IUCN Conservation Outlook Assessment 2014 **(archived)**
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Please note: this is an archived Conservation Outlook Assessment for Everglades National Park. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Everglades National Park

SITE INFORMATION

Country:
United States of America (USA)
Inscribed in: 1979
Criteria:
(viii) (ix) (x)

Site description:
This site at the southern tip of Florida has been called 'a river of grass flowing imperceptibly from the hinterland into the sea'. The exceptional variety of its water habitats has made it a sanctuary for a large number of birds and reptiles, as well as for threatened species such as the manatee. © UNESCO

SUMMARY

2014 Conservation Outlook

Critical

Unless more restoration projects are enacted outside the site (e.g., Decomp, Tamiami Trail Next Steps, water storage and treatment south of Lake Okeechobee, etc.) to deliver more clean water to the site as sheetflow, the essential qualities and habitat of the site will continue to be lost. Measures to control exotic plant and animal species will continue to be an ongoing management issue. Combined, this will lead to reduced populations of wading birds, which are key indicators of the health of the ecosystem, and perhaps more threatened and endangered species within the site.

Current state and trend of VALUES

Critical
Trend: Deteriorating

Major issues such as lack of water and degrading water quality are over-riding impacts to the system and the continued deteriorating trend of so many values put the park’s World Heritage values in a critical situation.

Overall THREATS

Very High Threat

Current threats related to reduced water flows, water pollution, and shifting habitat are affecting the health of the site and the amount and quality of habitat. Some of these losses cannot be restored, as habitat features have taken decades to centuries to develop. Potential threats, including hurricanes, climate change and ocean acidification, to the site are a high threat over all and are potentially being realized already. Current threats with a critical rating combined with potential that are of high concern result in nothing less than a critical rating for overall threats.

Overall PROTECTION and MANAGEMENT

Some Concern

The park faces major difficulties in addressing the many threats originating outside the site, such as reduced water flow and water pollution. The Everglades ecosystem is highly compartmentalized with varying jurisdiction and management strategies for each compartment. Regional management of water quality and quantity (controlled by the state and to some extent the Federal government) is not focused on the park, which is the World Heritage site. The park is at the downstream end of the ecosystem, and decisions made regarding management at the top have not always been compatible with protecting the health of the bottom end.

FULL ASSESSMENT

Description of values

Values

World Heritage values

- **Large, flat, low-lying landscape**
  Criterion:(viii)

  The Everglades is a vast, nearly flat, seabed that was submerged at the end of the last Ice Age supporting vast continuum of shallow marine, estuarine, freshwater, and terrestrial landscapes (seagrass, mangrove, wetland, and terrestrial vegetation) (R5)

- **One of the most active areas of modern carbonate sedimentation**
  Criterion:(viii)

  The limestone substrate of the site is one of the most active areas of modern carbonate sedimentation (R5).

- **Diverse array of habitats**
  Criterion:(ix)

  The Everglades contains vast subtropical wetlands and coastal/marine ecosystems including freshwater marshes, tropical hardwood hammocks, pine rocklands, extensive mangrove forests, saltwater marshes, and seagrass ecosystems important to commercial and recreational fisheries. Such mixture of subtropical and temperate wildlife species is found nowhere else in the United States. (R5).

► Oligotrophic ecosystem

Criterion:(ix)

Extremely low nutrient, P-limited throughout much of the park and N-limited at marine end-member—giving rise to plant and algal species that form the basis of the food web and maintain water quality.

► Biodiversity sustained through trophic interactions

Criterion:(ix)

Complex biological processes range from basic algal associations through progressively higher species and ultimately to primary predators such as the alligator, crocodile, and Florida panther; the food chain is superbly evident and unbroken (R5). Periphyton-based food web supports a diverse assemblage of fish and invertebrates in addition to a suite of large predators including panther, alligator, crocodile, etc. and a large wading bird community.

► A uniquely diverse combination of species from different biogeographic realms

Criterion:(ix)

The diversity of habitats described above supports a uniquely diverse combination of species from different biogeographic realms (Carolinian, Louisianan, and West Indian) and lies at the nexus of two major migratory bird routes: the Atlantic and Mississippi flyways (R1-R4).

► Threatened, endangered and endemic species

Criterion:(x)

The site provides habitat for approx. 20 threatened or endangered species including the Florida panther, green sea turtle, American crocodile, small-toothed sawfish, Wood Stork, West Indian manatee, and Cape Sable Seaside Sparrow (R5). ENP provides habitat for many rare and regionally endemic species of plants and animals including: numerous orchid species, tree snails, pine rockland herb and shrub species, Schaus swallowtail butterfly, and Everglades mink (R4).

► Essential wading bird habitat

Criterion:(x)

The exceptional variety of its water habitats has made it a sanctuary for a large number of birds. It provides important foraging and breeding habitat for more than 400 species of birds and is a major corridor for migration (R5). It is the most significant breeding ground for wading birds in North America including: Roseate Spoonbill, Great Egret, Snowy Egret, Great Blue Heron (+ white morph), Reddish Egret, Wood Stork, Little Blue Heron, and Tricolored Heron.

Assessment information

Threats

Current Threats

Very High Threat

Current threats related to reduced water flows, water pollution, and shifting habitat are affecting the health of the site and the amount and quality of habitat. Some of these losses cannot be restored, as habitat features have taken decades to centuries to develop.

► Fire/ Fire Suppression

High Threat
Inside site

Due to proximity to large urban/suburban population centers, fire suppression has likely altered the natural community assemblage. However, fire intensity has also increased due to the site being much drier than historically. This has led to habitat change and loss of organic soils over large areas, as well as loss of significant archaeological sites (R1-R4).

► Housing/ Urban Areas

High Threat
Outside site

Urbanization has reduced the Everglades footprint, impacts water supply and water quality, and affects the way water is managed in the ecosystem (R1-R4).

► Dams/ Water Management or Use

Very High Threat
Inside site
Outside site

The Central & South Florida Project and subsequent flood control features have altered the flow of water through the ecosystem—resulting in loss of landscape pattern and changes in habitat (R1-R4).

► Invasive Non-Native/ Alien Species

Very High Threat
Inside site
Outside site

Invasive species include Burmese python, Brazilian pepper, Melaleuca, birds (e.g., starling), non-native Apple snails, Cuban tree frog, several fish species. This is an ongoing problem that cannot be erased, only managed. Invasive and alien species threaten habitat quality throughout the Everglades (R1-R4).

► Hyper-Abundant Species

High Threat
Inside site
Outside site

Loading of phosphorous continues to result in the expansion of cattail in the water conservation areas north of the site. Some expansion is occurring within the site along Taylor Slough (R1-R4).

► Water Pollution

Very High Threat

Inside site
Outside site

Water pollution threats exist all around the site (R1-R4).

► Agricultural/ Forestry Effluents

Very High Threat
Inside site
Outside site

Agricultural sources of nutrient pollution and other contaminants are the biggest concern of water quality problems (R1-R4).

► Roads/ Railroads

Low Threat
Inside site
Outside site

The main road that runs through the park has been sufficiently culverted and bridged so as to not affect flow of water or exchange of biota. Tamiami Trail remains a threat, but a bridge that is under construction and plans for more bridging will increase the capacity for flow into the site (R1-R4).

► Flight Paths

Low Threat
Inside site

The site lies near a major airport (Miami International Airport) and immediately adjacent to smaller regional airports which contribute to noise pollution at times (R1-R4).

► Tourism/ visitors/ recreation

Low Threat
Inside site
Outside site

Isolated to relatively small areas of the site, there is still visible impact by visitors and tourism in the site. These are most often viewed as airboat trails (in the freshwater marsh) or propeller scars (in the shallow marine areas) (R1-R4).

► Air Pollution

Low Threat
Inside site
Outside site

High input and other airborne contaminants are a concern because of the large footprint of the area, but reductions in emissions have shown signs of improvement (R1-R4).

Potential Threats

High Threat

Potential threats, including hurricanes, climate change and ocean acidification, to the site are a high threat over all and are potentially being realized already.

► Chemical changes in oceanic waters

High Threat
Inside site
Outside site

As a potential threat, ocean acidification is very high as it will affect biogeochemical processes related to carbonate precipitation, particularly along the southwestern boundary between Florida Bay and the Gulf of Mexico (R1-R4).

► Fishing / Harvesting Aquatic Resources

Low Threat
Inside site
Outside site

Limited to Florida Bay, intense fishing pressure has led to declines of some species in some areas. However, other species such as lobster, sponges, and stone crabs are protected. Commercial fishing is no longer allowed within the site (R1-R4).

► Storms/Flooding

High Threat

Inside site
Outside site

Changes in hurricane intensity and frequency beyond what the ecosystem has co-evolved with will lead to significant threats to values (R1-R4).

► Utility / Service Lines

Low Threat

A plan for an electrical easement along the north-east section of the site will create viewshed and potential hydrological impacts. However, the plan has yet to be finalized. No other issues exist (R1-R4).

► Droughts

High Threat
Inside site
Outside site

Climate change projections call for reduced annual rainfall and perhaps more intense and frequent droughts, which will contribute to furthering threats related to lack of water (R1-R4).

Protection and management

Assessing Protection and Management

► Legal framework and enforcement

Some Concern

The Everglades ecosystem is highly compartmentalized with varying jurisdiction and management strategies for each compartment. Water in the Water Conservation Areas is managed by the state (South Florida Water Management District) and wildlife resources are managed by the Florida Fish & Wildlife Conservation Commission. Endangered species are managed at the state and Federal levels and enforcement of the Endangered Species Act is viewed by some as an impediment to restoration of the greater ecosystem. Some areas that used to be wet historically are kept dry for management of wildlife that were not abundant in those areas in the pre-impact state. Everglades National Park is managed by the National Park Service but inflows

are managed by the State. Water quality across the ecosystem is the responsibility of the State and standards to protect the Everglades currently are not being met. There are also tribal interests involved at many levels (R1-R4).

► Relationships with local people

Some Concern

Some stakeholders groups such as the hunting community and bass fishermen want to protect their recreational interests in the Everglades. In some instances these interests conflict with the goals of restoration that involve filling-in of canals used by bass fishermen and re-hydration of lands that are currently traversed by hunters on foot (R1-R4).

► Integration into regional and national planning systems

Mostly Effective

Integrative planning is effective; however, implementation has not achieved the same level of success.

► Management system

Some Concern

Regional management of water quality and quantity (controlled by the state and to some extent the Federal government) is not focused on the park, which is the World Heritage site. The park is at the downstream end of the ecosystem, and decisions made regarding management at the top have not always been compatible with protecting the health of the bottom end (R1-R4).

► Management effectiveness

Some Concern

Regional management does not allow for effective protection of World Heritage values. The staff at the park is not able to protect their resource sufficiently because many of the decisions affecting the resource (e.g., water quality, water quantity) are out of their control (R1-R4).

► Implementation of Committee decisions and recommendations

Some Concern

For reasons described above, little success has been seen in the implementation of Committee decisions and recommendations.

► Boundaries

Mostly Effective

Boundaries of the National Park are well established and guidelines for protection within boundaries are understood. This aspect is highly effective. However, the watershed boundaries extend well beyond (i.e., upstream) of the boundaries of the World Heritage site, which exacerbates water quantity and quality problems (R1-R4).

► Sustainable finance

Mostly Effective

Instability in year-to-year financing makes restoration planning and implementation difficult.

► Staff training and development

Highly Effective

High degree of mandatory training.

► Sustainable use

Highly Effective

Within boundaries, most of site is in Federal Wilderness-protected status with a very low developed footprint. Fishing guides generally support sustainable use of the coastal/ marine areas. Use outside of boundaries is not sustainable, thereby contributing to impacts within the site (R1-R4).

► Education and interpretation programs

Mostly Effective

Efforts at conveying natural aspects and values are unparalleled. However, more focus should be given to cultural history of site.

► Tourism and interpretation

Mostly Effective

Private concessions provide inconsistent quality of interpretation relative to Park staff. Fishing guide business, while small in numbers, has a large economic impact and provides quality interpretation of resources.

► Monitoring

Mostly Effective

Continued monitoring will be essential in tracking changes due to climate change, sea level rise, and ecosystem restoration. Most key parameters are being monitored by agencies other than the National Park Service; therefore, consistency and priorities for funding is a concern (R1-R4).

► Research

Mostly Effective

Research has been and will continue to be vital to managing the World Heritage values of the site. Fundamental research is largely supported by agencies other than the National Park Service; therefore, consistency and priorities for funding is a concern (R1-R4).

Overall assessment of protection and management

Some Concern

The park faces major difficulties in addressing the many threats originating outside the site, such as reduced water flow and water pollution. The Everglades ecosystem is highly compartmentalized with varying jurisdiction and management strategies for each compartment. Regional management of water quality and quantity (controlled by the state and to some extent the Federal government) is not focused on the park, which is the World Heritage site. The park is at the downstream end of the ecosystem, and decisions made regarding management at the top have not always been compatible with protecting the health of the bottom end.

► Assessment of the effectiveness of protection and management in addressing threats outside the site

Serious Concern

The park faces major difficulties in addressing the many threats originating

outside the site, such as reduced water flow and water pollution.

▶ **Best practice examples**

Coordination of monitoring and research, staff training and education and interpretation of visitors

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Large, flat, low-lying landscape**
High Concern
Trend:Deteriorating

Changes in soil elevation that affect the flow of water, the patterning of the landscape, and concentration of wading bird prey (R1-R5).

▶ **One of the most active areas of modern carbonate sedimentation**
Data Deficient
Trend:Data Deficient

Sea-level rise, reduced freshwater flow, and changes in ocean alkalinity will alter the location of active carbonate precipitation in the coastal Everglades or threaten carbonate precipitation over longer periods of time (R1-R5).

▶ **Diverse array of habitats**
Critical
Trend:Deteriorating

The diversity of habitats is being threatened by loss of ridge and slough patterning, loss of tree islands, and invasive/exotic plants and animals (R1-R5).

▶ **Oligotrophic ecosystem**
Critical
Trend:Deteriorating

With the addition of phosphorus from agricultural and urban runoff, the Everglades has become gradually enriched, making the ecosystem less oligotrophic. Further, with reduced flows to the coastal Everglades, we have seen a gradual loss of oligotrophy with relatively more enriched waters infiltrating from the Gulf of Mexico. Changes in water depth from sea-level rise and water management and increased nutrient loading can affect patterns of production, biomass allocation, and the ultimate accumulation of organic matter in Everglades soils and sediments (R1-R5).

► Biodiversity sustained through trophic interactions

High Concern
Trend:Deteriorating

The periphyton-based food web of the Everglades is threatened by nutrient (mainly phosphorus) loading (R1-R5).

► A uniquely diverse combination of species from different biogeographic realms

High Concern
Trend:Deteriorating

Loss of habitat will affect species diversity. A few species in particular are at risk due to decreased habitat quality (e.g., Everglades snail kite)

► Threatened, endangered and endemic species

High Concern
Trend:Deteriorating

20 Federally listed faunal species and several species of insects and plants are at-risk of being lost from the ecosystem. Endemic species may be at risk of going extinct (R1-R5).

► Essential wading bird habitat

High Concern
Trend:Deteriorating

The Everglades is still essential wading bird habitat in south Florida. However, continued impacts from water management and loss of habitat may lead to mass defection and abandonment of habitat in favor of other

areas (e.g., roseate spoonbills in Florida Bay) (R1-R5).

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values**
Critical
Trend: Deteriorating

Major issues such as lack of water and degrading water quality are over-riding impacts to the system and the continued deteriorating trend of so many values put the park's World Heritage values in a critical situation.

Additional information

Key conservation issues

▶ **Overall lack of freshwater**
Regional

More flow is needed into site overall, with greatest needs in NE Shark River Slough.

▶ **Reduced sheetflow into site**
Regional

Currently, all water flows through confined structures (gates) or culverts. Sheetflow enhancement can only occur through increased bridging (Tamiami Trail Next Steps) over the 1-mile bridge that is currently under construction.

▶ **Degraded water quality**
Regional

More effort is needed to clean up existing inflows of water let alone the increased volume of water necessary to meet the needs described above.

▶ **Loss of landscape pattern**
Regional

This is directly related to a lack of clean freshwater inflows and natural hydroperiods in the site.

▶ **Loss of habitat**
Regional

Habitat loss is connected to all of the above.

▶ **Increasing exotic species**
Regional

Exotic species expansion is difficult to control but potentially manageable with state and Federal support. Minimizing the introduction of new species will require policies that restrict the importation or sale of species that may pose an invasion risk.

▶ **Urban expansion**
Local

Urban expansion in such an urbanized region will be a persistent threat to the health of the site and our ability to fully restore what remains.

Benefits

Understanding Benefits

▶ **Water provision (importance for water quantity and quality)**

The site provides essential freshwater storage and aquifer recharge services for the greater South Florida urban, commercial and agricultural communities. Despite these threats, the system maintains its ability to recharge regional aquifers used for municipal water supplies.

▶ **Is the protected area valued for its nature conservation?**

As one of the largest protected wetland ecosystems in the world, the site provides critical conservation services for unique habitats (mangrove forests, tropical hardwood hammocks, rockland pine, and wetland prairies) as well as

for the associated endangered and threated species.

▶ **Coastal protection**

The mangrove coastal expanse, several miles wide in places, provides critical buffering against storm surge and wind for inland communities.

▶ **Outdoor recreation and tourism**

Nearly 1 million visitors enter the entrance stations of the site each year (this does not include the visitors using the site's marine resources). These visitors have a significant economic impact on the surrounding communities of Florida City, Homestead, Miami, the Florida Keys, and Everglades City. During the Spring months, a high percentage of visitors to the site are international.

▶ **Carbon sequestration**

With ongoing restoration of water flows to the site there is significant opportunity to sequester carbon by accretion of peat soils in freshwater marshes, tree islands, and mangrove swamps.

▶ **Fishing areas and conservation of fish stocks**

Florida Bay and the mangrove coast support the economically important recreational fishery (red drum, sea trout and others). In addition, the mangrove ecosystem provides critical spawning ground for important commercial species and the aquatic food chain.

Summary of benefits

The natural resources protected by Everglades National Park provide key ecosystem services to the regional human population. These services include water storage and recharge of the aquifer, buffering against the impacts of tropical storms and hurricanes, as well as economic benefits associated with tourism, including recreational fishing, and the commercial fishing industry. Benefits to the wider, world community include those associated with the protection and preservation of unique habitats and species, as well as climate modification benefits from carbon sequestration within the mangrove forests

and sea grasses of Florida Bay.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	NPS		GENERAL MANAGEMENT PLAN (GMP): The Everglades National Park General Management Plan is nearing completion. This overall project has spawned initial work to establish pilot boating zones within the Park (called pole and troll zones); and work to re-establish freshwater flow through infrastructure barriers on NPS lands (culvert projects on Old Ingraham Hwy and Research Road). In addition, the GMP contemplates adaptation of Park infrastructure and resource management in the face of climate change. The pilot projects will be continued and expanded when the GMP is complete and enters the implementation phase.
2	NPS and the South Florida National Parks Trust		FLORIDA BAY: SEAGRASS RESTORATION PROJECTS. Work to restore areas of seagrass habitat damaged by boaters. This work is ongoing; the intent of zoning through the GMP is to reduce the pressure on seagrass habitat and allow substantial restoration of this resource.
3	US Army Corps of Engineers US National Park Service		Modified Water Deliveries to Everglades National Park Project and the Tamiami Trail Next Steps Project – Restoration of water flows to the northeastern portion of ENP that was cut-off from natural marsh flow in the 1960’s.
4	South Florida Water Management District, US National Park Service		Everglades Construction Project and the Restoration Strategies Project – Construction/expansion of man-made wetlands (stormwater treatment areas) and shallow reservoirs (flow equalization basins) to reduce nutrient loadings and improve water flows into the Everglades.
5	US Army Corps of Engineers US National Park Service		Canal-111 South Dade and the C-111 Spreader Canal Projects – Restoration of marsh water depths in the Taylor Slough region of ENP through the construction of water detention areas.

№	Organization/ individuals	Project duration	Brief description of Active Projects
6	US Army Corps of Engineers South Florida Water Management District		Central Everglades Planning Project – Long-term planning to restore more natural water flows from Lake Okeechobee into the central and southern Everglades, as part of the Comprehensive Everglades Restoration Plan (CERP).
7	NPS Everglades National Park and NPS Southeast Regional Office		EXOTIC PLANT MANAGEMENT: work to remove exotic plant species from Everglades National Park lands, throughout all habitats. Funding principally from NPS. Additional work is needed (see below).
8	NPS Everglades National Park, in conjunction with the U.S. Army Corps of Engineers as the permitting entity		HOLE IN THE DONUT PROJECT: in-lieu-fee program oriented toward restoration of approximately 6,000 acres of abandoned agricultural land within Everglades National Park. Funding from the in-lieu-fee program, which works in a manner similar to a “mitigation bank”.
9	Carol Mitchell, carol_mitchell@nps.gov http://www.nps.gov/ever/naturescience/hidprogram.htm		EXOTIC ANIMAL MANAGEMENT: work to understand and eventually control/manage the impact of exotic animal species on Everglades National Park resources. Additional work is needed (see below).
10	NPS. Work completed from 2008 – 2011 plugged 2 major canals, using seed money from the USFWS Coastal Program, and major funding from the American Recovery and Reinvestment Act; work to monitor the ecological effects is ongoing.		CAPE SABLE CANALS DAM RESTORATION PROJECT: Work to plug man-made canals and ditches in the Cape Sable region of Everglades National Park. This work is oriented toward reducing the negative impact of the canals, toward restoring a more natural hydrology and salinity regime in the area, and toward restoring habitats for American crocodile. Additional work is needed (see below).

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years

1	NPS Everglades National Park and NPS Southeast Regional Office	EXOTIC PLANT MANAGEMENT: work to remove exotic plant species from Everglades National Park lands, throughout all habitats. Additional funding is needed to reduce the infestation of exotic plants in Everglades National Park habitats to acceptable levels, and to maintain Park habitats in perpetuity.
2	NPS	EXOTIC ANIMAL MANAGEMENT: In spite of extremely good interagency coordination, exotic animal management in Everglades National Park is proving to be challenging. Funding has been project-based from Everglades National Park sources; additional funding is needed.
3	NPS.	CAPE SABLE CANALS DAM RESTORATION PROJECT: Work to plug remaining canals (the Raulerson Canal, East Side Creek, and House and Slagle’s ditches) is in the planning phase. Funding will be required to implement these projects.

REFERENCES

№	References
1	Davis, S., and J.C. Ogden. 1994. Everglades: The Ecosystem and its Restoration. CRC Press
2	Lodge, T.E. 2010. The Everglades Handbook: Understanding the Ecosystem, 3rd Edition. CRC Press
3	McVoy, C.W., W.P. Said, J. Obeysekera, J. Van Arman, and T. Dreschel. 2011. Landscapes and Hydrology of the Pre-Drainage Everglades. University Press of Florida.
4	http://www.evergladesplan.org (various reports and publications)