

Appendix C-1
Ecological Criteria Fact Sheets

(MODIFIED FROM CORPS ET AL. [2001])

CRITERION 1: REGIONAL SIGNIFICANCE¹

Definition

The conservation unit's ecological importance within the project area relative to the other proposed conservation units and to lands not proposed as conservation units. The unit's position and influence in the landscape relative to identified environmentally and ecologically significant features within a 5-mile radius around the unit. Regional significance may be enhanced by linkages/corridors and large landscapes. This ecological criterion is somewhat dependent on the other criteria - consistently high ratings for the other criteria indicate regional significance.

Objectives for Selecting the Criterion

1. To show that the selected conservation unit is significant within a regional context and contributes to watershed-level management of natural resources.

Why is this Criterion Important?

Biologically: Large, relatively unfragmented landscapes are important to species and natural communities because they can buffer them from human impacts, provide connections with other populations, assist in providing sufficient area for species requiring large home ranges, and help provide the multiple types of habitats required by many species. Linkages are important to providing genetic and social connections between populations.

Economically: A complete and healthily functioning food web is essential for maintaining ecosystems and the industries/economies supported (e.g., fisheries are a \$75 billion per year industry worldwide). Large areas potentially offer more recreational opportunities.

Quality of Life: Water quality, aesthetics, recreation, and security of a stable environment are key features to maintaining and improving the high quality of life for Walton and Bay County residents.

Assessment Questions Used to Evaluate an Area

1. Does the area provide important connections with existing or proposed conservation lands, managed lands, identified core wildlife habitats?
2. Is the area near existing or proposed conservation lands, managed lands, identified core wildlife habitats?
3. Is the area uniquely positioned relative to the other conservation units?

¹ This criterion was developed by the RGP/EMA Technical Team, unlike the other three criteria which were modified from Corps et al. (2001).

4. Is the area large and intact with few or no secondary roads and no primary roads?
5. Does the area score high in the other criteria?

GIS Data Layers Used to Evaluate How Well a Conservation Unit Fulfills the Criterion

FNAI Conservation Lands database

Florida Forever Conservation Need Assessment Priorities (FNAI 2000, 2001)

Conservation and Recreation Lands (CARL)

Landscape-sized Protection Areas (FNAI 2000, 2001)

Landscape Linkages and Conservation Corridors from Ecological Greenways of the Statewide Greenways System Planning Project (UF and FDEP Office of Greenways and Trails; reported in FNAI 2000, 2001)

Data layers from the other four criteria

Ratings

VH: Large area (i.e., greater than 1,000 acres); intact (e.g., no or few roads, no holes); offers unique or important connections to other conservation units, conservation or managed lands; rates high to very high in other three ecological criteria.

H: Smaller (500-1,000 acres); not intact (e.g., roads); within identified conservation strategy areas for state; somewhat uniquely positioned relative to other conservation units; rates medium to high in other three ecological criteria.

M: Outside the identified conservation strategy areas; fragmented (e.g., more roads, holes); smaller (100-500 acres); rates low to medium in other criteria.

L: Highly fragmented (e.g., many secondary roads, primary road, holes); small (less than 100 acres); redundantly or not importantly positioned relative to other conservation units.

CRITERION 2: BIODIVERSITY

Definition (Meffe 1997)

The variety of living organisms considered at all levels of organization, including the genetic, species, and higher taxonomic levels, and the variety of habitats and ecosystems, as well as the processes occurring therein.

Federal Objectives for Selecting the Criterion (from Corps et al. 2001)

1. Actions should not have a significant adverse cumulative effect on biodiversity, either on a local or regional level. [Option: Comprehensive planning should address the need to maintain local and regional biological diversity by setting aside specific areas and minimizing significant adverse cumulative effects.]
2. Federal Wildlife Coordination Act (FWCA) requires all federal agencies to coordinate with and consider the comments of other federal and state natural resource agencies when taking action on permits and projects.

Why is this Criterion Important? (from Corps et al. 2001)

Biologically: Genetic diversity is essential for maintaining a species. Species and habitat diversity are essential for maintaining ecosystems. Almost unnoticed, the earth's living wealth is slipping away. As human populations expand and intensify their use of the land, species of wild things and their habitats disappear. With them go not only the beauty and variety of life created over millions of years but also environmental stability and untold potential for supplying human needs.

Economically: A complete food web is essential for maintaining fisheries, a \$75 billion per year industry worldwide. Clean water supports recreational fishing, canoeing, and other outdoor activities. Bird watching is responsible for \$600 million dollars of revenue generation, annually.

Quality of Life: Water quality, aesthetics, recreation, and security of a stable environment are key features to maintaining and improving the high quality of life for Walton and Bay County residents. Biodiversity is a form of an "insurance policy" for domestic food consumption and medical care. For example, the horse-shoe crab is essential in the detection of contamination of intravenous fluids and diagnosis of certain human diseases.

Assessment Questions Used to Evaluate an Area (from Corps et al. 2001)

6. Are any "target" species of concern found in the area?
7. Is this area important for the species as a whole?
8. Are there endemic species or communities?

9. Are there habitat types that are of regional or global significance?
10. Is the area important for connectivity of habitat types?

GIS Data Layers Used to Evaluate How Well a Conservation Unit Fulfills the Criterion (from Corps et al. 2001)

NWI Palustrine Emergent
 FNAI Species Occurrences (see also subsection *Threatened and Endangered Species*)
 FNAI Habitat Conservation Priorities
 FNAI Florida Forever Conservation Needs Assessment
 FWC Prioritized Strategic Habitat Conservation Areas (SHCAs)
 FWC Priority Wetlands
 FWC Wildlife Observations (bald eagle and black bear data)
 WilsonMiller Species Observations

Ratings Definitions (from Corps et al. 2001)

VH: Species-rich area, large intact area (i.e., greater than 1,000 acres), connected, important adjacent habitats such as marine and estuarine, diversity of native species per square meter, unique pitcher plants.

H: Smaller (500-1,000 acres), not intact, perforated, lower species richness, within identified conservation strategy areas for the state.

M: Outside the identified state conservation strategy areas; fragmented; smaller (100-500 acres); evidence of invasion by nuisance and/or exotic species (e.g., titi [*Cyrilla racemiflora* and *Cliftonia monophylla*], climbing fern [*Lygodium japonicum*], cogon grass [*Imperata cylindrica*], popcorn tree [*Sapium sebiferum*]).

L: Monocultures; significant invasion of nuisance and/or exotics (e.g., titi [*Cyrilla racemiflora* and *Cliftonia monophylla*], climbing fern [*Lygodium japonicum*], cogon grass [*Imperata cylindrica*], popcorn tree [*Sapium sebiferum*]); isolated patches; highly fragmented; fallow fields; there can be unique/listed species if unlikely to be self-sustaining; small (less than 100 acres).

Criterion 2 (Cont.): Threatened and Endangered Species

Definition (from Corps et al. 2001)

Endangered species are those species that are in danger of extinction throughout all or a significant portion of their range. Threatened species are those likely to become an endangered species within the foreseeable future throughout all or a significant portion of their range.

Federal Objectives (from Corps et al. 2001)

1. To protect endangered and threatened species.

2. To restore populations of listed species to a point where they are no longer in danger of extinction and are again self-sustaining members of their ecosystem.
3. To take such action as necessary to ensure that actions authorized, funded, or carried out by federal agencies do not jeopardize endangered or threatened species or result in the destruction or modification of their habitat.

Why are Threatened and Endangered Species Important? (from Corps et al. 2001)

Biologically: Ecological integrity of biological systems; education; and scientific research.

Economically: Tourism; aesthetics; increased expense to develop; increased regulatory hurdles; loss of recreational areas; loss of commercial opportunities; restricted land use.

Quality of Life: Healthy and sustainable environment; intact natural areas; increased opportunities for recreation and enjoyment.

Assessment Questions Used to Evaluate an Area (from Corps et al. 2001)

1. Presence/absence of species or designated critical habitat
2. Presence/absence of suitable habitat
3. Importance of population to overall species recovery
4. Ability of habitat to support population/condition of local ecosystem
5. Historical range of species and local history of occurrence
6. Potential for natural re-population or re-introduction

GIS Data Layers Used to Evaluate How Well a Conservation Unit Supports Threatened and Endangered Species

FNAI Species Occurrence Data

FNAI Habitat Conservation Priorities

FWC Prioritized Strategic Habitat Conservation Areas (SHCAs)

FWC Priority Wetlands

FWC Wildlife Observations (bald eagle and black bear data)

WilsonMiller Species Observations

Ratings

Not applicable. See *Ratings* for Biodiversity.

CRITERION 3: WATER QUALITY

Definition (from Corps et al. 2001)

A term that describes the ability of water to provide benefits to the ecosystem. The higher the water quality, the more benefits provided. There are numerous classification systems to describe water quality. The State of Florida has five surface water classifications, from Class I (Potable Water Supplies), Class II (Shellfish Propagation or Harvesting), Class III (Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife), Class IV (Agricultural Water Supplies), and Class V (Navigation, Utility and Industrial Use). Outstanding Florida Waters (OFWs) is a special category of waters within the state that are considered worthy of special protection because of their natural attributes. The Department of Environmental Protection (FDEP) cannot issue permits for direct pollutant discharges to OFWs that would lower existing water quality, or for indirect discharges that would significantly degrade the OFW. Examples of OFWs are Lake Powell and Deer Point Lake in Bay County.

Federal Objectives (from Corps et al. 2001)

1. Implementation of the Clean Water Act. The anti-degradation clause of the act requires that no activity lower the classification of a water body.

Why is This Criterion Important? (from Corps et al. 2001)

Clean water is a universal concern for the continued health of the county.

Biologically: In the estuary, maintains shellfish waters to allow harvesting and human consumption of shellfish. Maintains high populations of shrimp in the bays and other commercial and recreational fishing. In freshwater systems, maintains emergent and aquatic plants and fish and other aquatic faunal habitat and is necessary for wildlife consumption. Clean surface water may be used for human consumption; surface water may affect groundwater quality, which may be used for human consumption.

Economically: Allows commercial and recreational fisheries to operate. Supplies seafood for both local and interstate sales. Keeps beaches open, including support of the local tourist industry.

Quality of Life: Clean water contributes to aesthetics; allows recreational activities such as bird watching, shellfishing, drinking water, recreational fishing, water related sports (e.g., swimming, water skiing, boating).

Assessment Questions Used to Evaluate the Criteria (from Corps et al. 2001)

1. Review available information for indications of water quality in the area.
2. Amount of wetlands available to perform maintenance or enhancement of water quality such as nutrient uptake, sediment stabilization, erosion control,

3. Are there sufficient upland buffers to allow wetlands to protect water quality?
4. What is the classification of the waters? Is it an OFW? What other information is available to indicate status of water quality, (studies or testing)?
5. Amount of stormwater entering the system.
6. The amount of wetlands available for filtering water versus the amount of development.

GIS Data Layers Used to Evaluate How Well a Conservation Unit Fulfills the Criterion (from Corps et al. 2001)

FDEP OFWs

FDEP Surface Water Classification (1995, 1998, 2002 305b Basin Status Reports)

NWFWMD Land Uses

NWI Wetlands

NRCS Hydric Soils Data

Blackwater inflow (NRCS soils data)

Springs

Marinas

Comprehensive Environmental Resource Compensation and Liability Act (CERCLA)

Hazardous Sites

Storage Tank Contaminant Monitoring Sites

Toxic Release Inventory

Private Wells

Ratings (from Corps et al. 2001)

VH: Data indicate adjacent water bodies are of high importance; contributes to water quality maintenance/enhancement and high water quality; contains shellfish waters; maintains health of shrimp and other fisheries; sufficient, available wetlands to perform filtering; multiple water body impacts; small amount of development to contribute to reduced water quality; large natural communities available to act as buffers; high level of connectivity to water bodies.

H: Impacting and directly adjacent to water body; less shoreline; more development and less wetlands area; smaller natural community buffer; less connectivity.

M: Remaining wetlands functional, but lack buffers; water quality not sufficient to support commercial fisheries; tree plantations, cropland, activities in area contribute to water quality degradation; no buffers; low connectivity; ditched; stormwater treatment.

L: industrial waste; highly impaired; point source discharge.

CRITERION 4: ESSENTIAL FISH HABITAT AND LIVING MARINE RESOURCES

Definition (from Corps et al. 2001)

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth a new mandate for the National Marine Fisheries Service (NMFS), regional fishery management councils (FMCs), and other Federal agencies to identify and protect important marine and anadromous fish habitat. The Essential Fish Habitat (EFH) provisions of the MSFCMA support one of the Nation's overall marine resource management goals – maintaining sustainable fisheries. Essential to achieving this goal is the maintenance of suitable marine fishery habitat quality and quantity. The FMCs, with assistance from NMFS, have delineated EFH for managed species. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH.

EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" and includes the estuarine marshes, seagrass beds, and other estuarine habitats within Walton and Bay Counties. The managed estuarine-dependent species found in Walton and Bay Counties and adjacent Gulf of Mexico waters include shrimp, red drum, groupers, snappers, bluefish, king and Spanish mackerel, dolphin, cobia, and many of the sharks and billfishes.

Federal Objectives (from Corps et al. 2001)

1. The EFH mandates of the MSFCMA represent a new effort to integrate fishery management and habitat management by stressing the dependency of healthy, productive fisheries on the maintenance of viable and diverse estuarine and marine ecosystems. The purpose of addressing habitat in this act is to further one of the Nation's important marine resource management goals – maintaining sustainable fisheries. Achieving this goal requires the long-term maintenance of suitable marine fishery habitat quality and quantity.

Why is This Criterion Important? (from Corps et al. 2001)

Biologically: Sustainable fisheries, food chain production, nursery and refuge habitat, and water quality maintenance. Seagrasses, marshes, and coastal wetlands provide excellent spawning and nursery habitat for fish and shellfish. Juvenile fish and shellfish also use the shallow, coastal habitats for shelter from larger predators. Later in their life cycle, many fish species migrate to other waters where they are commercially and recreationally caught. At least 96 percent of commercially and 70 percent of recreationally important fishery resources in the southeastern U.S. are dependent upon estuarine and near-shore marine habitats.

Economically: Tourism - boating, sightseeing, aesthetics; Recreation - boating and sunbathing; Seafood - commercial fishery, food source for fish, shellfish and humans;

Fishing - recreational boats, gear, fuel, motels, tourism. Boating and sport fishing are recreational activities that provide important benefits to coastal communities. In 1990, more than 5,000 marinas, available to service 9 million recreational boats in the United States, were situated along the coastline. It is estimated that the sport fishing industry supports over 205,000 jobs that are generated by salt-water fishing nationwide. In 1991, recreational fishing in Florida generated approximately \$3.5 billion in economic output and employed over 58,000 people. In 1999 for the Gulf of Mexico, 1.9 million marine recreational fishing participants took 15.9 million trips and caught 129.9 million fish (excluding Texas). Seventy-one percent of the trips were made in west Florida.

Commercially: Along Florida's west coast over 90 million tons of fish were landed worth more than \$164.4 million dollars.

Quality of Life: Open space; clean waters, fishable and swimmable waters; beaches and shores; bird watching, and shelling.

Assessment Questions Used to Evaluate an Area (from Corps et al. 2001)

1. Are living marine resources, such as seagrass beds, marshes, oyster beds, present?
2. Do adjacent habitats support living marine resources?
3. Is the unit located in coastal waters subject to tidal and salt water influences?
4. Does the unit or the basin in which the unit is located contribute surface water flow to coastal waters?
5. What estuarine and/or marine habitat types will be impacted and to what degree?

GIS Data Layers Used to Evaluate How Well a Conservation Unit Fulfills the Criterion (from Corps et al. 2001)

NWI for submerged aquatic vegetation (SAV)
NWI Marine and Estuarine Systems
FDEP Aquatic Preserves
Coastal and Aquatic Managed Areas (CAMA)
Florida Marine Research Institute (FMRI) Seagrass beds
FNAI Coastal Priority Areas

Contact Information by Agency (from Corps et al. 2001)

National Marine Fisheries Service
Mark.Thompson@noaa.gov
850/234-5061

Criterion 4 (Cont.): Living Marine Resources

Definition (from Corps et al. 2001)

Those biological resources that require any part of the marine ecosystem to complete their life cycle. Marine ecosystems include estuaries such as the bays and sounds and the lower reaches of rivers that are influenced by tides and saltwater. Marshes, seagrasses, flats and estuarine bottoms are important nursery and refuge habitat within the estuary. Some of the better known species are those included under EFH, but forage and food chain species such as marine worms, zooplankton, menhaden, shad, killifish, and shellfish are equally important. At least 96 percent of commercially and 70 percent of recreationally important fishery resources in the southeastern U.S. are dependent upon estuarine and near-shore marine habitats.

Federal Objectives (from Corps et al. 2001)

1. The mission is to protect, conserve, restore, and create habitats and ecosystems vital to self-sustaining populations of living marine resources.

Why is This Criterion Important? (from Corps et al. 2001)

Biologically: Fish and wildlife populations, food chain production, nursery and refuge habitat, water quality maintenance.

Economically: Tourism - boating, sightseeing, aesthetics; Recreation - boating and sunbathing; Seafood - commercial fishery, food source for fish, shellfish and humans; Fishing - recreational boats, gear, fuel; motels; tourism (see also Essential Fish Habitat Fact Sheet).

Quality of Life: Open space; clean waters; fishable and swimmable waters; beaches and shores; bird watching; shelling.

Assessment Questions Used to Evaluate an Area

Same as EFH.

GIS Data Layers Used to Evaluate How Well a Conservation Unit Fulfills the Criterion (from Corps et al. 2001)

Same as EFH.

Contact Information by Agency (from Corps et al. 2001)

Same as EFH.

National Marine Fisheries Service
Mark.Thompson@noaa.gov
850/234-5061