

GUAM and the NORTHERN MARIANA ISLANDS



































SHORELINE HABITATS

	1A	EXPOSED ROCKY SHORES
	1B	EXPOSED, SOLID MAN-MADE STRUCTURES
	2A	EXPOSED WAVE-CUT PLATFORMS
	3A	FINE- TO MEDIUM-GRAINED SAND BEACHES
	5	MIXED SAND AND GRAVEL BEACHES
	6A	GRAVEL BEACHES
	6B	RIPRAP
	8A	SHELTERED ROCKY SHORES
	8B	SHELTERED, SOLID MAN-MADE STRUCTURES
	8C	SHELTERED RIPRAP
	9B	VEGETATED LOW BANKS
	10A	SALT- AND BRACKISH-WATER MARSHES
	10B	FRESHWATER MARSHES
	10C	SWAMP
	10D	SCRUB-SHRUB WETLANDS
		10D MANGROVES

HUMAN-USE FEATURES

	AIRPORT		DIVE SITE		SUBSISTENCE FISHING / COLLECTING
	AQUACULTURE		MANAGEMENT AREA		SURFING
	ARCHAEOLOGICAL / HISTORICAL SITE		MARINA		WATER INTAKE / OUTFALL
	BOAT RAMP		NATIONAL HISTORIC PARK / LANDMARK		WILDLIFE REFUGE
	COAST GUARD		RECREATIONAL BEACH		HUMAN-USE NUMBER
					MANAGEMENT AREA BOUNDARY

SENSITIVE BIOLOGICAL RESOURCES

	MARINE MAMMAL		REPTILE	HABITAT	
	DOLPHIN		TURTLE		PLANT
	BIRD		FISH		PLANT
	GULL / TERN		FISH	BENTHIC MARINE HABITAT	
	PASSERINE BIRD		INVERTEBRATE		MACROALGAE
	PELAGIC BIRD		BIVALVE		SEAGRASS
	SHOREBIRD		CEPHALPOD		CORAL REEF & COLONIZED HARDBOTTOM (50% - 100% LIVE CORAL COVER)
	WADING BIRD		CRAB / INVERTEBRATE		CORAL REEF & COLONIZED HARDBOTTOM (10% - < 50% LIVE CORAL COVER)
	WATERFOWL		ECHINODERM		CORALLINE ALGAE
			GASTROPOD		TURF ALGAE
			LOBSTER		CORAL AREA OF SPECIAL SIGNIFICANCE
					SEAGRASS AREA OF SPECIAL SIGNIFICANCE
					ABANDONED VESSEL(S)
	MULTI-GROUP		THREATENED / ENDANGERED		RAR NUMBER

Guidelines for Interpreting ESI Maps

To help users interpret the ESI maps and tabular data, we offer the following guidelines for use in addition to the map legend:

- Shoreline Habitats. The “shoreline,” representing the boundary between land and water, is color-coded with the ESI classification. Most shoreline habitats are shown as a line, with no areal dimension. Where there is more than one shoreline type (e.g., a beach in front of a seawall), the colors for each habitat are shown, with the color for the landward habitat on the land side of the shoreline and the color for the seaward habitat on the water side. In areas where the intertidal zone is wide (e.g., wide tidal flats, wave-cut rocky platforms), the habitat from high to low water is filled with the ESI classification color. When data are available, the entire extent of wetlands are filled with colored patterns. The seaward edge of the wetland is color-coded with the ESI classification; the landward extent of the wetland is indicated by a dashed, colored line.
- Biological Resources. The distribution of biological resources is shown using many different conventions. The major convention is an icon associated with a point, line, or polygon that shows the species’ areal distribution. The icon’s reference number corresponds to a data table with details on species and life history. Biological resource data are organized into six major groups, each with a reference color: birds (green), mammals (brown), fish (blue), shellfish (orange), reptiles (red), and rare/endangered plants and special habitats (purple). These colors are used to fill hatched polygons and the icons. Each major group has subgroups with unique icons to visually indicate the type of organism or feature present. The icon or group of icons is usually located inside the polygon it represents; however, sometimes a line is connected between the icon and the polygon or point to make it easier to relate the two. Note that icons are used to indicate the types of resources present, but the actual data are the points and polygons. A red box around an icon indicates the presence of a species on the state or Federal list of threatened or endangered species.

The number listed below each icon refers to the first column of a data table for each map. The data tables, organized by group (birds, fish, etc.), include the following information: species name, status as threatened or endangered on state and Federal lists, concentration (specifically for each point or polygon), presence by month, and special life-history time periods. When a polygon contains multiple groups, the one number under the group of icons is listed under each group heading in the data tables. Where possible, the same number is used on multiple maps. For example, all bald eagle nests with the same seasonality could have the same number throughout the atlas, or the same assemblage of fish would have the same number wherever it occurred.

A data table has a separate listing for every unique combination of species, concentration, seasonality, life-history stage, and source. By looking at the monthly seasonality data in the table for each map, the species present at the time of concern can be easily identified. An ‘X’ or number is placed under each month in which any life stage of the species is present in the area represented by the point or polygon. Numbers are used typically for fish and shellfish where data on relative abundance are available. The final columns in the data tables include the months when reproductive activities occur or early life stages are present. Users should pay close attention to the data tables because they contain much of the information needed to identify the most sensitive resources at different times of the year.

Points, lines, and polygons on a map represent the distribution of the resources. Green points show bird nesting sites, including bald eagle nests and dense colonial nesters (e.g., heron rookeries and seabird nesting colonies). Animals and habitats are also represented as: 1) hatched polygons in the color for the animal group (e.g., green for birds); 2) black hatched polygons which contain multiple groups of resources (birds and fish in the same tidal channels); 3) solid lines (usually used for fish in small streams); or 4) in “common in ...” boxes. When showing the biological resource polygons would make the maps too difficult to read (usually when multiple polygons cover a large area), the polygons are not plotted and the presence of the resource is indicated by placing the icon in a box labeled “common in ...” The box contains an appropriate geographic reference. Different boxes can be used on the same map when, for example: “common in Winyah Bay” or “common in tidal creeks.” The data for these resources are still fully present in the database but are not shown to make the maps more readable.

- Human-use Resources. Most of the human-use resources are point features indicated by a black-and-white icon. Managed lands, such as refuges and sanctuaries, have their boundaries shown as a dot-dash line with an icon and name placed inside. Where the feature is a known point location (e.g., a drinking water intake, boat ramp, marina), the exact location is shown as a small black dot and a line is drawn from it to the icon. Activities such as commercial and recreational fishing and areas such as recreational beaches are also indicated by an icon placed in the general area without any lines to points or polygons since the boundaries are not readily defined.

Some features, like historic and archaeological sites, are location-sensitive: the agency managing the resource believes the exact location should not be shown in order to protect the site. In these cases, the icon is placed in the general area of the resource, but the exact location is not shown.