE CONSIDERATIONS

- Cleanup is frequently required, because natural removal rates are slow and these features are located in populated areas
- High-pressure spraying may be required to remove oil for aesthetic reasons and to prevent leaching of oil from the structure
- Cleanup crews should make sure to recover all released oil
- All pooled oil and oiled debris should be removed as soon as possible



SHELTERED TIDAL FLATS

ESI = 9A

DESCRIPTION

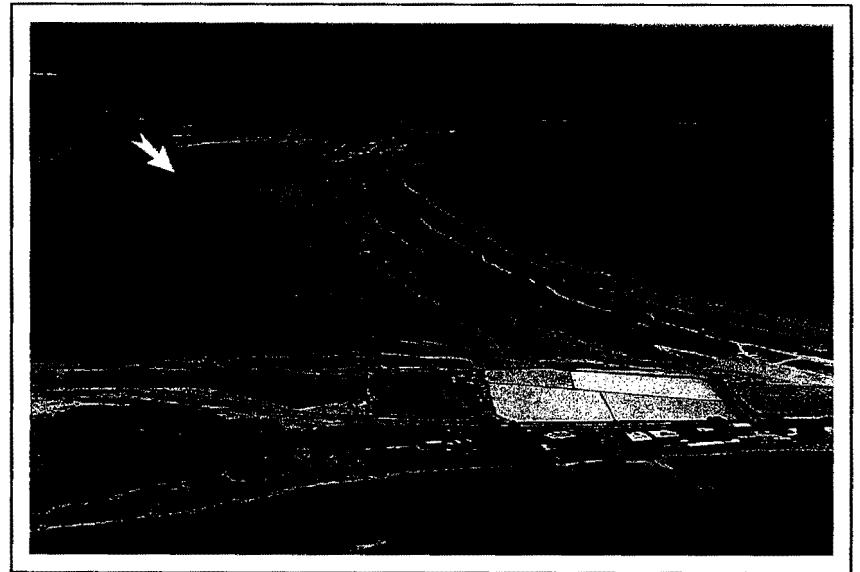
- Sheltered tidal flats are composed primarily of mud with minor amounts of sand and shell
- They are present in calm-water habitats, sheltered from major wave activity, frequently in unvegetated areas within mangrove forests and in salt ponds
- The sediments are very soft and cannot support even light foot traffic in many areas
- They can be sparsely to heavily covered with algae
- They can have very heavy wrack deposits along the upper fringe
- There can be large concentrations of invertebrates on and in the sediments

PREDICTED OIL BEHAVIOR

- Oil does not usually adhere to the surface of sheltered tidal flats, but rather moves across the flat and accumulates at the high-tide line
- Deposition of oil on the flat may occur on a falling tide if concentrations are heavy
- Oil will not penetrate the water-saturated sediments, but could penetrate burrows and desiccation cracks or other crevices in muddy sediments

RESPONSE CONSIDERATIONS

- These are high-priority areas necessitating the use of spill protection devices to limit oil-spill impact; deflection or sorbent booms and open water skimmers should be used
- Cleanup of the flat surface is very difficult because of the soft substrate; many methods may be restricted
- Care should be taken to limit foot traffic during any cleanup operations, to avoid mixing oil into the sediments
- Low-pressure flushing and deployment of sorbents from shallow-draft boats may be helpful



SHELTERED, VEGETATED LOW BANKS ESI = 9B

DESCRIPTION

- Sheltered banks of stream channels, canals and other waterways
- Calm-water habitats that are typically muddy, soft and highly vegetated
- Wave energy is very low, although there may be some tidal and/or riverine currents along the banks
- Present but not abundant throughout the islands along the most oceanward parts of river deltas, stream outlets, minor estuarine systems, and canals

PREDICTED OIL BEHAVIOR

- Natural removal rates very slow because of low energy and dense vegetation
- Oil adheres readily to vegetation
- The band of oil coating on the vegetation will vary widely, depending upon the tidal stage at the time of oiling; there may be multiple bands
- If the vegetation is thick, heavy oil coating will be restricted to the outer fringe, with penetration and lighter oiling to the limit of tidal influence
- In areas of high suspended sediments, sorption of oil can result in deposition of contaminated sediments on the channel banks and bottoms

RESPONSE CONSIDERATIONS

- These are high-priority areas necessitating the use of spill protection devices to limit oil-spill impact; most are along channels that have a opening to the open ocean close by; therefore, deflection booming should be used to prevent the oil from entering the channel mouth
- Cleanup of the banks is very difficult because of the soft substrate
- Manual operations and deployment of sorbents from shallow-draft boats may be helpful
- Under light oiling, the best practice is to let the area recover naturally.
- Heavy accumulations of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing
- Any cleanup activity must not mix the oil deeper into the sediments; trampling of the plant roots must be minimized
- Cutting of oiled vegetation should only be considered when other resources present (such as birds) are at great risk from leaving the oiled vegetation in place



MANGROVES

ESI = 10D

DESCRIPTION

- Mangrove species include red, white, and black mangroves, and buttonwood; red mangroves usually, but not always, occupy the most seaward fringe or zone
- Roots and trunks are intertidal, with only the lowest leaves inundated at high tide
- Relatively sheltered from waves and strong tidal currents
- The width of the mangroves can range from one tree to a wide forest
- The substrate ranges from mud to shell to coral rubble
- Mangroves are important nursery habitats for fish and invertebrates, and feeding and nesting areas for wildlife (such as birds)
- Occur along sheltered shorelines and estuarine areas throughout the islands



PREDICTED OIL BEHAVIOR

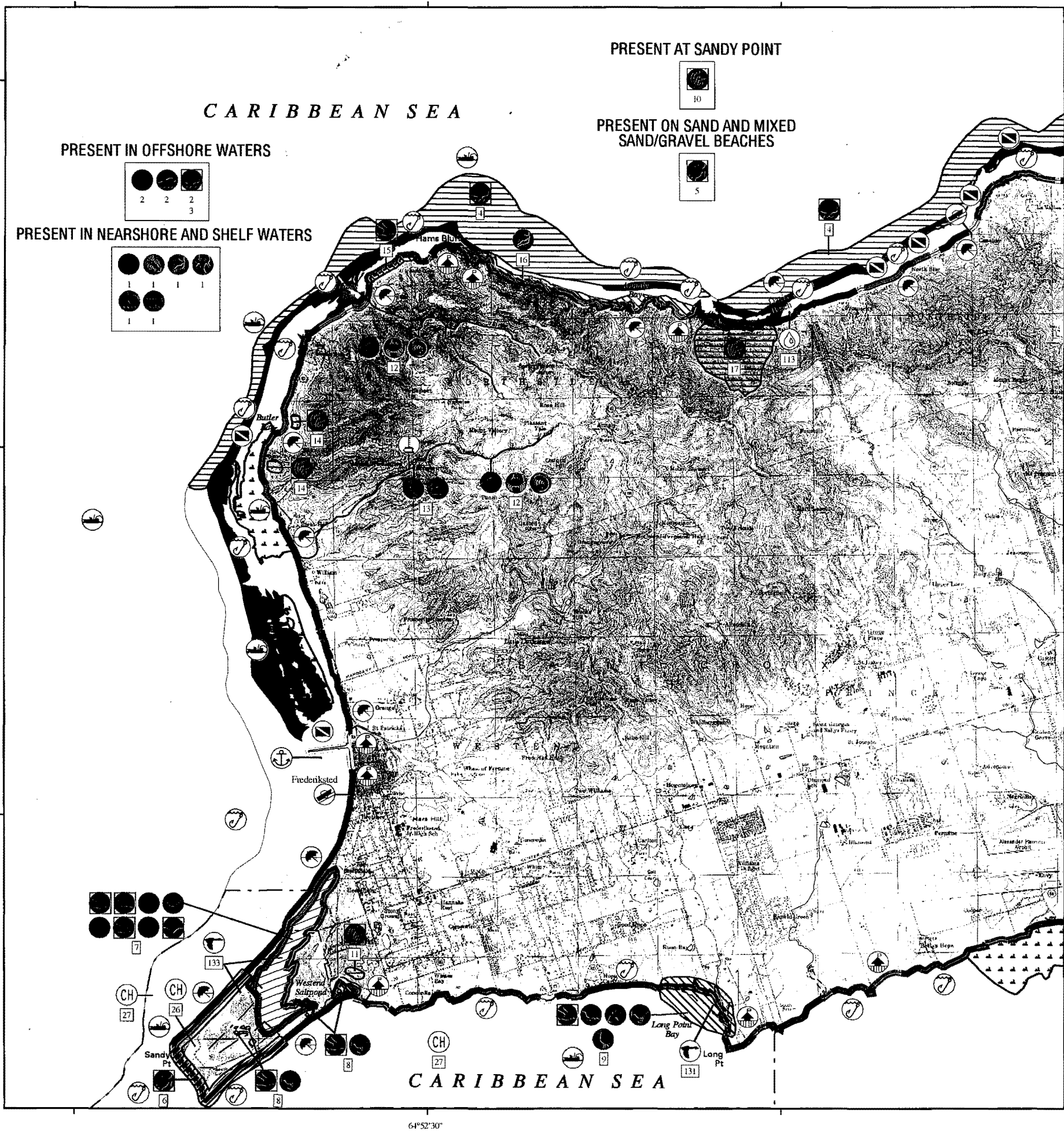
- Oil can wash through mangroves if it comes ashore at high tide
- If there is a berm present, oil tends to concentrate and penetrate into the berm sediments or the wrack/litter that has accumulated on the berm
- Heavy and emulsified oil can be trapped in thickets of mangrove prop roots or pneumatophores
- Oil readily adheres to prop roots, tree trunks, and pneumatophores
- Re-oiling from resuspended or released oil residues may cause additional injury over time
- Oiled trees may start to show evidence of effects (leaf yellowing) days to weeks after oiling; tree mortality may take months, especially for heavy oils
- Oil that penetrates the substrate or gets mixed into the sediments can cause long-term contamination of sediments and severe mangrove injury and mortality

RESPONSE CONSIDERATIONS

- Wrack may protect the trees from oiling, so wait until the threat of oiling has passed before removing it
- Sorbent boom can be placed in front of oiled forests to recover oil released naturally
- In most cases, no other cleanup activities are recommended
- Where thick oil accumulations are not being naturally removed, low-pressure flushing or vacuum may be attempted at the outer fringe
- No attempt should be made to clean interior mangroves, except where access to the oil is possible from terrestrial areas
- It is extremely important to prevent disturbance of soft substrates by foot traffic, which can mix oil into the sediments

ENVIRONMENTAL SENSITIVITY INDEX MAP

64°52'30"



64°52'30"

SHORELINE HABITATS (ESI)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

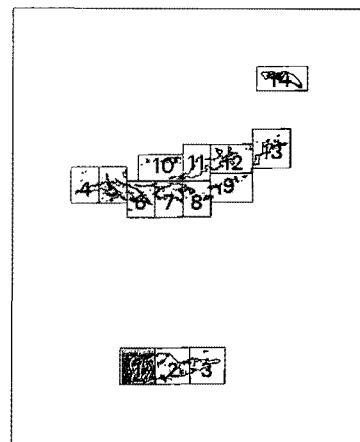


SCALE 1:55000



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National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division



VIRGIN ISLANDS - ESIMAP 1

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
7	Black-necked stilt							X	X	X	X	X	X	X	X	X	APR-OCT
	Brown booby				X	X	X	X	X	X	X	X	X	X	X	X	-
	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Greater flamingo				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Least grebe	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Least tern	S	E					X	X	X	X						MAY-AUG
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Neotropical migrants				X	X	X	X							X	X	-
	Peregrine falcon				X	X	X	X							X	X	-
	Shorebirds				X	X	X	X				X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL
	White-crowned pigeon	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
8	Black-necked stilt							X	X	X	X	X	X	X	X	X	APR-OCT
	Least tern	S	E					X	X	X	X						MAY-AUG
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
9	Black-necked stilt			POTENTIAL				X	X	X	X	X	X	X	X	X	APR-OCT
	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls			POTENTIAL	X	X	X	X	X	X	X	X	X	X	X	X	-
	Least tern	S	E					X	X	X	X						MAY-AUG
	Neotropical migrants			POTENTIAL	X	X	X	X							X	X	-
	Peregrine falcon				X	X	X	X							X	X	-
	Shorebirds			POTENTIAL	X	X	X	X				X	X	X	X	X	-
	Terns			POTENTIAL	X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds			POTENTIAL	X	X	X	X	X	X	X	X	X	X	X	X	-
	Wilson's plover			POTENTIAL	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
13	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Pied-billed grebe				X	X	X	X	X	X	X	X	X	X	X	X	-
	Sora				X	X	X	X							X	X	-
15	Brown pelican	S/F	E/E	POTENTIAL	X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Magnificent frigatebird			POTENTIAL	X	X	X	X	X	X	X	X	X	X	X	X	OCT-MAY

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
2	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
7	Mangrove molly				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
12	Native stream fish				X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	APR-MAY	APR-MAY	JAN-DEC
																	AUG-NOV	AUG-NOV	AUG-NOV	JAN-DEC

PLANT:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
10	Psychilis macconelliae	S	E		X	X	X	X	X	X	X	X	X	X	X	X
11	Buxus vahlii	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X
14	Malpighia infestissima	S	E		X	X	X	X	X	X	X	X	X	X	X	X
17	Erythrina eggersii	S	E		X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC
12	Freshwater crab				X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	APR-MAY	-	JAN-DEC
																	AUG-NOV	AUG-NOV		JAN-DEC
	Native stream shrimp				X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	APR-MAY	APR-MAY	JAN-DEC
																	AUG-NOV	AUG-NOV	AUG-NOV	JAN-DEC
16	West Indian topsnail (whelk)			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
2	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
3	Sperm whale	S/F	E/E	LOW	X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X								X	NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
5	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
6	Green sea turtle	S/F	E/T	HIGH	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E	HIGH	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E	VERY HIGH				X	X	X	X	X					MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG

TERRESTRIAL MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
7	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X

HUMAN USE RESOURCES:

CRITICAL HABITAT:

HUN#	Name	Owner/Manager	Contact	Phone
26	LEATHERBACK TURTLE DCH	USFWS	CARIBBEAN FIELD OFFICE	787/851-7297
27	LEATHERBACK TURTLE DCH	NMFS	MAYAGUEZ FIELD OFFICE	787/831-3426

WATER INTAKE:

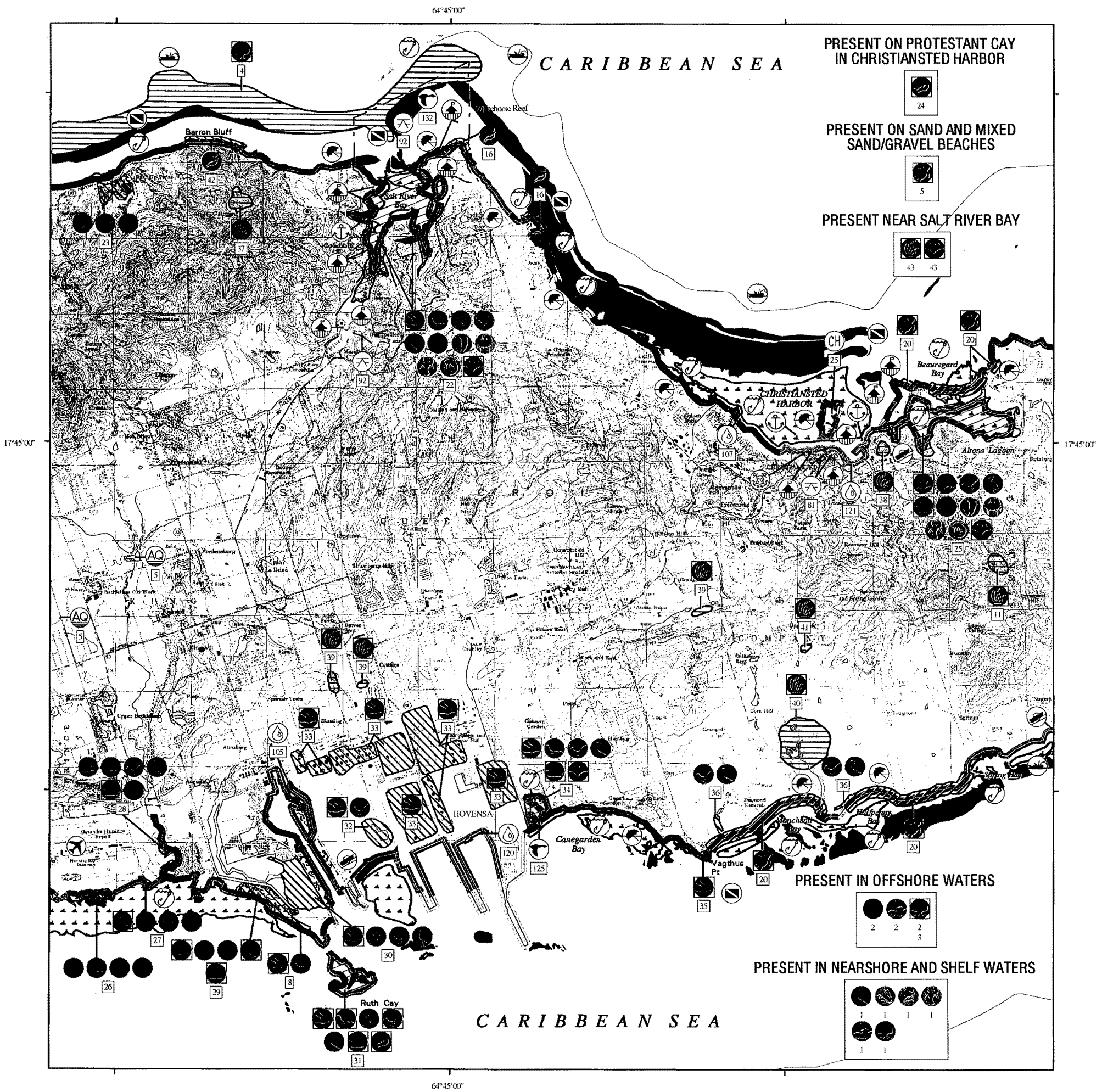
HUN#	Name	Owner/Manager	Contact	Phone
113	DESALINATION PLANT	CARAMBOLA RESORT		

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
131	LONG POINT PRESERVE	TNC		
133	SANDY POINT NATIONAL WILDLIFE REFUGE	USFWS	REFUGE MANAGER	340/773-4554

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP



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- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

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1 KILOMETER

1 MILE

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VIRGIN ISLANDS - ESIMAP 2

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
8	Black-necked stilt						X	X	X	X	X	X	X	X			APR-OCT
	Least tern	S		E				X	X	X	X	X					MAY-AUG
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
22	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Brown pelican	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Least tern	S		E			X	X	X	X	X						MAY-AUG
	Neotropical migrants				X	X	X	X							X	X	X
	Osprey				X	X	X	X				X	X	X	X		-
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL
23	Neotropical migrants				X	X	X	X							X	X	X
	Northern waterthrush				X	X	X	X				X	X	X	X		-
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
25	Blue-winged teal				X	X	X	X							X	X	X
	Brown pelican	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Least tern	S		E			X	X	X	X	X						MAY-AUG
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X		-
	Neotropical migrants				X	X	X	X							X	X	X
	Royal tern				X	X	X	X	X	X	X	X	X	X	X		-
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
	White-cheeked pintail	S		E	X	X	X	X	X	X	X	X	X	X	X		-
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
26	Gulls				X	X	X	X	X	X	X	X	X	X	X		-
	Neotropical migrants				X	X	X	X							X	X	X
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
27	Gulls				X	X	X	X	X	X	X	X	X	X	X		-
	Least tern	S		E			X	X	X	X	X						MAY-AUG
	Neotropical migrants				X	X	X	X							X	X	X
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
28	Common moorhen				X	X	X	X	X	X	X	X	X	X	X		-
	Gulls				X	X	X	X	X	X	X	X	X	X	X		-
	Neotropical migrants				X	X	X	X							X	X	X
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		APR-JUL
	White-cheeked pintail	S		E	X	X	X	X	X	X	X	X	X	X	X		-
29	Brown pelican	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Cattle egret				X	X	X	X	X	X	X	X	X	X	X		-
	Great egret	S		E	X	X	X	X	X	X	X	X	X	X	X		APR-JUN
	Gulls				X	X	X	X	X	X	X	X	X	X	X		-
	Little blue heron				X	X	X	X	X	X	X	X	X	X	X		APR-JUL
	Neotropical migrants				X	X	X	X							X	X	X
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Snowy egret	S		E	X	X	X	X	X	X	X	X	X	X	X		APR-JUL
																	OCT-OCT
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
	White-cheeked pintail	S		E	X	X	X	X	X	X	X	X	X	X	X		JAN-DEC
30	Brown pelican	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X		-
	Laughing gull				X	X	X	X	X	X							-
	Least tern	S		E			X	X	X	X	X						-
	Osprey				X	X	X	X				X	X	X	X		-
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
31	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X		MAY-AUG
	Brown booby				X	X	X	X	X	X	X	X	X	X	X		-
	Common ground-dove				X	X	X	X	X	X	X	X	X	X	X		JAN-DEC
	Gulls				X	X	X	X	X	X	X	X	X	X	X		-
	Least tern	S		E			X	X	X	X	X						MAY-AUG
	Osprey				X	X	X	X				X	X	X	X		-
	Peregrine falcon				X	X	X	X	X			X	X	X			-
	Scaly-naped pigeon				X	X	X	X	X	X	X	X	X	X	X		JAN-DEC
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
	White-cheeked pintail	S		E	X	X	X	X	X	X	X	X	X	X	X		JAN-DEC
	White-crowned pigeon	S		E	X	X	X	X	X	X	X	X	X	X	X		MAR-SEP
	Willet	S		E	X	X	X	X	X	X	X	X	X	X	X		-
	Zenaida dove				X	X	X	X	X	X	X	X	X	X	X		APR-JUN
32	Least tern	S		E			X	X	X	X	X						MAY-AUG
	Shorebirds				X	X	X	X	X			X	X	X	X		-
33	Least tern	S		E			X	X	X	X	X						MAY-AUG
34	Blue-winged teal				X	X	X	X							X	X	X
	Brown pelican	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X		-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X		-
	Gulls				X	X	X	X	X	X	X	X	X	X	X		-
	Least tern	S		E			X	X	X	X							-
	Neotropical migrants				X	X	X	X							X	X	X
	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Terns				X	X	X	X	X	X	X	X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-
	White-cheeked pintail	S		E	X	X	X	X	X	X	X	X	X	X	X		-
35	White-tailed tropicbird	S		E			X	X	X	X	X						MAR-AUG
36	Shorebirds				X	X	X	X	X			X	X	X	X		-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X		-

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
2	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
22	Butterfly fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Damselfish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Grunts				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Jacks				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Mojarras				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Snappers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
25	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Grunts				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Jacks				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Mojarras				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Snappers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
28	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-

VIRGIN ISLANDS - ESIMAP 2 cont.

BIOLOGICAL RESOURCES: cont.

PLANT:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
11	Buxus vahlii	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X
37	Peperomia myrtifolia	S	E		X	X	X	X	X	X	X	X	X	X	X	X
38	Agave eggersiana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
39	Guajacum officinale	S	E		X	X	X	X	X	X	X	X	X	X	X	X
40	Catesbaea melanocarpa	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Malpighia infestissima	S	E		X	X	X	X	X	X	X	X	X	X	X	X
41	Maytenus cymosa	S	E		X	X	X	X	X	X	X	X	X	X	X	X
43	Agave eggersiana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Malpighia infestissima	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Mammillaria nivosa	S	E		X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate	Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
16	West Indian topsnail (whelk)			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
22	Bivalves				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Blue crabs				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC	-
	Southern pink shrimp				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
25	Bivalves				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Blue crabs				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC	-
	Southern pink shrimp				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
42	West Indian topsnail (whelk)			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
2	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
3	Sperm whale	S/F	E/E	LOW	X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X	X								X X NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
5	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
20	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG
24	St. Croix ground lizard	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
31	St. Croix ground lizard	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
22	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
25	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
34	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
43	Cave bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Red fruit bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X

HUMAN USE RESOURCES:

AQUACULTURE:

HUN#	Name	Owner/Manager	Contact	Phone
5	AQUACULTURE FACILITY	UVI COOP. EXT. SERVICE	JAMES RAKOCY	340/692-4080

CRITICAL HABITAT:

HUN#	Name	Owner/Manager	Contact	Phone
25	GROUND LIZARD DCH	USFWS	CARIBBEAN FIELD OFFICE	787/851-7297

NATIONAL PARK:

HUN#	Name	Owner/Manager	Contact	Phone
81	CHRISTIANSSED NHS	NPS	DISTRICT MANAGER	340/773-1460
92	SALT RIVER BAY NHP AND ECOLOGICAL PRES.	NPS	DISTRICT MANAGER	340/773-1460

WATER INTAKE:

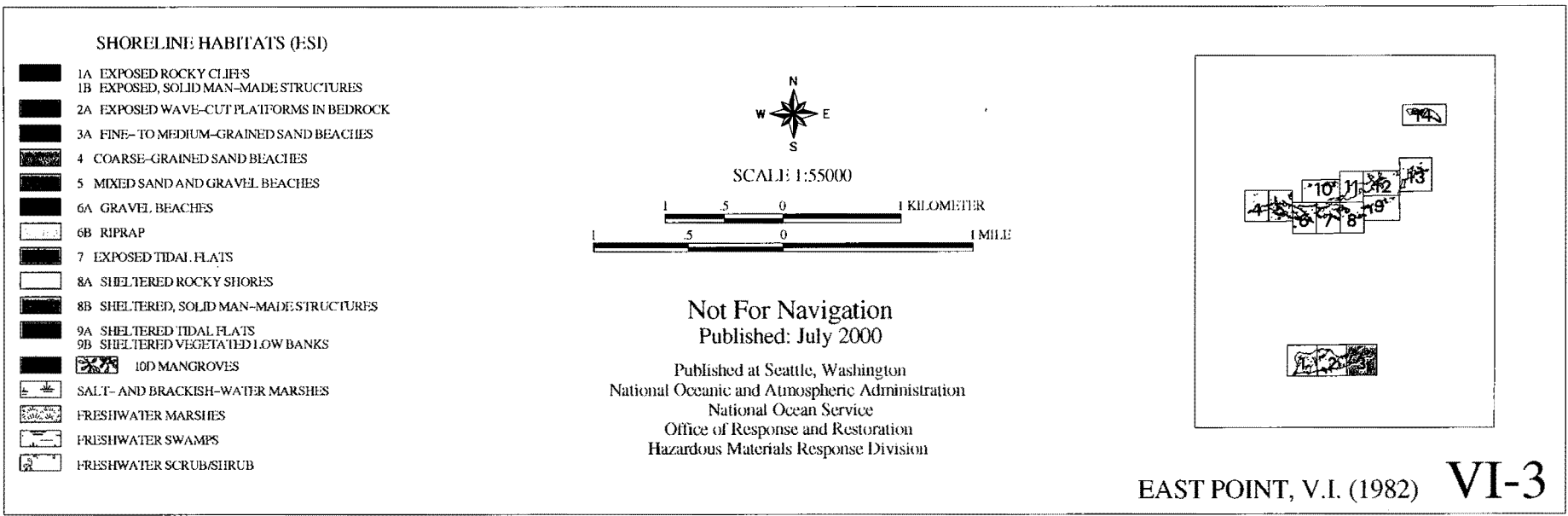
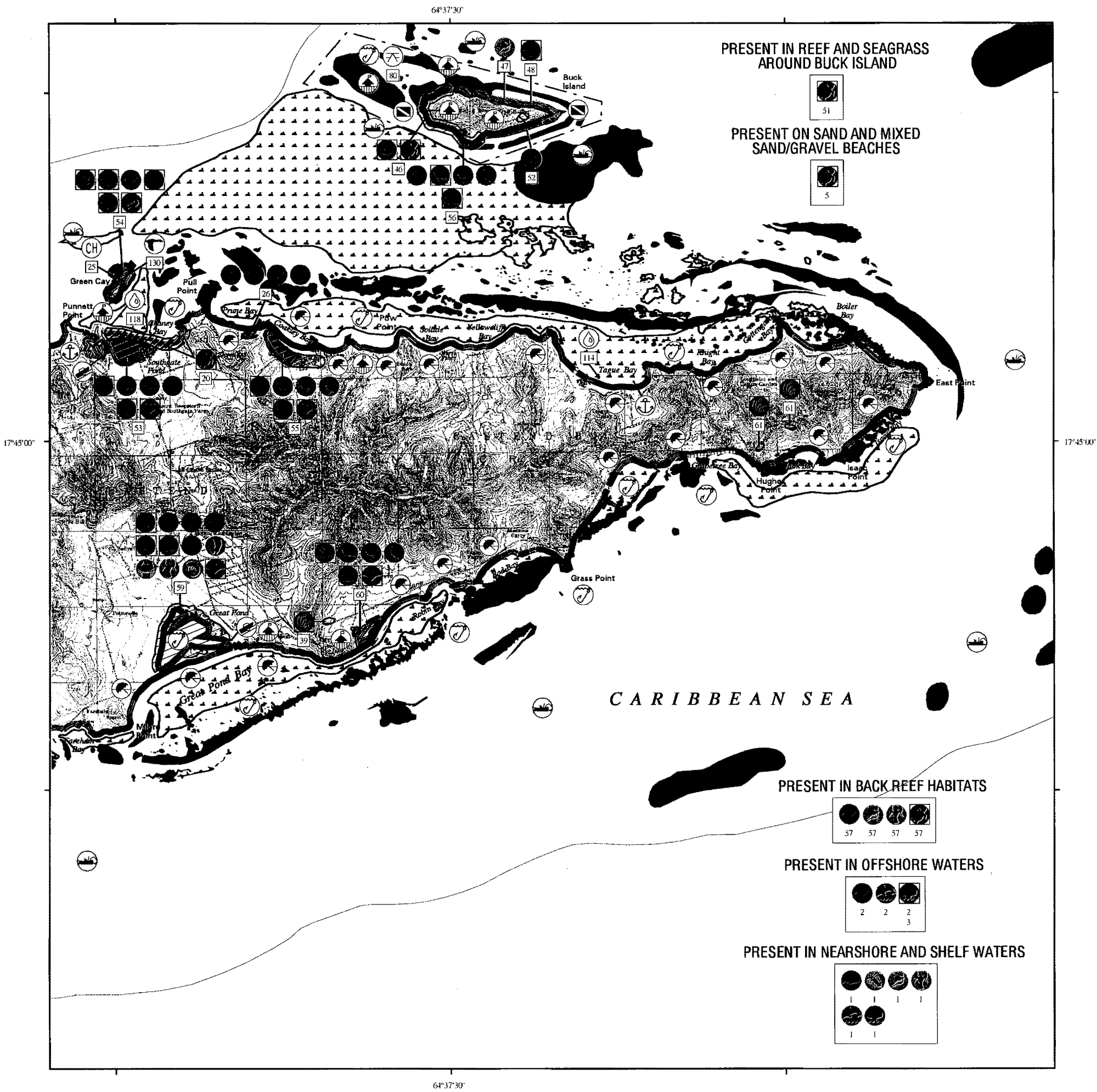
HUN#	Name	Owner/Manager	Contact	Phone
105	ALUMINA PLANT INTAKE	ST. CROIX ALUMINA CORP.	ENV., HEALTH, & SAFETY MANAGER	340/772-7648
107	DESALINATION AND INDUSTRIAL PLANTS	WAPA		340/773-2250
120	REFINERY INTAKE	HOVENSA	ENV. STAFF ENGINEER	340/692-3254
121	SEAWATER INTAKE	DEPT. OF PUBLIC WORKS		

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
125	BILLY FRENCH PONDS WETLAND RESERVE	UVI	SEA GRANT MARINE ADVISER	340/778-1112
132	SALT RIVER BAY MAR. RES. & WILD. SANCT.	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/774-3320

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP



VIRGIN ISLANDS - ESIMAP 3

BIOLOGICAL RESOURCES:

BIRD:

[illegible]

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
1	Pelagic fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
2	Pelagic fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
57	Butterfly fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Damselfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Great barracuda	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Groupers	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Grunts	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Nursery fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Parrotfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Reef fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Snappers	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Tarpon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Wrasses	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
59	Bonefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Common snook	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Great barracuda	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Grunts	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Jacks	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Mojarras	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Mullet	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Nursery fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Permit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Snappers	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC

PLANT:

[illegible]

VIRGIN ISLANDS - ESIMAP 3 cont.

BIOLOGICAL RESOURCES: cont.

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate	Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
47	West Indian topsnail (whelk)			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
57	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
59	Bivalves				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Blue crabs				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC	-
	Southern pink shrimp				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
2	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
3	Sperm whale			S/F E/E LOW	X	X	X	X	X	X	X	X	X	X	X	X	-	-

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
5	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
20	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG
46	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	MAY-NOV	MAY-NOV	MAR-AUG
51	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
54	St. Croix ground lizard	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
57	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-

TERRESTRIAL MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
53	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
55	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
59	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
60	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X

HUMAN USE RESOURCES:

CRITICAL HABITAT:

HUN#	Name	Owner/Manager	Contact	Phone
25	GROUND LIZARD DCH	USFWS	CARIBBEAN FIELD OFFICE	787/851-7297

NATIONAL PARK:

HUN#	Name	Owner/Manager	Contact	Phone
80	BUCK ISLAND REEF NATIONAL MONUMENT	NPS	RESOURCE MANAGEMENT SPECIALIST	340/773-1460

WATER INTAKE:

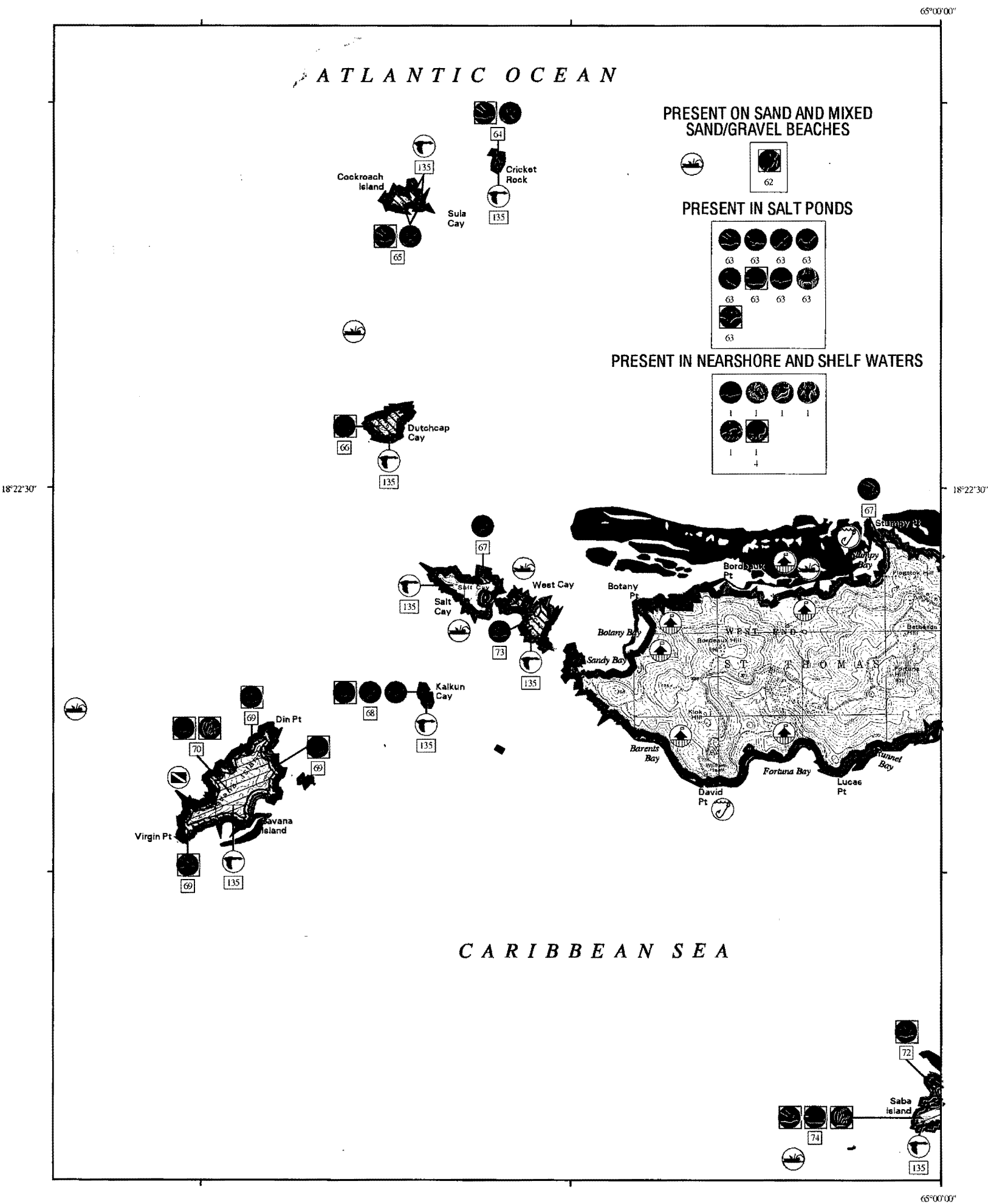
HUN#	Name	Owner/Manager	Contact	Phone
114	DESALINATION PLANT	THE REEF CONDO		
118	MARINA INTAKE	GREEN CAY MARINA		

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
130	GREEN CAY NATIONAL WILDLIFE REFUGE	USFWS	REFUGE MANAGER	340/773-4554

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE HABITATS (ESD)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE-TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

W N E S

SCALE 1:55000

1 0.5 0 0.5 1 KILOMETER

1 0.5 0 0.5 1 MILE

Not For Navigation
Published: July 2000

Published at Seattle, Washington
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division

WESTERN ST. THOMAS, V.I. (1982)

VI-4

VIRGIN ISLANDS - ESIMAP 4

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
63	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Belted kingfisher				X	X	X	X					X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X				APR-OCT
	Blue-winged teal				X	X	X	X					X	X	X		-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X					X	X	X	X	-
	Passerine birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X					X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
64	Bridled tern			30-50													MAY-AUG
	Brown booby			<5	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Brown noddy			20	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Masked (blue-faced) booby			POTENTIAL	X	X	X	X	X	X	X	X	X	X	X	X	OCT-MAY
	Peregrine falcon				X	X	X	X							X	X	-
	Red-billed tropicbird			5-15	X	X	X	X	X						X	X	OCT-JUN
	Roseate tern	S/F	E/T						X	X	X	X	X				MAY-AUG
65	Audubon's shearwater	S	E	5-25	X	X	X	X								X	DEC-MAY
	Bridled tern			10-30					X	X	X	X	X				MAY-AUG
	Brown booby			150-200	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Brown noddy			25-50	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull								X	X	X	X	X				JUN-AUG
	Masked (blue-faced) booby			40-60	X	X	X	X	X	X	X	X	X	X	X	X	OCT-MAY
	Peregrine falcon				X	X	X	X							X	X	-
	Red-billed tropicbird			100-125	X	X	X	X	X						X	X	OCT-JUN
	White-tailed tropicbird	S	E						X	X	X	X	X				MAR-AUG
66	Bridled tern								X	X	X	X	X				MAY-AUG
	Brown booby			150-200	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Brown pelican	S/F	E/E	100-200	X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Red-billed tropicbird			10-20	X	X	X	X	X						X	X	OCT-JUN
	Red-footed booby			125-175	X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	White-tailed tropicbird	S	E						X	X	X	X	X				MAR-AUG
67	Seabirds			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-
68	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Bridled tern			10-20					X	X	X	X					MAY-AUG
	Brown booby			60-90	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Brown noddy			10-20	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Peregrine falcon				X	X	X	X							X	X	-
	Red-billed tropicbird			5-10	X	X	X	X	X						X	X	OCT-JUN
	Roseate tern	S/F	E/T	50-350					X	X	X	X	X				MAY-AUG
69	Red-billed tropicbird			HIGH	X	X	X	X	X						X	X	OCT-JUN
	White-tailed tropicbird	S	E	LOW					X	X	X	X	X				MAR-AUG
70	Scaly-naped pigeon				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	White-crowned pigeon	S	E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP
72	Bridled tern			25-50					X	X	X	X					MAY-AUG
	Brown noddy			25-50	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull			200-400					X	X	X	X	X				JUN-AUG
	Roseate tern	S/F	E/T						X	X	X	X	X				MAY-AUG
	Royal tern			20-80	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sandwich tern			50-250	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sooty tern			50-200					X	X	X	X	X				APR-AUG
73	Red-billed tropicbird				X	X	X	X	X						X	X	OCT-JUN
74	Audubon's shearwater	S	E	<20	X	X	X	X								X	DEC-MAY
	Bridled tern			50-200					X	X	X	X	X				MAY-AUG
	Brown noddy			200-400	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull			100-200					X	X	X	X	X				JUN-AUG
	Roseate tern	S/F	E/T	20-400					X	X	X	X	X				MAY-AUG
	Sooty tern			30-40000					X	X	X	X	X				APR-AUG
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
63	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-

PLANT:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
70	Malpighia woodburyana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
74	Mammillaria nivosa	S	E		X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate	Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
63	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X	X								X X NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
62	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
63	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X

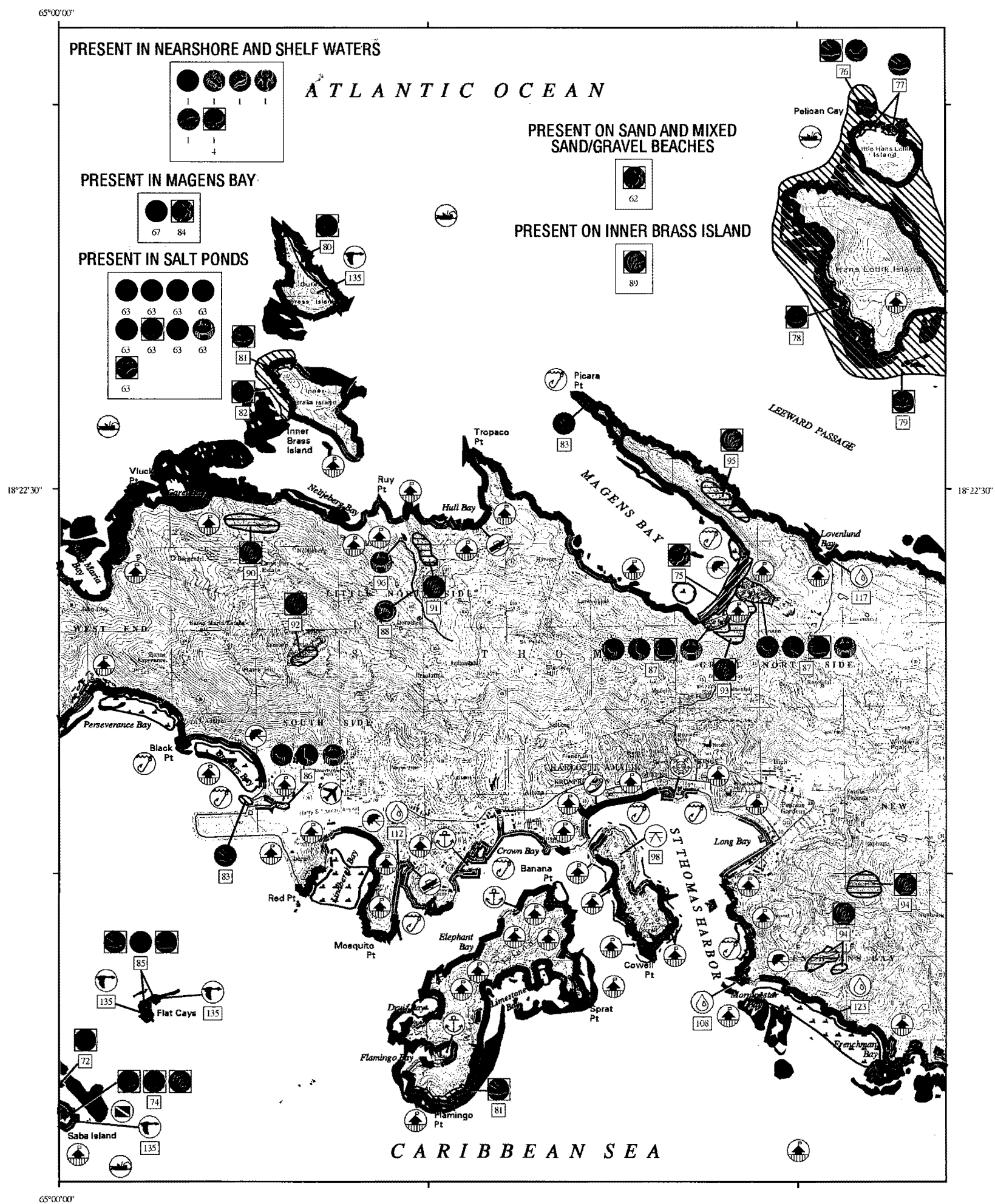
HUMAN USE RESOURCES:

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
135	USVI WILDLIFE SANCTUARY	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/775-6762

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP

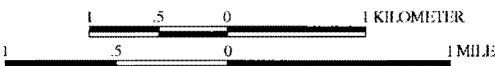


SHORELINE HABITATS (ESI)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

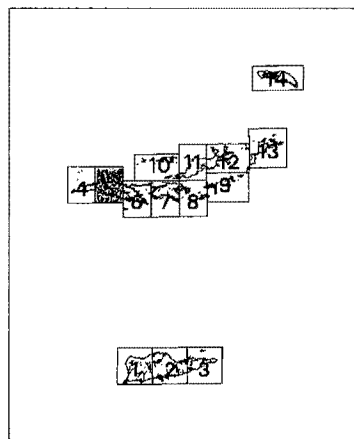


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Office of Response and Restoration
Hazardous Materials Response Division



VIRGIN ISLANDS - ESIMAP 5

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
63	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Belted kingfisher				X	X	X	X					X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X				APR-OCT
	Blue-winged teal				X	X	X	X					X	X	X		-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X					X	X	X	X	-
	Passerine birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X			X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
67	Seabirds			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-
72	Bridled tern			25-50			X	X	X	X	X						MAY-AUG
	Brown noddy			25-50	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull			200-400			X	X	X	X	X	X					JUN-AUG
	Roseate tern	S/F	E/T				X	X	X	X	X						MAY-AUG
	Royal tern			20-80	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sandwich tern			50-250	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sooty tern			50-200			X	X	X	X	X						APR-AUG
74	Audubon's shearwater	S	E	<20	X	X	X	X	X							X	DEC-MAY
	Bridled tern			50-200			X	X	X	X	X						MAY-AUG
	Brown noddy			200-400	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull			100-200			X	X	X	X	X						JUN-AUG
	Roseate tern	S/F	E/T	20-400			X	X	X	X	X						MAY-AUG
	Sooty tern			30-40000			X	X	X	X	X						APR-AUG
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
76	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull						X	X	X	X	X						JUN-AUG
	Roseate tern	S/F	E/T	100-400			X	X	X	X	X						MAY-AUG
	Royal tern			1	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sandwich tern			20-300	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
77	Laughing gull			100-300			X	X	X	X	X						JUN-AUG
	Sandwich tern			200-700	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
78	Brown pelican	S/F	E/E	3-8	X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Red-billed tropicbird			15-30	X	X	X	X	X					X	X	X	OCT-JUN
	White-tailed tropicbird	S	E	5			X	X	X	X	X						MAR-AUG
79	Brown pelican	S/F	E/E	HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-
80	Brown booby				X	X	X	X	X	X	X	X	X	X	X	X	-
	Laughing gull						X	X	X	X	X	X					-
	Red-billed tropicbird				X	X	X	X	X	X				X	X	X	OCT-JUN
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-tailed tropicbird	S	E				X	X	X	X	X						MAR-AUG
81	Red-billed tropicbird				X	X	X	X	X	X				X	X	X	OCT-JUN
	White-tailed tropicbird	S	E				X	X	X	X	X						MAR-AUG
82	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
83	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
85	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Bridled tern			30-60			X	X	X	X							MAY-AUG
	Brown noddy			25-50	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull						X	X	X	X	X						JUN-AUG
	Red-billed tropicbird			3-5	X	X	X	X	X				X	X	X		OCT-JUN
	Roseate tern	S/F	E/T	20-200			X	X	X	X	X	X					MAY-AUG
	Royal tern			1-20	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sandwich tern			5-50	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sooty tern			200-400			X	X	X	X	X						APR-AUG
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
86	Shorebirds			HIGH	X	X	X	X	X			X	X	X	X	X	-
	Wading birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-
87	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X			X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Waterfowl				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
63	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-

PLANT:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
74	Mammillaria nivosa	S	E		X	X	X	X	X	X	X	X	X	X	X	X
89	Malpighia woodburyana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
90	Brassavola cucullata	S	E		X	X	X	X	X	X	X	X	X	X	X	X
91	Psychilis macconelliae	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Tillandsia lineatispica	S	E		X	X	X	X	X	X	X	X	X	X	X	X
92	Schoepfia schreberi	S	E		X	X	X	X	X	X	X	X	X	X	X	X
93	Manilkara bidentata	S	E		X	X	X	X	X	X	X	X	X	X	X	X
94	Zanthoxylum thomsonianum	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X
95	Tillandsia lineatispica	S	E		X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
63	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JAN-DEC	JAN-DEC
86	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JAN-DEC	JAN-DEC
87	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JAN-DEC	JAN-DEC
88	Native stream shrimp				X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	APR-MAY	JAN-DEC	JAN-DEC
																	AUG-NOV	AUG-NOV	JAN-DEC	JAN-DEC
96	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JAN-DEC	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X						X	X	X	NOV-MAY	NOV-MAY

VIRGIN ISLANDS - ESIMAP 5 cont.

BIOLOGICAL RESOURCES: cont.

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
62	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
75	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E							X	X	X	X	X	X		MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG
84	Hawksbill sea turtle	S/F	E/E	HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-

TERRESTRIAL MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
63	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X

HUMAN USE RESOURCES:

NATIONAL PARK:

HUN#	Name	Owner/Manager	Contact	Phone
98	VIRGIN ISLANDS NATIONAL PARK	NPS	CHIEF OF RESOURCE MANAGEMENT	340/693-8950

WATER INTAKE:

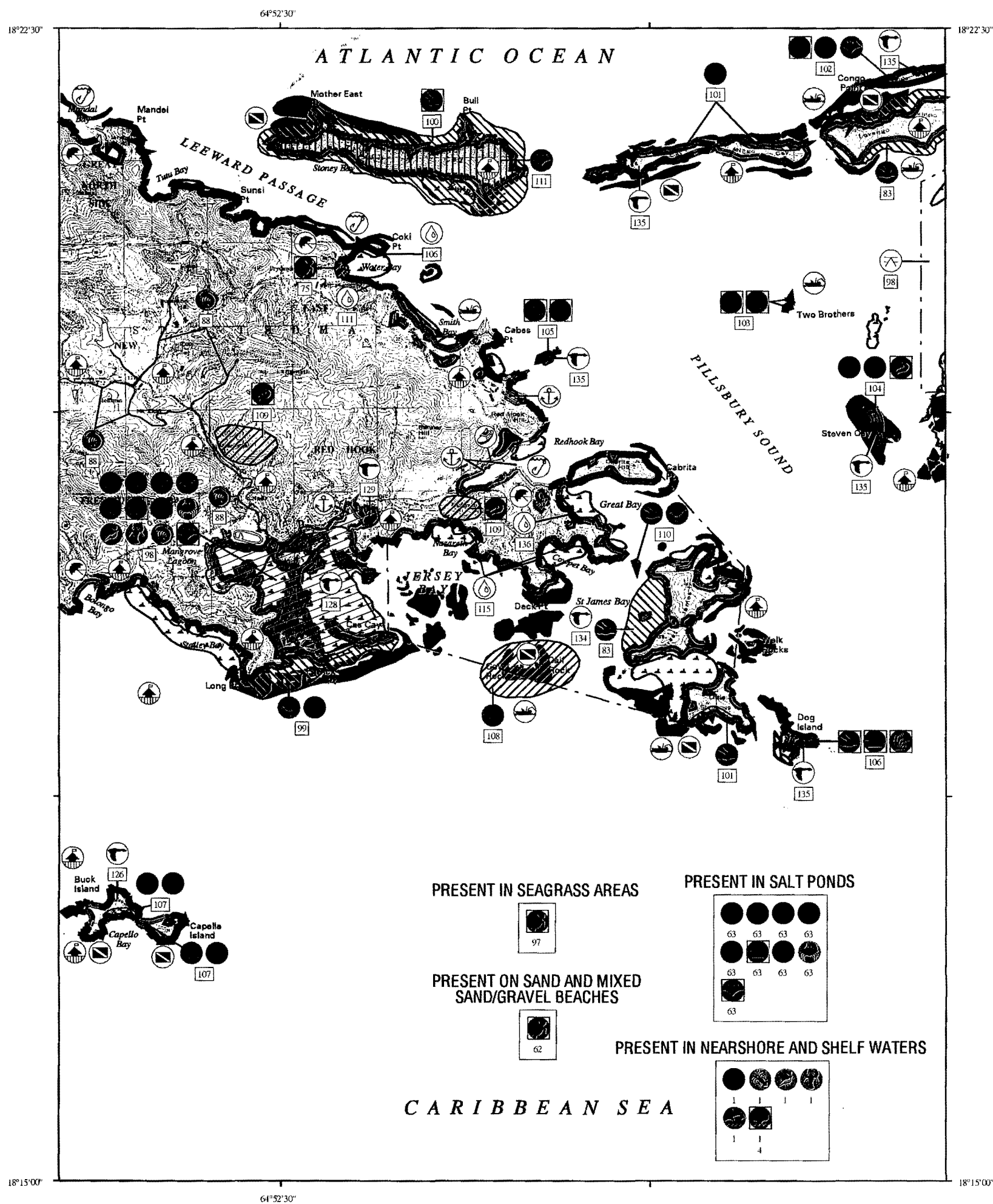
HUN#	Name	Owner/Manager	Contact	Phone
108	DESALINATION PLANT	FRENCHMANS REEF HOTEL WAPA		340/774-3552
112	DESALINATION PLANT			
117	MAHOGANY RUN			
123	WATER INTAKE			

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
135	USVI WILDLIFE SANCTUARY	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/775-6762

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP



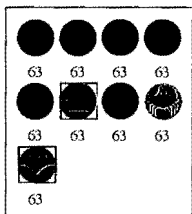
PRESENT IN SEAGRASS AREAS



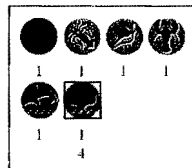
PRESENT ON SAND AND MIXED SAND/GRAVEL BEACHES



PRESENT IN SALT PONDS



PRESENT IN NEARSHORE AND SHELF WATERS



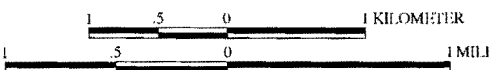
CARIBBEAN SEA

SHORELINE HABITATS (ESI)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

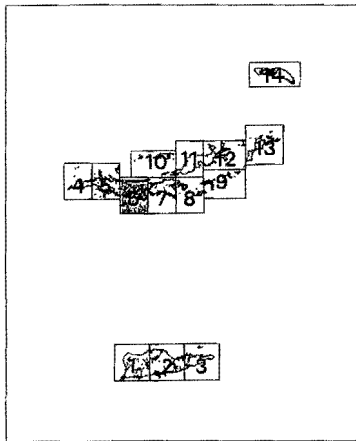


SCALE 1:55000



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National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division



VIRGIN ISLANDS - ESIMAP 6

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
63	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Belted kingfisher				X	X	X	X						X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X				APR-OCT
	Blue-winged teal				X	X	X	X						X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X						X	X	X	-
	Passerine birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
83	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
98	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Belted kingfisher				X	X	X	X						X	X	X	-
	Black-necked stilt								X	X	X	X	X				APR-OCT
	Blue-winged teal				X	X	X	X						X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X						X	X	X	-
	Passerine birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X		X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
99	Shorebirds			HIGH	X	X	X	X		X	X	X	X	X	X	X	-
	Wading birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-
100	Roseate tern	S/F	E/T					X	X	X	X	X					-
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
101	Red-billed tropicbird				X	X	X	X	X					X	X	X	OCT-JUN
102	Bridled tern			<50				X	X	X	X	X					MAY-AUG
	Brown noddy			20-40	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Brown pelican	S/F	E/E	75-150	X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Peregrine falcon				X	X	X	X						X	X	X	-
	Red-billed tropicbird			15-30	X	X	X	X	X					X	X	X	OCT-JUN
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-tailed tropicbird	S	E	5-10				X	X	X	X	X					MAR-AUG
103	Great blue heron	S	E		X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG
	Laughing gull							X	X	X	X	X					JUN-AUG
	Red-billed tropicbird				X	X	X	X	X					X	X	X	OCT-JUN
	Roseate tern	S/F	E/T					X	X	X	X	X	X				MAY-AUG
	Royal tern				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
104	Laughing gull							X	X	X	X	X					JUN-AUG
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL
105	Red-billed tropicbird			3-6	X	X	X	X	X					X	X	X	OCT-JUN
	Roseate tern	S/F	E/T	100-800				X	X	X	X	X					MAY-AUG
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
106	Bridled tern							X	X	X	X	X					MAY-AUG
	Laughing gull			200-400				X	X	X	X	X					JUN-AUG
	Red-billed tropicbird			3-6	X	X	X	X	X					X	X	X	OCT-JUN
	Roseate tern	S/F	E/T	14-275				X	X	X	X	X					MAY-AUG
	Royal tern			25-85	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sandwich tern			100-800	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sooty tern			1				X	X	X	X						APR-AUG
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	White-tailed tropicbird	S	E					X	X	X	X	X					MAR-AUG
107	Peregrine falcon				X	X	X	X	X					X	X	X	-
	Red-billed tropicbird			5-20	X	X	X	X	X					X	X	X	OCT-JUN
110	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull							X	X	X	X	X					JUN-AUG
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
63	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
98	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Groupers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Grunts				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Parrotfish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Snappers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
108	Dwarf herring (blue fry)			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC

PLANT:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
106	Mammillaria nivosa	S	E		X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC
63	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC
88	Native stream shrimp				X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	APR-MAY	APR-MAY	JAN-DEC
																	AUG-NOV	AUG-NOV	AUG-NOV	JAN-DEC
98	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC
	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC
	Native stream shrimp							X		X	X	X					-	-	APR-MAY	-
																		AUG-NOV	-	-
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X									X X NOV-MAY	NOV-MAY

VIRGIN ISLANDS - ESIMAP 6 cont.

BIOLOGICAL RESOURCES: cont.

REPTILE:

RAR#	Species	S/F T/E Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
62	Green sea turtle	S/F E/T	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F E/E	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
75	Green sea turtle	S/F E/T	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F E/E	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F E/E		X	X	X	X	X	X						MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG
97	Green sea turtle	S/F E/T HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
104	Virgin Islands tree boa	S/F E/E	X	X	X	X	X	X	X	X	X	X	X	X	-	JUL-SEP	JAN-DEC	JAN-DEC
109	Virgin Islands tree boa	S/F E/E HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	JUL-SEP	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR#	Species	S/F T/E Conc	J	F	M	A	M	J	J	A	S	O	N	D
63	Fisherman bat	S E	X	X	X	X	X	X	X	X	X	X	X	X
98	Fisherman bat	S E	X	X	X	X	X	X	X	X	X	X	X	X
102	Bats		X	X	X	X	X	X	X	X	X	X	X	X
111	Bats		X	X	X	X	X	X	X	X	X	X	X	X

HUMAN USE RESOURCES:

NATIONAL PARK:

HUN#	Name	Owner/Manager	Contact	Phone
98	VIRGIN ISLANDS NATIONAL PARK	NPS	CHIEF OF RESOURCE MANAGEMENT	340/693-8950

WATER INTAKE:

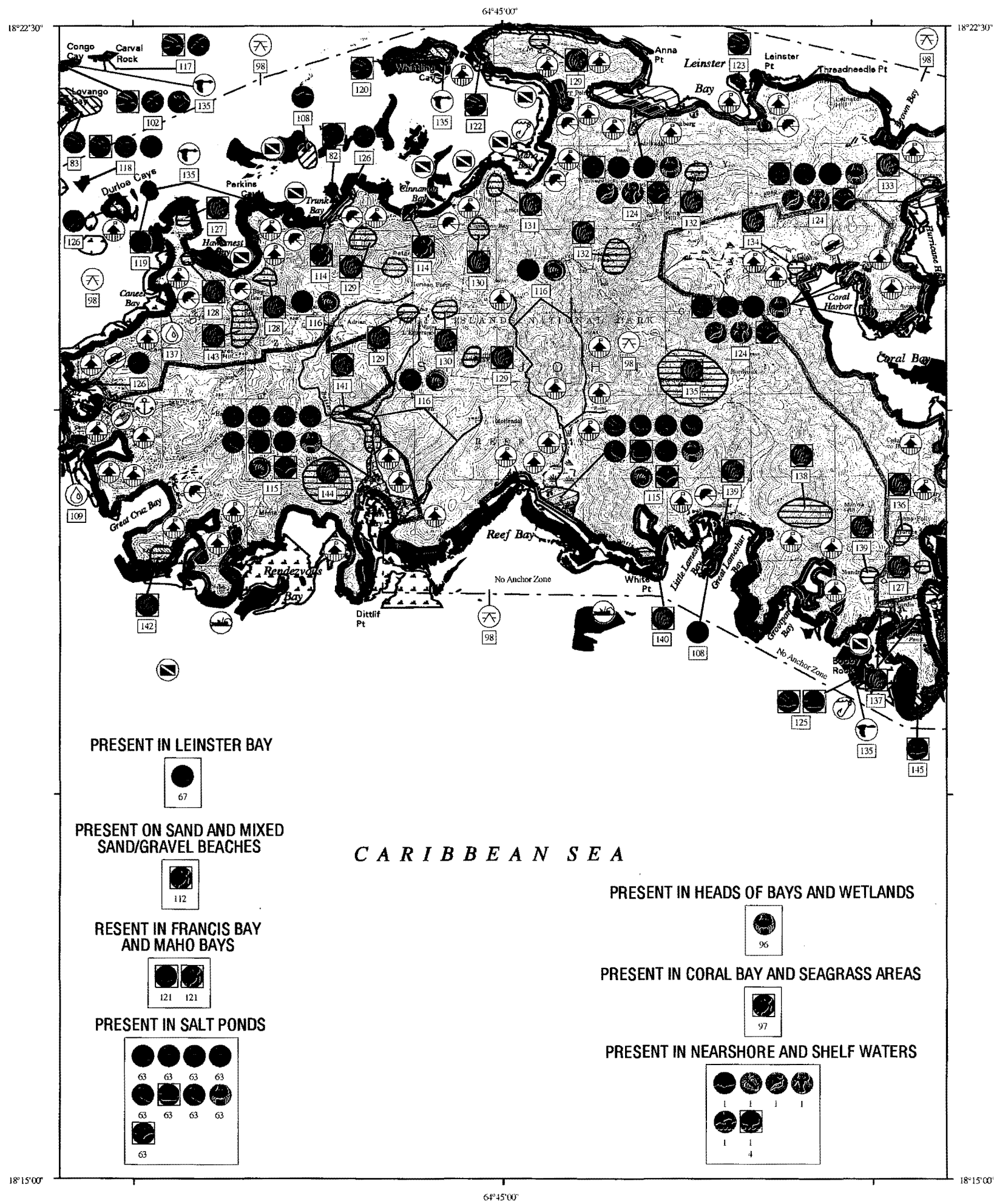
HUN#	Name	Owner/Manager	Contact	Phone
106	CORAL WORLD	CORAL WORLD		340/775-1555
136	DESALINATION PLANT	RITZ CARLTON HOTEL		
111	DESALINATION PLANT	WYNDAM HOTEL		
115	DESALINATION PLANTS	HOTELS (VARIOUS)		

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
126	BUCK ISLAND NATIONAL WILDLIFE REFUGE	USFWS	REFUGE MANAGER	340/773-4554
128	CAS CAY/MANGROVE LAGOON MRWS	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/775-6762
129	COMPASS POINT. POND MRWS	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/775-6762
134	ST. JAMES BAY MRWS	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/775-6762
135	USVI WILDLIFE SANCTUARY	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/775-6762

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ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE HABITATS (ESI)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
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- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

SCALE: 1:55000

1 KILOMETER

1 MILE

Not For Navigation
Published: July 2000

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National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division

VIRGIN ISLANDS - ESIMAP 7

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
63	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Belted kingfisher				X	X	X	X					X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X	X			APR-OCT
	Blue-winged teal				X	X	X	X					X	X	X		-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X					X	X	X	X	-
	Passerine birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X					X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
67	Seabirds			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-
82	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
83	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
102	Bridled tern			<50				X	X	X	X						MAY-AUG
	Brown noddy			20-40	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Brown pelican	S/F	E/E	75-150	X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Peregrine falcon				X	X	X	X					X	X	X		-
	Red-billed tropicbird			15-30	X	X	X	X	X				X	X	X		OCT-JUN
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-tailed tropicbird	S	E	5-10			X	X	X	X	X						MAR-AUG
115	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Belted kingfisher				X	X	X	X					X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X	X			APR-OCT
	Blue-winged teal				X	X	X	X					X	X	X		-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X					X	X	X	X	-
	Passerine birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X					X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
117	Bridled tern			10-30				X	X	X	X						MAY-AUG
	Brown noddy			25-75	X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Osprey				X	X	X	X					X	X	X		-
	Red-billed tropicbird			10-15	X	X	X	X	X				X	X	X		OCT-JUN
	Roseate tern	S/F	E/T	77			X	X	X	X	X	X					MAY-AUG
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
118	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Roseate tern	S/F	E/T				X	X	X	X	X						MAY-AUG
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Yellow-crowned night-heron				X	X	X	X	X	X	X	X	X	X	X	X	-
119	Roseate tern	S/F	E/T				X	X	X	X	X						MAY-AUG
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
120	Brown pelican	S/F	E/E	5-30	X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
121	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
122	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Red-billed tropicbird				X	X	X	X	X				X	X	X		OCT-JUN
123	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
125	Bridled tern			5-20			X	X	X	X	X						MAY-AUG
	Laughing gull			5-20			X	X	X	X	X						JUN-AUG
	Roseate tern	S/F	E/T	7			X	X	X	X	X						MAY-AUG
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
126	Peregrine falcon				X	X	X	X					X	X	X		-
145	Red-billed tropicbird				X	X	X	X	X				X	X	X		OCT-JUN
	White-tailed tropicbird	S	E				X	X	X	X	X						MAR-AUG
147	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
63	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
108	Dwarf herring (blue fry)			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
115	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mountain mullet						X	X				X	X	X	X		-	APR-MAY AUG-NOV	-	-
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
116	Mountain mullet				X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY AUG-NOV	APR-MAY AUG-NOV	APR-MAY AUG-NOV	JAN-DEC JAN-DEC
147	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Groupers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Grunts				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mojarras				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Parrotfish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Snappers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-

VIRGIN ISLANDS - ESIMAP 7 cont.

BIOLOGICAL RESOURCES: cont.

PLANT:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
127	Eugenia sp.	S	E		X	X	X	X	X	X	X	X	X	X	X	X
128	Malpighia woodburyana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
129	Peperomia myrtifolia	S	E		X	X	X	X	X	X	X	X	X	X	X	X
130	Schoepfia schreberi	S	E		X	X	X	X	X	X	X	X	X	X	X	X
131	Galactia eggersii	S	E		X	X	X	X	X	X	X	X	X	X	X	X
132	Erythrina eggersii	S	E		X	X	X	X	X	X	X	X	X	X	X	X
133	Cypselea humifusa	S	E		X	X	X	X	X	X	X	X	X	X	X	X
134	Solanum mucronatum	S	E		X	X	X	X	X	X	X	X	X	X	X	X
135	Calypttranthes thomasiana	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X
	Ilex urbaniana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Schoepfia schreberi	S	E		X	X	X	X	X	X	X	X	X	X	X	X
136	Zanthoxylum thomasianum	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X
137	Malpighia sp.	S	E		X	X	X	X	X	X	X	X	X	X	X	X
138	Erythrina eggersii	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Malpighia woodburyana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
139	Malpighia linearis	S	E		X	X	X	X	X	X	X	X	X	X	X	X
140	Byrsonima sp.	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Eugenia sp.	S	E		X	X	X	X	X	X	X	X	X	X	X	X
141	Erythrina eggersii	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Tillandsia lineatispica	S	E		X	X	X	X	X	X	X	X	X	X	X	X
142	Byrsonima sp.	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Psidium sp.	S	E		X	X	X	X	X	X	X	X	X	X	X	X
143	Malpighia woodburyana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Peperomia myrtifolia	S	E		X	X	X	X	X	X	X	X	X	X	X	X
144	Machaonia woodburyana	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Tillandsia lineatispica	S	E		X	X	X	X	X	X	X	X	X	X	X	X
	Zanthoxylum thomasianum	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate	Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
63	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC	JAN-DEC
96	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC	JAN-DEC
115	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC	JAN-DEC
	Native stream shrimp						X	X					X	X	X	X	-	-	APR-MAY	-	-
																			AUG-NOV		
116	Native stream shrimp				X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	APR-MAY	APR-MAY	JAN-DEC	JAN-DEC
																	AUG-NOV	AUG-NOV	AUG-NOV		
147	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC	-
	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X									X X NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
97	Green sea turtle	S/F	E/T	HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
112	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
114	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E				X	X	X	X	X	X					MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG
121	Green sea turtle	S/F	E/T	HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-

TERRESTRIAL MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
63	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
102	Bats				X	X	X	X	X	X	X	X	X	X	X	X
115	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
147	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X

HUMAN USE RESOURCES:

NATIONAL PARK:

HUN#	Name	Owner/Manager	Contact	Phone
98	VIRGIN ISLANDS NATIONAL PARK	NPS	CHIEF OF RESOURCE MANAGEMENT	340/693-8950

WATER INTAKE:

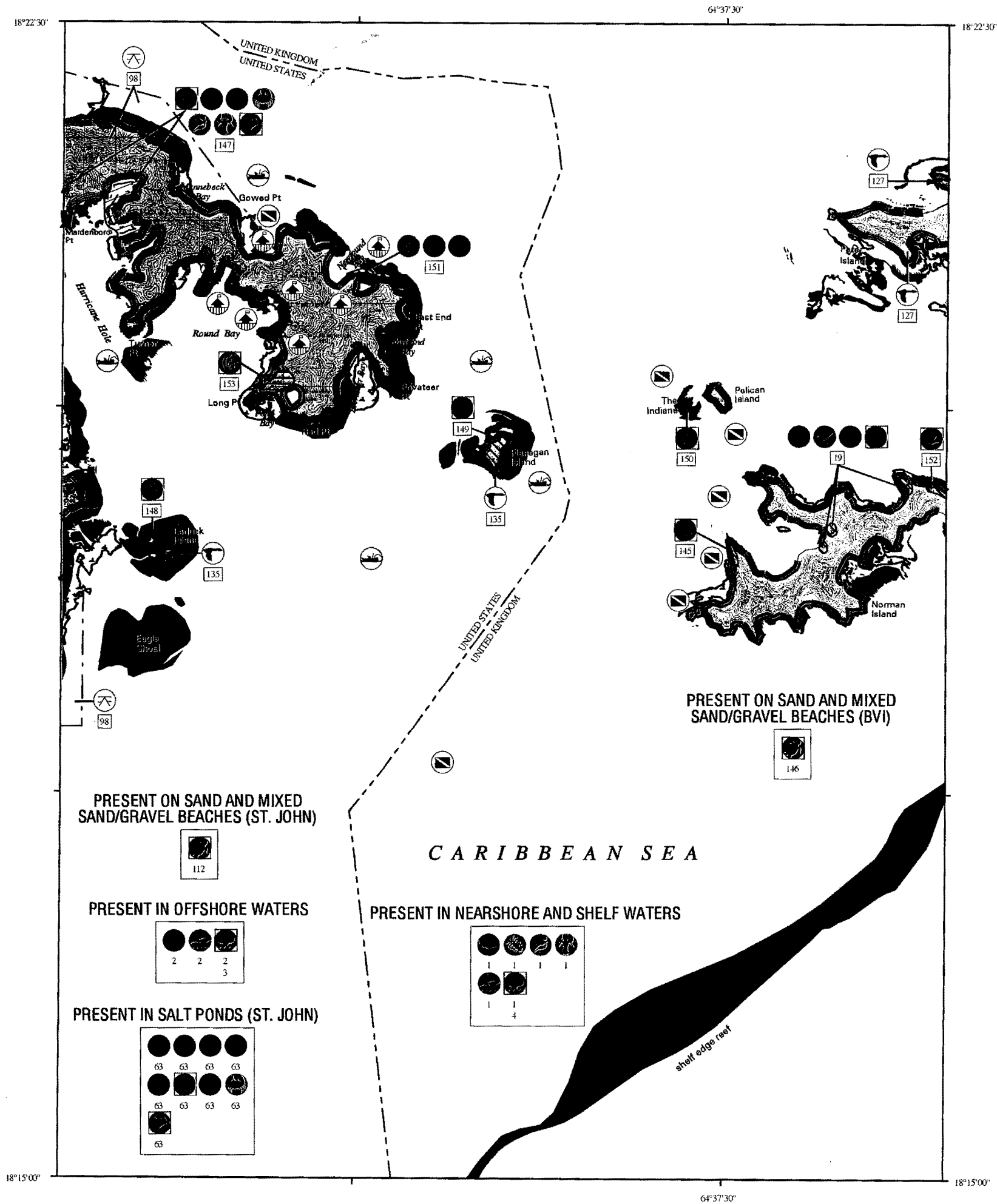
HUN#	Name	Owner/Manager	Contact	Phone
137	DESALINATION PLANT	CANEEL BAY HOTEL		
109	DESALINATION PLANT	WAPA		340/773-4379

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
135	USVI WILDLIFE SANCTUARY	USVI DPNR	DIVISION OF FISH AND WILDLIFE	340/775-6762

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP

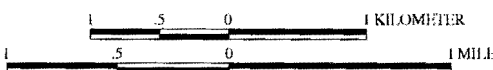


SHORELINE HABITATS (ESI)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

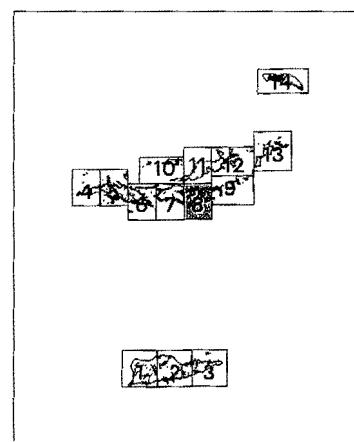


SCALE 1:55000



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National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division



PETER ISLAND, U.K. (1984)
EASTERN ST. JOHN, V.I. (1982)

VI-8

VIRGIN ISLANDS - ESIMAP 8

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
19	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X									-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X									-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
63	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Belted kingfisher				X	X	X	X									-
	Black-necked stilt					X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X									-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X									-
	Passerine birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X									-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
145	Red-billed tropicbird				X	X	X	X	X								OCT-JUN
	White-tailed tropicbird	S	E			X	X	X	X	X							MAR-AUG
147	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
148	Laughing gull			50-200		X	X	X	X	X							JUN-AUG
	Roseate tern	S/F	E/T	500-800		X	X	X	X	X							MAY-AUG
149	Bridled tern					X	X	X	X	X							MAY-AUG
	Laughing gull			100-300		X	X	X	X	X							JUN-AUG
	Roseate tern	S/F	E/T	200-1000		X	X	X	X	X							MAY-AUG
150	Bridled tern					X	X	X	X								MAY-AUG
	Laughing gull					X	X	X	X	X							JUN-AUG
	Roseate tern	S/F	E/T			X	X	X	X	X							MAY-AUG
151	Seabirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X									-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
152	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
2	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
63	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mullet				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
147	Common snook				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Groupers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Grunts				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mojarras				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Parrotfish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Snappers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-

PLANT:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
153	Machaonia woodburyana	S	E		X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC
63	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC
147	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC
	Land crabs				X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	JUL-AUG	JUL-SEP	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
2	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
3	Sperm whale	S/F	E/E	LOW	X	X	X	X	X	X							-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X									X X NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
112	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
146	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D
63	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X
147	Fisherman bat	S	E		X	X	X	X	X	X	X	X	X	X	X	X

HUMAN USE RESOURCES:

NATIONAL PARK:

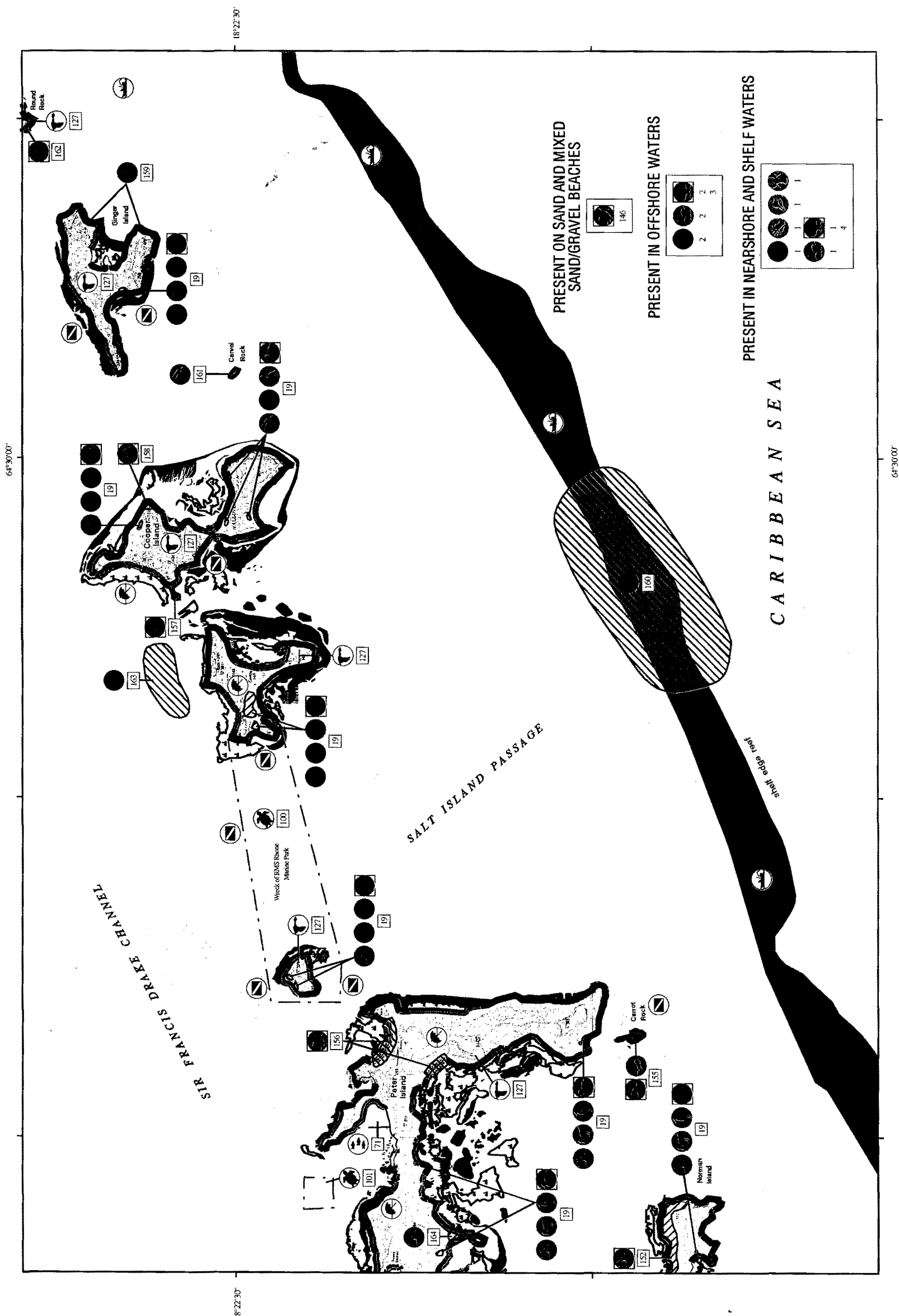
HUN#	Name	Owner/Manager	Contact	Phone
98	VIRGIN ISLANDS NATIONAL PARK	NPS	CHIEF OF RESOURCE MANAGEMENT	340/693-8950

WILDLIFE REFUGE:

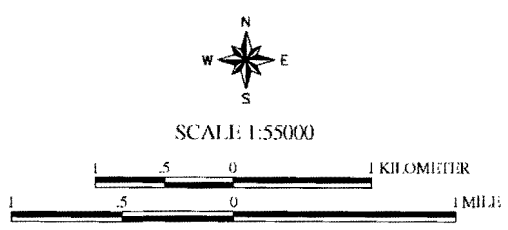
HUN#	Name	Owner/Manager	Contact	Phone
127	BVI BIRD SANCTUARY	BVI CONSERVATION AND FISHERIES	CHIEF CONSERVATION AND	284/494-5681
135	USVI WILDLIFE SANCTUARY	DEPT. USVI DPNR	FISHERIES OFFICER DIVISION OF FISH AND WILDLIFE	340/775-6762

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

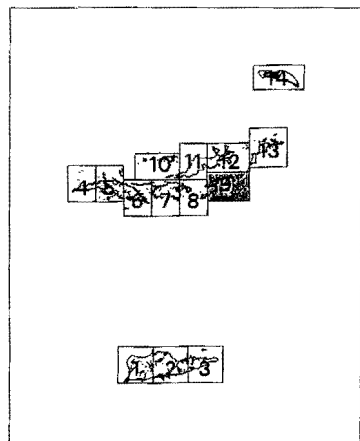
ENVIRONMENTAL SENSITIVITY INDEX MAP



- SHORELINE HABITATS (ESI)**
- 1A EXPOSED ROCKY CLIFFS
 - 1B EXPOSED, SOLID MAN-MADE STRUCTURES
 - 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
 - 3A FINE-TO MEDIUM-GRAINED SAND BEACHES
 - 4 COARSE-GRAINED SAND BEACHES
 - 5 MIXED SAND AND GRAVEL BEACHES
 - 6A GRAVEL BEACHES
 - 6B RIPRAP
 - 7 EXPOSED TIDAL FLATS
 - 8A SHELTERED ROCKY SHORES
 - 8B SHELTERED, SOLID MAN-MADE STRUCTURES
 - 9A SHELTERED TIDAL FLATS
 - 9B SHELTERED VEGETATED LOW BANKS
 - 10D MANGROVES
 - SALT-AND BRACKISH-WATER MARSHES
 - FRESHWATER MARSHES
 - FRESHWATER SWAMPS
 - FRESHWATER SCRUB/SHRUB



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 National Oceanic and Atmospheric Administration
 National Ocean Service
 Office of Response and Restoration
 Hazardous Materials Response Division



VIRGIN ISLANDS - ESIMAP 9

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
19	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X								X	X
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X					X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
152	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
155	Bridled tern									X	X	X	X	X			MAY-AUG
	Red-billed tropicbird				X	X	X	X	X	X					X	X	OCT-JUN
	Roseate tern	S/F	E/T							X	X	X	X	X			MAY-AUG
	Sooty tern									X	X	X	X	X			APR-AUG
	White-tailed tropicbird	S	E							X	X	X	X	X			MAR-AUG
157	Bridled tern									X	X	X	X	X			MAY-AUG
	Roseate tern	S/F	E/T							X	X	X	X	X			MAY-AUG
158	Red-billed tropicbird				X	X	X	X	X						X	X	OCT-JUN
	White-tailed tropicbird	S	E							X	X	X	X	X			MAR-AUG
159	Bridled tern									X	X	X	X	X			MAY-AUG
	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
161	Bridled tern									X	X	X	X	X			MAY-AUG
	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Sooty tern									X	X	X	X	X			APR-AUG
162	Bridled tern									X	X	X	X	X			MAY-AUG
	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Roseate tern	S/F	E/T							X	X	X	X	X			MAY-AUG
	Sooty tern									X	X	X	X	X			APR-AUG
164	Gulls									X	X	X	X	X			JUN-AUG
	Terns									X	X	X	X	X			MAY-AUG

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
2	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
160	Red hind			HIGH	X	X	X										X JAN-MAR	JAN-MAR	JAN-MAR	-
163	Red hind				X	X	X										X JAN-MAR	JAN-MAR	JAN-MAR	-

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
2	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
3	Sperm whale	S/F	E/E	LOW	X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X	X							X	X NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
146	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
155	Rare lizard				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
156	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E							X	X	X	X	X	X		MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG

HUMAN USE RESOURCES:

MANAGEMENT AREA:

HUN#	Name	Owner/Manager	Contact	Phone
71	PETER ISLAND FISHERIES PRIORITY AREA	BVI CONSERVATION AND FISHERIES DEPT.	CHIEF CONSERVATION AND FISHERIES OFFICER	284/494-5681

NATIONAL PARK:

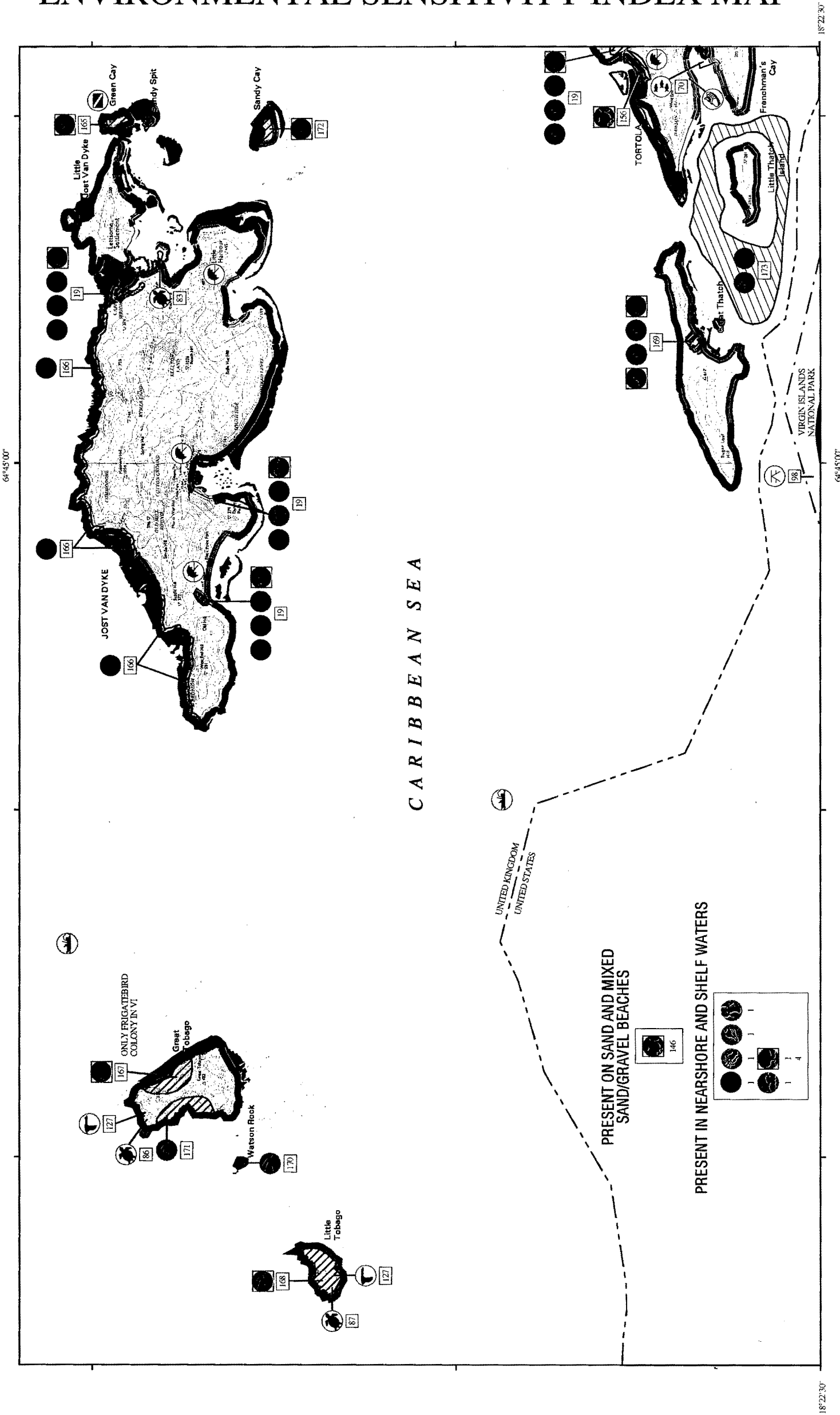
HUN#	Name	Owner/Manager	Contact	Phone
100	WRECK OF RMS RHONE NAT'L MARINE PARK	BVI NATIONAL PARKS TRUST		284/494-3904
101	WRECK OF RMS RHONE NMP (ANCHORAGE)	BVI NATIONAL PARKS TRUST		284/494-3904

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
127	BVI BIRD SANCTUARY	BVI CONSERVATION AND FISHERIES DEPT.	CHIEF CONSERVATION AND FISHERIES OFFICER	284/494-5681

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE HABITATS (ESI)

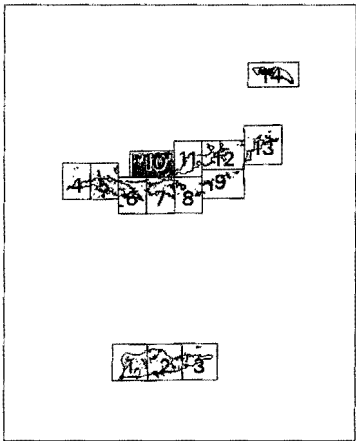
- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB



SCALE 1:55000



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VIRGIN ISLANDS - ESIMAP 10

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
19	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
165	Bridled tern				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull				X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG
	Roseate tern	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Royal tern				X	X	X	X	X	X	X	X	X	X	X	X	-
	Sandwich tern				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
166	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Red-billed tropicbird				X	X	X	X	X	X	X	X	X	X	X	X	OCT-JUN
167	Brown booby				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	OCT-MAY
	Red-billed tropicbird				X	X	X	X	X	X	X	X	X	X	X	X	OCT-JUN
	Red-footed booby				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	White-tailed tropicbird	S	E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-AUG
168	Brown booby				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Laughing gull				X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG
169	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Least tern	S	E		X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-checked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
170	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
171	Red-billed tropicbird				X	X	X	X	X	X	X	X	X	X	X	X	OCT-JUN
172	Red-billed tropicbird				X	X	X	X	X	X	X	X	X	X	X	X	OCT-JUN
	White-tailed tropicbird	S	E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-AUG
173	Seabirds			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
173	Forage fish			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X	X	X	X	X	X	X	X	X	NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
146	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
156	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG

HUMAN USE RESOURCES:

MANAGEMENT AREA:

HUN#	Name	Owner/Manager	Contact	Phone
70	FRENCHMAN'S CAY FISHERIES PRIORITY AREA	BVI CONSERVATION AND FISHERIES DEPT.	CHIEF CONSERVATION AND FISHERIES OFFICER	284/494-5681

NATIONAL PARK:

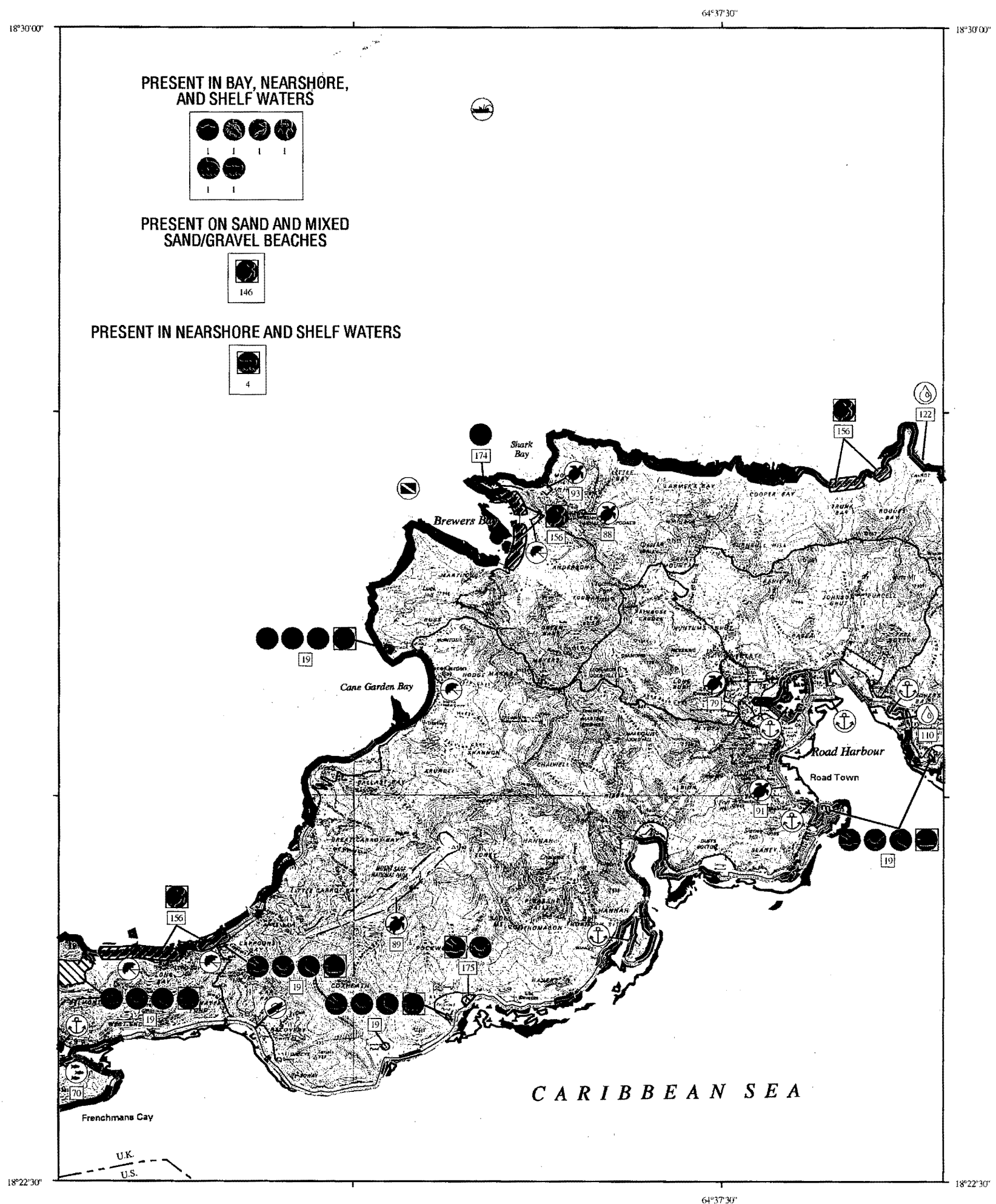
HUN#	Name	Owner/Manager	Contact	Phone
83	DIAMOND CAY NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
86	GREAT TOBAGO NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
87	LITTLE TOBAGO NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
98	VIRGIN ISLANDS NATIONAL PARK	NPS	CHIEF OF RESOURCE MANAGEMENT	340/693-8950

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
127	BVI BIRD SANCTUARY	BVI CONSERVATION AND FISHERIES DEPT.	CHIEF CONSERVATION AND FISHERIES OFFICER	284/494-5681

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE HABITATS (ESI)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

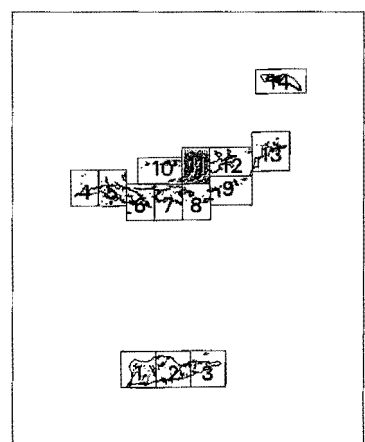


SCALE 1:55000



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National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division



VIRGIN ISLANDS - ESIMAP 11

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
19	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X						X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X			X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
174	Brown booby				X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
175	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Least tern	S	E				X	X	X	X	X						MAY-AUG

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X	X							X	NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
146	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
156	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E				X	X	X	X	X	X					MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG

HUMAN USE RESOURCES:

MANAGEMENT AREA:

HUN#	Name	Owner/Manager	Contact	Phone
70	FRENCHMAN'S CAY FISHERIES PRIORITY AREA	BVI CONSERVATION AND FISHERIES DEPT.	CHIEF CONSERVATION AND FISHERIES OFFICER	284/494-5681

NATIONAL PARK:

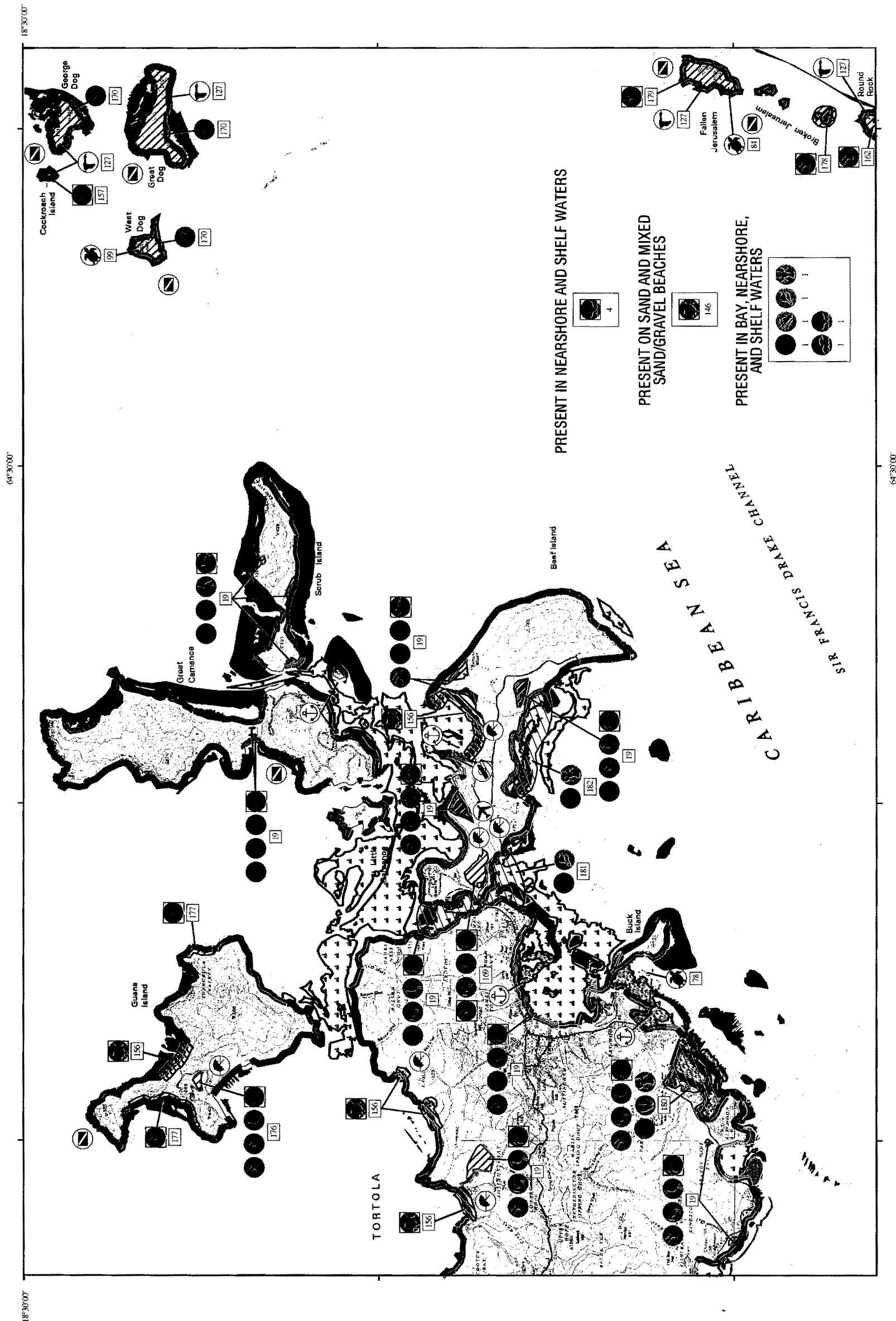
HUN#	Name	Owner/Manager	Contact	Phone
79	BOTANIC GARDENS NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
88	MT. HEALTHY NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
89	MT.SAGE NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
91	QUEEN ELIZABETH NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
93	SHARK BAY NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904

WATER INTAKE:

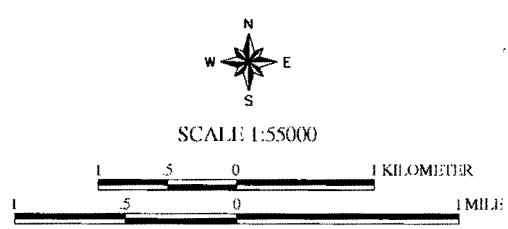
HUN#	Name	Owner/Manager	Contact	Phone
110	DESALINATION PLANT	WATER AND SEWER DEPARTMENT		
122	WATER INTAKE			

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

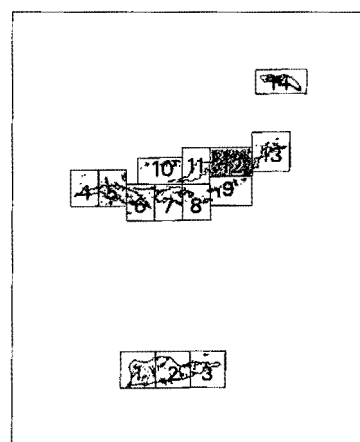
ENVIRONMENTAL SENSITIVITY INDEX MAP



- SHORELINE HABITATS (ESI)**
- 1A EXPOSED ROCKY CLIFFS
 - 1B EXPOSED, SOLID MAN-MADE STRUCTURES
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 - 8A SHELTERED ROCKY SHORES
 - 8B SHELTERED, SOLID MAN-MADE STRUCTURES
 - 9A SHELTERED TIDAL FLATS
 - 9B SHELTERED VEGETATED LOW BANKS
 - 10D MANGROVES
 - SALT- AND BRACKISH-WATER MARSHES
 - FRESHWATER MARSHES
 - FRESHWATER SWAMPS
 - FRESHWATER SCRUB/SHRUB



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National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division



VIRGIN ISLANDS - ESIMAP 12

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
19	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
157	Bridled tern				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Roseate tern	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
162	Bridled tern				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Roseate tern	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Sooty tern				X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG
169	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Least tern	S	E		X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
170	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
176	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Greater flamingo				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
177	Brown pelican	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	AUG-FEB
	Red-billed tropicbird				X	X	X	X	X	X	X	X	X	X	X	X	OCT-JUN
	White-tailed tropicbird	S	E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-AUG
178	Roseate tern	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
179	Bridled tern				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull				X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG
	Sooty tern				X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG
	White-tailed tropicbird	S	E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-AUG
180	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X	X	X	X	X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
180	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
181	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
182	Dwarf herring (blue fry)				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Groupers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Grunts				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Snappers				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
180	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
	Mussels				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC
181	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-
182	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X	X	X	X	X	X	X	X	X	NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
146	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
156	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG

HUMAN USE RESOURCES:

NATIONAL PARK:

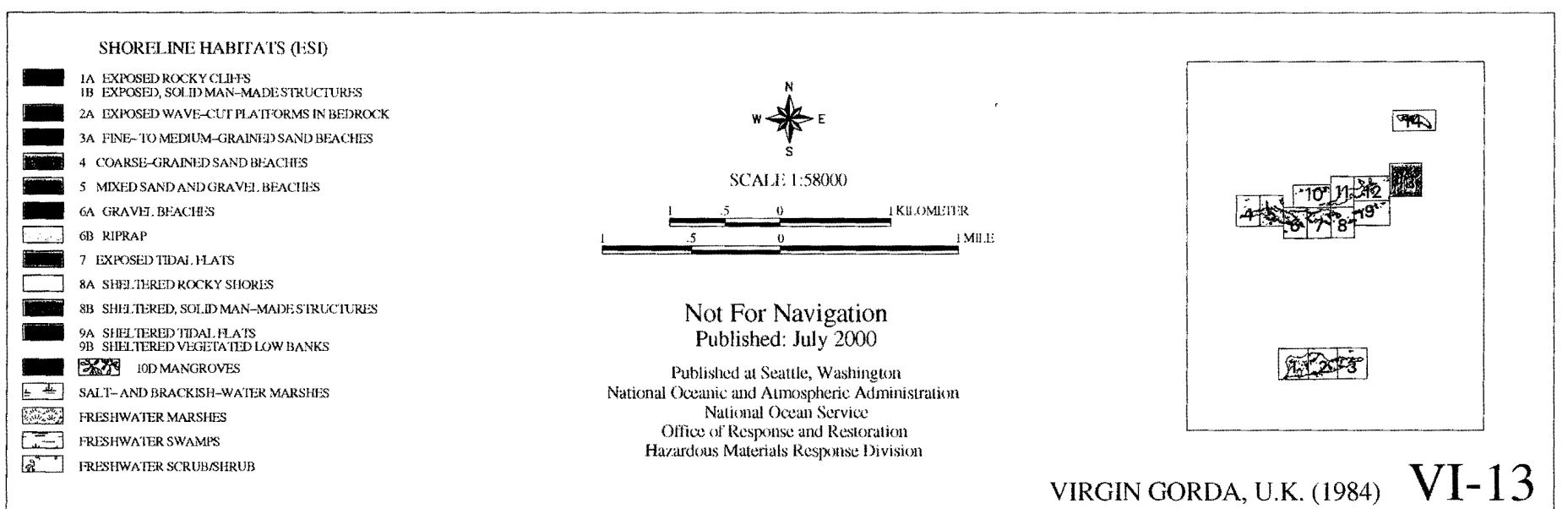
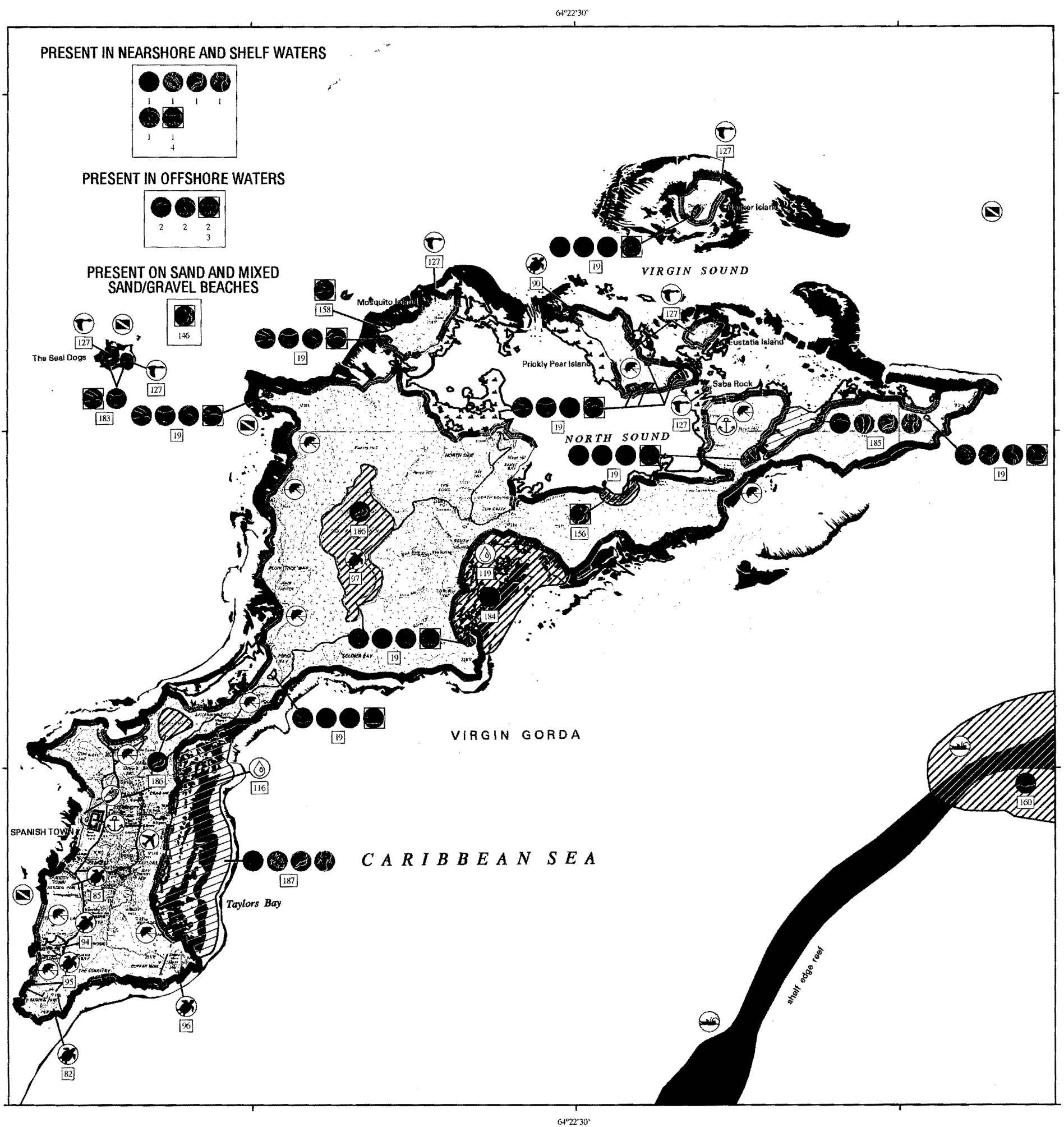
HUN#	Name	Owner/Manager	Contact	Phone
78	BAR BAY NATIONAL PARK (PROPOSED)	BVI NATIONAL PARKS TRUST		284/494-3904
84	FALLEN JERUSALEM NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
99	WEST DOG ISLANDS NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
127	BVI BIRD SANCTUARY	BVI CONSERVATION AND FISHERIES DEPT.	CHIEF CONSERVATION AND FISHERIES OFFICER	284/494-5681

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

ENVIRONMENTAL SENSITIVITY INDEX MAP



VIRGIN ISLANDS - ESIMAP 13

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
19	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X									-
	Caribbean coot	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S	E		X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X									-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S	E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
158	Red-billed tropicbird				X	X	X	X	X								OCT-JUN
	White-tailed tropicbird	S	E														MAR-AUG
183	American oystercatcher				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Bridled tern																MAY-AUG
	Brown noddy				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Laughing gull																JUN-AUG
	Roseate tern	S/F	E/T														MAY-AUG

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
2	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
160	Red hind			HIGH	X	X	X										JAN-MAR	JAN-MAR	JAN-MAR	-	DEC-MAR
184	Tiger shark			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	JUL-AUG	-	-	JAN-DEC	JUL-AUG
185	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
187	Nursery fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate	Eggs	Larvae	Juveniles	Adults
1	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
185	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC	-
	Mussels				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
187	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
2	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
3	Sperm whale	S/F	E/E	LOW	X	X	X	X	X	X							-	-
4	Humpback whale	S/F	E/E	MODERATE	X	X	X	X									X X	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
146	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
156	Green sea turtle	S/F	E/T		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F	E/E		X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F	E/E														MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG
186	Rare lizard				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	JAN-DEC

HUMAN USE RESOURCES:

NATIONAL PARK:

HUN#	Name	Owner/Manager	Contact	Phone
82	DEVILS BAY NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
85	FORT POINT NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
90	PRICKLY PEAR ISLAND NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
94	SPRING BAY NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
95	THE BATHS NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904
96	THE COPPER MINE NATIONAL PARK (PROPOSED)	BVI NATIONAL PARKS TRUST		284/494-3904
97	VIRGIN GORDA PEAK NATIONAL PARK	BVI NATIONAL PARKS TRUST		284/494-3904

WATER INTAKE:

HUN#	Name	Owner/Manager	Contact	Phone
116	HANDSOME BAY DESALINATION PLANT			
119	NORTH SOUND DESALINATION PLANT			

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
127	BVI BIRD SANCTUARY	BVI CONSERVATION AND FISHERIES DEPT.	CHIEF CONSERVATION AND FISHERIES OFFICER	284/494-5681

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.



- VI-14

VIRGIN ISLANDS - ESIMAP 14

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting
19	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X							X	X	-
	Caribbean coot	S		E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Ruddy duck	S		E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Shorebirds				X	X	X	X	X				X	X	X	X	-
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S		E	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
190	American coot				X	X	X	X	X	X	X	X	X	X	X	X	-
	Black-necked stilt					X	X	X	X	X	X	X	X	X	X	X	APR-OCT
	Blue-winged teal				X	X	X	X							X	X	-
	Brown pelican	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Caribbean coot	S		E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	-
	Greater flamingo			HIGH	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-
	Least tern	S		E				X	X	X	X	X					-
	Ruddy duck	S		E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Sandwich tern				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG
	Shorebirds				X	X	X	X				X	X	X	X		-
	Snowy plover	S		E	X	X	X	X	X	X	X	X	X	X	X	X	JAN-AUG
	Terns				X	X	X	X	X	X	X	X	X	X	X	X	-
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	-
	White-cheeked pintail	S		E	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC
	Wilson's plover				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL
191	Brown pelican	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X	X	-
	Magnificent frigatebird				X	X	X	X	X	X	X	X	X	X	X	X	-
	Osprey				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUN
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL

FISH:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Eggs	Larvae	Juveniles	Adults
1	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Reef fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
2	Pelagic fish				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC

INVERTEBRATE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Spawn/Mate Eggs	Larvae	Juveniles	Adults
188	Caribbean spiny lobster				X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Octopus				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-APR	-	JAN-DEC
	Queen conch				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving
1	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
2	Dolphins				X	X	X	X	X	X	X	X	X	X	X	X	-	-
	Whales				X	X	X	X	X	X	X	X	X	X	X	X	-	-
3	Sperm whale	S/F		E/E LOW	X	X	X	X	X	X	X	X	X	X	X	X	-	-
4	Humpback whale	S/F		E/E MODERATE	X	X	X	X	X						X	X	NOV-MAY	NOV-MAY

REPTILE:

RAR#	Species	S/F	T/E	Conc	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Juveniles	Adults
146	Green sea turtle	S/F		E/T	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
156	Green sea turtle	S/F		E/T	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Hawksbill sea turtle	S/F		E/E	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	Leatherback sea turtle	S/F		E/E				X	X	X	X	X	X				MAR-JUL	MAY-SEP	MAY-SEP	MAR-AUG
192	Anegada ground iguana	F		E	X	X	X	X	X	X	X	X	X	X	X	X	JUN-JUL	SEP-OCT	JAN-DEC	JAN-DEC

HUMAN USE RESOURCES:

WILDLIFE REFUGE:

HUN#	Name	Owner/Manager	Contact	Phone
124	ANEGADA WESTERN SALT PONDS RAMSAR SITE	BVI NATIONAL PARKS TRUST		284/494-5681

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VIRGIN ISLANDS

SHORELINE HABITATS (ESI)

- 1A EXPOSED ROCKY CLIFFS
- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN BEDROCK
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES
- 8B SHELTERED, SOLID MAN-MADE STRUCTURES
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED VEGETATED LOW BANKS
- 10D MANGROVES
- SALT- AND BRACKISH-WATER MARSHES
- FRESHWATER MARSHES
- FRESHWATER SWAMPS
- FRESHWATER SCRUB/SHRUB

BENTHIC MARINE HABITATS

- CORAL REEF
- HARDBOTTOM
- SEAGRASS
- ALGAL BEDS

HUMAN-USE FEATURES

- AIRPORT
- AQUACULTURE
- ARCHAEOLOGICAL/HISTORICAL SITE
- ARTISANAL/COMMERCIAL FISHING
- BOAT RAMP
- BVI NATIONAL PARK
- BRIDGE
- MANAGEMENT AREA
- SHELF BOUNDARY
- COAST GUARD
- DAM
- DESIGNATED CRITICAL HABITAT
- DIVE SITE
- FERRY
- MARINA
- RECREATIONAL BEACH
- RECREATIONAL FISHING
- SPECIAL FISHERIES MANAGEMENT AREA
- U.S. NATIONAL PARK
- WATER INTAKE
- WILDLIFE REFUGE/ RESERVE/SANCTUARY
- HUMAN-USE NUMBER

SENSITIVE BIOLOGICAL RESOURCES

- BIRD
 - PASSERINE-LIKE BIRD
 - RAPTOR
 - SEABIRD
 - SHOREBIRD
 - WADING BIRD
 - WATERFOWL
- MARINE MAMMAL
 - DOLPHIN
 - WHALE
- TERRESTRIAL MAMMAL
 - BAT
- FISH
 - FISH
- INVERTEBRATE
 - BIVALVE
 - CRAB
 - GASTROPOD
 - LOBSTER
 - OCTOPUS
 - SHRIMP
- REPTILE
 - OTHER REPTILE
 - TURTLE
- PLANT
 - RARE PLANT
- MULTI-GROUP
 - FISH AND/OR INVERTEBRATE STREAM
 - THREATENED/ENDANGERED
 - RAR NUMBER