



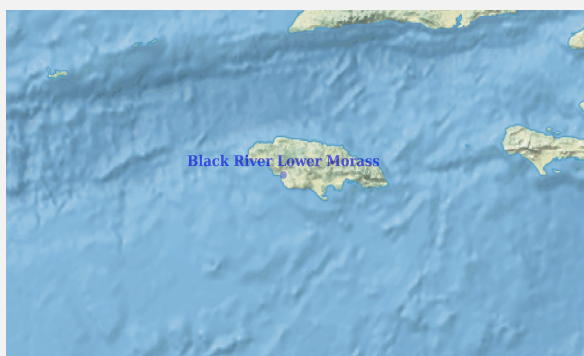
Ramsar Information Sheet

Published on 11 November 2021

Update version, previously published on : 7 October 1997

Jamaica

Black River Lower Morass



Designation date	7 October 1997
Site number	919
Coordinates	18°02'10"N 77°48'20"W
Area	13 713,17 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

The Black River Lower Morass Ramsar Site is one of the largest freshwater wetland ecosystems in Jamaica. It is located on the southwest coast of Jamaica in the parish of St. Elizabeth and lies within the administrative region of Black River.

It is reported to have the best example of Amazonian type swamp forest outside of South America (Douglas, 1991). It is an area of high biological diversity that supports a large number of endemic endangered species, for example, *Trachemys terrapin* (Jamaican Slider) [endemic] and *Crocodylus acutus* (American Crocodile) [endangered], *Sabal jamaicensis* (Bull Thatch) and *Combretum robinsonii* [endemic] and natural communities.

The Lower Morass has a wide variety of habitats including herbaceous wetland, riparian forest, swamp forest, limestone islands, coastal flood plain, freshwater areas and dunes (Webber et al., 2002). Additionally, the morass serves as an important nursery for fish.

Historically, the local communities have utilized portions of the area for cane farming, fisheries, timber harvesting, charcoal production and pastureland during the dry season. The Black River and its tributaries is a source of water for some communities in the area. The area is also very important in the tourism industry of the south coast as it is the site of several river safari nature tourism activities.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency	National Environment and Planning Agency
Postal address	10- 11 Caledonia Avenue Kingston 5 Jamaica Monique.curtis@nepa.gov.jm; mmason@nepa.gov.jm; csutherland@nepa.gov.jm; sazan@nepa.gov.jm; ahenry@nepa.gov.jm

National Ramsar Administrative Authority

Institution/agency	National Environment Planning Agency
Postal address	10 & 11 Caledonia Avenue Kingston 5 Jamaica

2.1.2 - Period of collection of data and information used to compile the RIS

From year

To year

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)

2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

(Update) A. Changes to Site boundary Yes No

(Update) B. Changes to Site area the area has increased

(Update) The Site area has been calculated more accurately

(Update) The Site has been delineated more accurately

(Update) The Site area has increased because of a boundary extension

(Update) The Site area has decreased because of a boundary restriction

(Update) For secretariat only: This update is an extension

2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS? Yes (actual)

(Update) Are the changes Positive Negative Positive & Negative

(Update) Negative %

(Update) No information available

(Update) Optional text box to provide further information

The direct impacts and degradation of natural habitats is also compounded by an influx of invasive plant and animal species that are putting components of the native biodiversity under increasing pressure. Recent research conducted by Dr. K McLaren and Dr. B. Wilson of the University of the West Indies, Mona Campus, has highlighted this as an anthropogenic driven catastrophe, having confirmed that the BRGM has lost approximately 31% of its original (natural) habitat since 1941. The present state of remaining pockets of swamp forest exemplify the perilous future now awaiting the other habitat types within the Black River system, if there are no interventions to combat these losses

(Update) Changes resulting from causes operating within the existing boundaries?

(Update) Changes resulting from causes operating beyond the site's boundaries?

(Update) Changes consequent upon site boundary reduction alone (e.g., the exclusion of some wetland types formerly included within the site)?

(Update) Changes consequent upon site boundary increase alone (e.g., the inclusion of different wetland types in the site)?

(Update) Please describe any changes to the ecological character of the Ramsar Site, including in the application of the Criteria, since the previous RIS for the site.

several major threats to the BRLM which impact various habitat types. The direct impacts and degradation of natural habitats is also compounded by an influx of invasive plant and animal species that are putting components of the native biodiversity under increasing pressure. Recent research conducted by Dr. K McLaren and Dr. B. Wilson of the University of the West Indies, Mona Campus, has highlighted this as an anthropogenic driven catastrophe, having confirmed that the BRGM has lost approximately 31% of its original (natural) habitat since 1941. The present state of remaining pockets of swamp forest exemplify the perilous future now awaiting the other habitat types within the Black River system, if there are no interventions to combat these losses. Once covering large continuous tracts of the BRGM, the area covered by this unique forest habitat has been reduced by 80% and is now restricted to 20 small fragmented patches in the lower morass, all of which are in various states of degradation. Loss of swamp forest habitat can be attributed to centuries of deforestation and these remaining patches, constituting the only Amazonian type swamp forest habitat in Jamaica, are considered to be the most critically endangered habitat type on the island, and probably in the Caribbean generally. Conservation of the swamp forest is challenged by on-going human impacts (e.g., tree cutting, fires) and to date a lack of an effective management structure. The harvesting of valuable tree species and the pervasive burning of the morass remains a severe threat to the persistence of these relictual patches. Rampant planting of marijuana is a major source of habitat degradation; it also represents a complex sociological issue and a correspondingly formidable conservation challenge. Compounding the degradation attributed to intentional effort, the introduction of invasive alien species (IAS) has had disastrous consequences for the morass. Two exotic plant species in particular that are at different stages of invasion, represent an even more critical threat. An invasive herbaceous plant (*Alpinia allughas*), a member of the ginger (*Zingiberaceae*) family, has established itself in large areas of the upper section of the BRGM and poses a significant threat to the Ramsar site. The invasive ginger has displaced most of the native swamp flora adjacent to the tributaries that feed the morass, and is now the dominant vegetation in the upper region of the BRGM. The remnant patches of swamp forest have not escaped the progression of ginger, with smaller patches being more susceptible to invasion. Even larger patches have been adversely impacted, as *Alpinia* has established itself around the edges and in tree gaps found within patches. Low light levels found in the understory of the larger swamp forest patches have apparently prevented *Alpinia* from becoming established; however, gaps created by the removal of valuable tree species provide a point of entry for the establishment of *Alpinia*, and may therefore precipitate the demise of a given forest patch.

Recently, another invasive plant species, *Melaleuca* sp. was found in the BRLM. Although it may be possible to eradicate this more recently introduced species, on the other hand, *A. allughas*, is now firmly established but its spread and impact can be managed and controlled. Additionally, the aquatic component of the morass is dominated by six invasive fish species, an invasive crayfish species and an invasive frog species. The impacts of these invasives on the native biodiversity and on ecosystem services such as the shrimp and fish nurseries, have not been established.

(Update) Is the change in ecological character negative, human-induced AND a significant change (above the limit of acceptable change) Yes

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Former maps

Boundaries description

The boundary of the Black River Lower Morass Ramsar Site is delineated to the north by the Lacovia to Black River Class A Road; south-south westerly by the Black River to Mountainside Class B Road; south-easterly by the Fullerswood to Hill Top Class C Road and easterly by the Mountainside to Lacovia Class B Road. The highwater mark along the coast, Black River to Starve Gut Bay, forms the south-western marine boundary of the Ramsar Site.

2.2.2 - General location

a) In which large administrative region does the site lie?

b) What is the nearest town or population centre?

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes No

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes No

2.2.4 - Area of the Site

Official area, in hectares (ha):

Area, in hectares (ha) as calculated from GIS boundaries

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Other scheme (provide name below)	Western Tropical Atlantic Greater Antillean Marine (WWF)

[Other biogeographic regionalisation scheme](#)

Jamaica falls in the Neotropical Biogeographical Region as defined by the global biogeographic regionalisation system, specifically, ecoregion 236 - Western Tropical Atlantic Greater Antillean Marine (WWF)

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

- Criterion 1: Representative, rare or unique natural or near-natural wetland types

Hydrological services provided

The Lower Morass plays an ecologically important role in the removal of nutrients received by the Black River from the Upper Morass. This is done through exporting substantial amounts of organic carbon in the form of particulate detritus to the food web of estuaries and coastal ecosystems and, controlling floodwaters from the YS and Black Rivers.

Other ecosystem services provided

The Lower Morass serves as an important genetic reserve, where 207 species of plants have been identified; of which 11 were endemic and 22 rare (Douglas 1991). Of this, 92 species are flowering plants, of which 25% are rare; nine percent are endemic to Jamaica, 7% endemic to the Greater Antilles and 3% endemic to the West Indies (Garrick, 1986).

Other reasons

The Amazonian type swamp forest and juxtaposing ponds formed by upwellings of the Upper and Lower Morass, springs, seasonal floods, brackish coastal lagoons and salt ponds, which also forms part of the largest river system in the island, is also important regionally and nationally (Massa et al., 1998; Massa et al., 1999; Webber et al., 2002).

- Criterion 2 : Rare species and threatened ecological communities

- Criterion 3 : Biological diversity

Justification

The Lower Morass and its diverse communities are essential for the maintenance of the overall biodiversity of the area. In fact, a large number of species, many of which are endemic to Jamaica, are found in the various ecosystems of the morass. It has been reported that in the Lower Morass, of the 207 species of plants recorded; 22 species are rare and 10 are endemic to Jamaica; over 300 species of birds have also been recorded, 60 of them rare and 14 endemic (Douglas, 1991). Additionally, Jamaica has a high endemism of herpetofauna of which several examples occur in this site (Webber et al., 2002). Some of the rare and endemic species include, *Broughtonia sanguinea*, *Cabomba piauiensis*, Royal Palm (*Roystonea princeps*), Bull Thatch (*Sabal jamaicensis*) and *Thalia geniculata*. *Trachemys terrapin* (Jamaican Slider) [endemic]. *Gambusia melapleura* (endemic ticki).

- Criterion 4 : Support during critical life cycle stage or in adverse conditions

- Criterion 7 : Significant and representative fish

Justification

The fish stock within the Lower Morass supports the livelihood of locals as well as the wider Jamaican population. Most of the commercial species of fish found are those that spend most of their life cycle at sea. However, these species also make use of the mangrove areas, diurnally or during some stage of their life cycle, for feeding or spawning.

- Criterion 8 : Fish spawning grounds, etc.

Justification

The marine fish, which use the mangrove habitat at some stage in their lifecycle, include the commercially important Jack, Snapper and Snook. Nonetheless, an estimated 10% of the fish population found includes Mudfish and Bullhead (Dormitator spp.) and the species Tilapia spp. (Massa et al., 1998).

3.2 - Plant species whose presence relates to the international importance of the site

Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
Plantae								
TRACHEOPHYTA / LILIOPSIDA	<i>Broughtonia sanguinea</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Rare and endemic
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Cabomba furcata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Rare and endemic
TRACHEOPHYTA / LILIOPSIDA	<i>Roystonea princeps</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Rare and endemic
TRACHEOPHYTA / LILIOPSIDA	<i>Sabal maritima</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Rare and endemic
TRACHEOPHYTA / LILIOPSIDA	<i>Thalia geniculata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC	<input type="checkbox"/>		Rare and endemic

Floral species noted within the area includes Queen-of-the-Night (*Selenicereus grandiflorus*) cactus, CITES Appendix II.

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
Others																	
CHORDATA / REPTILIA	<i>Crocodylus acutus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / REPTILIA	<i>Eretmochelys imbricata</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				CR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Provides habitat for juvenile birds
CHORDATA / REPTILIA	<i>Trachemys terrapen</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		Endemic
Fish, Mollusc and Crustacea																	
CHORDATA / ACTINOPTERYGII	<i>Caranx lugubris</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / ACTINOPTERYGII	<i>Centropomus undecimalis</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / ACTINOPTERYGII	<i>Gambusia melapleura</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		Endemic ticki ticki
Birds																	
CHORDATA / AVES	<i>Dendrocygna arborea</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / AVES	<i>Egretta tricolor</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Provides habitat for juvenile birds
CHORDATA / AVES	<i>Ixobrychus exilis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Provides habitat for juvenile birds
CHORDATA / AVES	<i>Jacana spinosa</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Provides habitat for juvenile birds
CHORDATA / AVES	<i>Laterallus jamaicensis</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA / AVES	<i>Porphyrio martinica</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Provides habitat for juvenile birds

1) Percentage of the total biogeographic population at the site

It can also be found Giant Gallywasp (*Diploglossus [Celestus] occiduus*), IUCN possibly extinct.

3.4 - Ecological communities whose presence relates to the international importance of the site

RIS for Site no. 919, Black River Lower Morass, Jamaica

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
aeolian dunefield	<input type="checkbox"/>	in the Thatchfield area; it covers an area (coastal) of approximately 3.25km ² . This ancient dunefield is inactive and vegetated. It appears to be geomorphologically degraded, being extensively affected by blowouts. The largest dune is presently mined f	
Sedge Savannah	<input type="checkbox"/>	The plant found mainly in this vegetation type was <i>Cladium jamaicense</i> . As human activities increased the dominant plant started to be replaced by various species of <i>Scirpus</i> , <i>Rhynchospora</i> , and <i>Eleocharis</i> .	
Marsh Forest	<input type="checkbox"/>	the most distinctive assemblage in the lower Black River region is, no longer dominated by <i>Symphonia globulifera</i> , <i>Terminalia latifolia</i> , <i>Hibiscus elatus</i> and Swamp Cabbage	
Riparian Swale	<input type="checkbox"/>	The area is dominated by the grass, <i>Phragmites communis</i> or a mixture of <i>Typha angustifolia</i> , <i>Sagittaria lancifolia</i> , <i>Cladium jamaicense</i> , <i>Cyperus giganteus</i> , <i>Scirpus validus</i> , <i>S. olneyi</i> , <i>Fuirena umbellata</i> and few semi-aquatic grasses, which dominates this	

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

The Black River Lower Morass has been reported as one of the 2% of wetlands that covers the island's surface area (Garrick, 1986). It is a valuable natural ecosystem with immense biodiversity (Spring, 1995).

The Lower Morass plays an ecologically important role in the removal of nutrients received by the Black River from the Upper Morass. This is done through exporting substantial amounts of organic carbon in the form of particulate detritus to the food web of estuarine and coastal ecosystems and, controlling floodwaters from the YS and Black Rivers. Additionally, the Lower Morass serves as an important genetic reserve, where 207 species of plants have been identified; of which 11 were endemic and 22 rare (Douglas 1991). Of this, 92 species are flowering plants, of which 25% are rare; nine percent are endemic to Jamaica, 7% endemic to the Greater Antilles and 3% endemic to the West Indies (Garrick, 1986). These also included both plants that are restricted to Black River, as well as species known from other parts of the world, but are restricted to the western area in Jamaica [for examples were *Grias cauliflora* (Anchovy Pear), *Roystonea princeps* (Swamp Cabbage) and *Sabal jamaicensis* (Bull Thatch)].

There is a unique inter-relationship between soils and the vegetation (Grontmij, 1964). In the Lower Morass, the presence of peat was characterized by various plants namely, *Cladium jamaicense* (Sawgrass), *Typha augustifolia*, Bull Thatch and Swamp Cabbage. In areas where clay was located, swamp forest was found to be dominant. On alluvial clay, mangroves, especially *Rhizophora mangle* (Red Mangrove), were dominant as well as *Phragmites communis* (Reeds). *Nymphaea ampla* (Water Lily) and *Eichhornia crassipes* (Water Hyacinth) dominated the waterways.

The Black River Lower Morass area contains one large aeolian dunefield in the Thatchfield area; it covers an area (coastal) of approximately 3.25km². This ancient dunefield is inactive and vegetated. It appears to be geomorphologically degraded, being extensively affected by blowouts. The largest dune is presently mined for sand. Total carbonate in the sediments from the large dunefield at Thatchfield yielded a radiocarbon age 5,020 years +/- 215 years.

The Black River Lower Morass Ramsar Site vegetation can be described in seven types:mangrove woodland; sedge savannah (marsh); riparian swale; marsh forest; riparian forest; aquatic vegetation and limestone islands.

4.2 - What wetland type(s) are in the site?

Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
E: Sand, shingle or pebble shores		4		
F: Estuarine waters		2		
H: Intertidal marshes		3		
I: Intertidal forested wetlands		3		
J: Coastal brackish / saline lagoons		1		Representative

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks		1		
Saline, brackish or alkaline water > Marshes & pools >> Sp: Permanent saline/ brackish/ alkaline marshes/ pools		4		
Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands		2		
Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands		3		
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands		1		
Fresh water > Marshes on peat soils >> Xp: Permanent Forested peatlands		2		
Fresh water > Flowing water >> Y: Permanent Freshwater springs; oases		4		

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/LILIOPSIDA	<i>Alpinia nigra</i>	Present in the riparian swale
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Amphitecna latifolia</i>	Present in the marsh forest
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Aristolochia trilobata</i>	
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Bursera simaruba</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Calyptanthes chytraculia</i>	Present in the limestone island
TRACHEOPHYTA/LILIOPSIDA	<i>Calyptronoma occidentalis</i>	Present in the marsh forest
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Chrysophyllum oliviforme</i>	Present in the limestone island
TRACHEOPHYTA/LILIOPSIDA	<i>Cladium mariscus jamaicense</i>	Present in the sedge savannah
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Combretum laxum</i>	Present in the marsh forest
TRACHEOPHYTA/LILIOPSIDA	<i>Crinum americanum</i>	Present in the marsh forest
TRACHEOPHYTA/LILIOPSIDA	<i>Cyperus giganteus</i>	Present in the riparian swale
TRACHEOPHYTA/LILIOPSIDA	<i>Dieffenbachia seguine</i>	Present in the marsh forest
TRACHEOPHYTA/LILIOPSIDA	<i>Eichornia crassipes</i>	
TRACHEOPHYTA/LILIOPSIDA	<i>Eleocharis geniculata</i>	Present in the riparian swale
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Ficus maxima</i>	Present in the marsh forest
TRACHEOPHYTA/LILIOPSIDA	<i>Fuirena umbellata</i>	Present in the riparian swale
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Gymnanthes lucida</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Homalium racemosum</i>	Present in the marsh forest
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Ipomoea sagittata</i>	Present in the riparian swale
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Manilkara sideroxyton</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Manilkara zapota</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Nymphaea ampla</i>	
TRACHEOPHYTA/LILIOPSIDA	<i>Philodendron lacerum</i>	Present in the marsh forest
TRACHEOPHYTA/LILIOPSIDA	<i>Phragmites australis australis</i>	
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Piscidia piscipula</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Plumeria obtusa</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Rhizophora mangle</i>	Present in the sedge savannah
TRACHEOPHYTA/LILIOPSIDA	<i>Sagittaria lancifolia</i>	Present in the riparian swale
TRACHEOPHYTA/LILIOPSIDA	<i>Schoenoplectus americanus</i>	Present in the riparian swale
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Selenicereus grandiflorus</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Symphonia globulifera</i>	Present in the marsh forest
TRACHEOPHYTA/LILIOPSIDA	<i>Syngonium auritum</i>	Present in the marsh forest
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Tabebuia heterophylla</i>	Present in the marsh forest
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Talipariti elatum</i>	Present in the marsh forest
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Terminalia buceras</i>	Present in the limestone island
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Terminalia latifolia</i>	Present in the marsh forest
TRACHEOPHYTA/LILIOPSIDA	<i>Tillandsia fasciculata</i>	Present in the limestone island
TRACHEOPHYTA/LILIOPSIDA	<i>Tillandsia usneoides</i>	Present in the limestone island
TRACHEOPHYTA/LILIOPSIDA	<i>Typha angustifolia</i>	

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
ARTHROPODA/MALACOSTRACA	<i>Macrobrachium acanthurus</i>				
CHORDATA/AVES	<i>Anas discors</i>				
CHORDATA/AVES	<i>Nomonyx dominicus</i>				
CHORDATA/AVES	<i>Oxyura jamaicensis</i>				
CHORDATA/AVES	<i>Phoenicopterus ruber</i>				
CHORDATA/AVES	<i>Porzana flaviventris</i>				

Invasive alien animal species

Phylum	Scientific name	Impacts	Changes at RIS update
ARTHROPODA/MALACOSTRACA	<i>Cherax quadricarinatus</i>	Actual (minor impacts)	No change

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Aw: Tropical savanna (Winter dry season)

Temperature: The Lower Morass lies within the Trade Wind Belt and have tropical oceanic climate. The mean annual temperature ranges between 25.8°C in June and 34°C in February. In January - March, the weather is cool with a mean temperature of 24.4°C; June - September being the warm season has a mean temperature of 26.6°C.

Humidity: The annual humidity is less than 10%; however, its diurnal variation is much larger with the variation between early morning, evening and afternoon more than 25%. The annual mean relative humidity is 76%.

Sunshine and Evaporation: The daily sunshine averages 7.6 hours. Evaporation from Class-A pan averaged 5.35mm/day and 1,953mm per annum. The evapotranspiration from the swamp in the Lower Morass is approximately 5.4mm/day and 1,971mm per annum.

Wind: The average daily wind run is estimated at 94km. During the day, wind blows from the sea inland resulting in a pressure and temperature difference between sea and land.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The Black River watershed at 163,880 hectares is the largest in the island and in the river system; flows through the Black River Lower Morass Ramsar Site. s.

The Black River Lower Morass is divided into four regions:

- Eastern segment contains upper reaches of Broad River. Bounded by Santa Cruz Mountains and Burnt Savanna on east, Vineyard on outh, Cataboo in west and Cashew in North.
- Northwestern segment drained by Middle Quarters and YS Rivers; bounded by Holland Estate and Black River on east, Luana on south and west and Middle Quarters River the north.
- North-central segment with a variety of plant communities; bounded by the district of Frenchman in the north-east, Holland Pen in the south and the Black River to the west and north.
- Southern segment: contains mangrove complex, bounded by Cataboo on east, Fullerswood on southwest and Black and Punches River on west and north.

4.4.3 - Soil

Mineral

(Update) Changes at RIS update No change Increase Decrease Unknown

Organic

(Update) Changes at RIS update No change Increase Decrease Unknown

No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes No

Please provide further information on the soil (optional)

The soil types in the Lower Morass are based on:
 - Limestone: Primarily alluvium, originating from gneissose in the pre-cambrian era. As a result of the steep topography in some places, heavy showers have out washed finer fractions of these materials. Thus, the present texture quality of these places is generally sandy. Various bolder, cobbles, coarse fragments or stony layers intercalate few positions in the shallow profile.
 - Old Alluvium: Primarily fine deposits of specific particle size in a wide range from 15-50% clay, 25-45% silt and 5-65% sand. Fine to small gravel and/or fragments are also found in certain shallow layers.
 - Recent Alluvium: These materials are generally deep deposits in the floodplain of the Lower Morass which had been transported by the Black River and YS River. They are 35-40% clay, 10-15% silt, and 45-50% sandy particles. Additionally, deep sandy sediments are sometimes found in the natural levee.

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	unknown

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from groundwater	<input type="checkbox"/>	No change
Water inputs from precipitation	<input type="checkbox"/>	No change

Stability of water regime

Presence?	Changes at RIS update
Water levels fluctuating (including tidal)	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

There are seasonal variations in the flow of water with December – April associated with the lowest flows and May – June and October associated with the highest. The presence of a salt wedge is usually manifested during the months of January – February and is usually reduced with the increase in water flow. The Black River and its major tributaries the Middle Quarters, YS and Broad Rivers differ from each other in source, flow rate and water quality.

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site

(Update) Changes at RIS update No change Increase Decrease Unknown

Significant accretion or deposition of sediments occurs on the site

(Update) Changes at RIS update No change Increase Decrease Unknown

Significant transportation of sediments occurs on or through the site

(Update) Changes at RIS update No change Increase Decrease Unknown

Sediment regime is highly variable, either seasonally or inter-annually

(Update) Changes at RIS update No change Increase Decrease Unknown

Sediment regime unknown

Please provide further information on sediment (optional):

Water exits the systems via the various Rivers within the Morass to the coast where increased sediment plumes become noticeable during incidence of heavy rainfall.

4.4.6 - Water pH

Acid (pH<5.5)

(Update) Changes at RIS update No change Increase Decrease Unknown

Circumneutral (pH: 5.5-7.4)

(Update) Changes at RIS update No change Increase Decrease Unknown

Alkaline (pH>7.4)

(Update) Changes at RIS update No change Increase Decrease Unknown

Unknown

4.4.7 - Water salinity

Fresh (<0.5 g/l)

(Update) Changes at RIS update No change Increase Decrease Unknown

Mixohaline (brackish)/Mixosaline (0.5-30 g/l)

(Update) Changes at RIS update No change Increase Decrease Unknown

Euhaline/Eusaline (30-40 g/l)

(Update) Changes at RIS update No change Increase Decrease Unknown

Hyperhaline/Hypersaline (>40 g/l)

(Update) Changes at RIS update No change Increase Decrease Unknown

Unknown

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic

(Update) Changes at RIS update No change Increase Decrease Unknown

Mesotrophic

(Update) Changes at RIS update No change Increase Decrease Unknown

Oligotrophic

(Update) Changes at RIS update No change Increase Decrease Unknown

Dystrophic

(Update) Changes at RIS update No change Increase Decrease Unknown

Unknown

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the i) broadly similar ii) significantly different site itself:

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	
Fresh water	Drinking water for humans and/or livestock	not relevant for site
Fresh water	Water for irrigated agriculture	not relevant for site
Wetland non-food products	Other	not relevant for site

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Hazard reduction	Flood control, flood storage	not relevant for site

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Picnics, outings, touring	not relevant for site
Spiritual and inspirational	Cultural heritage (historical and archaeological)	
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	not relevant for site

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	not relevant for site
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	not relevant for site

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes No Unknown

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples

RIS for Site no. 919, Black River Lower Morass, Jamaica

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland

<no data available>

4.6 - Ecological processes

<no data available>

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Local authority, municipality, (sub)district, etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Provide further information on the land tenure / ownership regime (optional):

a) within the Ramsar site: The Black River Lower Morass Ramsar Site has a total of two thousand, two hundred and twelve (2212) parcels of land, fifty-four (54) are owned by the Commissioner of Lands and fourteen (14) by the St. Elizabeth Parish Council; a total of sixty four (64) are owned by the Government of Jamaica. The remaining parcels are privately owned (Valuation Roll April 1, 2002).

b) in the surrounding area: The lands surrounding the Black River Lower Morass Ramsar Site are a mixture of public and private landownership, with the majority being private.

5.1.2 - Management authority

While there is currently no single manager designated for the site, the primary management authority of the area is the National Environment and Planning Agency (NEPA) and in matters related to development and the use of heritage resources, the local government/parish council, St. Elizabeth Parish Council in conjunction with the Jamaica National Heritage Trust (JNHT) must also be consulted for approval.

Mr. Peter Knight JP.
Chief Executive Officer
National Environment and Planning Agency
10-11 Caledonia Avenue
Kingston 5
Telephone 876-754-7540
Email: ceo@nepa.gov.jm

Please list the local office / offices of any agency or organization responsible for managing the site:

Mrs. Laleta Davis-Mattis
Executive Director
Jamaica National Heritage Trust
79 Duke Street
Kingston, Jamaica
Telephone 876-922-3990
E-mail: jnht@wtjamnet

Mr. David Parkes
Secretary Manager
St. Elizabeth Parish Council
58 High Street
Black River, St Elizabeth, Jamaica
Telephone 876-965-2256

Provide the name and/or title of the person or people with responsibility for the wetland:

Peter Knight; Laleta Davis-Mattis; David Parkes

Postal address:

Mr. Peter Knight JP; Chief Executive Officer
National Environment and Planning Agency
10-11 Caledonia Avenue, Kingston 5
Email: ceo@nepa.gov.jm

E-mail address:

ceo@nepa.gov.jm

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Housing and urban areas	High impact		<input checked="" type="checkbox"/>	No change	<input type="checkbox"/>	No change

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Drainage	Medium impact		<input checked="" type="checkbox"/>	No change	<input type="checkbox"/>	No change

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Recreational and tourism activities	Medium impact	unknown impact	<input checked="" type="checkbox"/>	unknown	<input checked="" type="checkbox"/>	unknown

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Vegetation clearance/land conversion			<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Fire and fire suppression	unknown impact	unknown impact	<input checked="" type="checkbox"/>	unknown	<input type="checkbox"/>	unknown

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Invasive non-native/ alien species	Medium impact		<input checked="" type="checkbox"/>	No change	<input type="checkbox"/>	No change

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Agricultural and forestry effluents	High impact		<input type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Please describe any other threats (optional):

Increased tour trips on the Broad River and the feeding of crocodiles.

5.2.2 - Legal conservation status

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Conservation area	Black River Lower Morass		whole
Game Reserve	Lower Morass and Great Morass (Parottee Pond) as		partly

5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

<no data available>

5.2.4 - Key conservation measures

Habitat

Measures	Status
Land conversion controls	Implemented
Improvement of water quality	Implemented

Species

Measures	Status
Control of invasive alien plants	Implemented

Other:

Under the Permit and Licence Regulation (1996) which is under the Natural Resources Conservation Authority Act (1991), a permit is required for wetland modification, clearance or reclamation.

A Water Quality Monitoring, Early Warning and Response Programme spearheaded by NEPA and its partners has been implemented in the Black River Watershed inclusive of the Ramsar Site since 2010. A Black River-managed "Resource Protected Area Management Plan" was drafted to provide a framework of policy and action for the proposed Upper and Lower Morass (Massa et al., 1999).

Additionally, the Black River Biological, Social and Economic study with funding from the Ramsar Small Grants Fund was conducted with a view towards implementation for management.

The area has been proposed for protected area status; however, significant issues relating to land tenure have delayed this process. The government of Jamaica is currently finalizing a Protected Areas System and Master Plan which is expected will provide for greater harmonization of the management and protected areas process. This will redound to the benefit of this Ramsar site as it is expected that the designation of the area as a protected area under local law will then be possible.

5.2.5 - Management planning

Is there a site-specific management plan for the site? No

Has a management effectiveness assessment been undertaken for the site? Yes No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes No

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

The NEPA, non-governmental organizations and other interest groups conduct presentations, exhibitions and tours (e.g. World Wetlands Day) within the area aimed at enhancing public awareness and education of wetlands and the Black River Lower Morass in particular. The implementation of the Watershed Area Management Mechanism (WAMM) in the area has also resulted in significant public awareness activities being done.

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? Yes, there is a plan

Further information

in 2010 Jamaica commenced the implementation of the Watershed Area Management Mechanism (WAMM) in the Black River Lower Morass Ramsar Site. This WAMM was developed through the Global Environment Facility-Intergrating Watershed and Coastal Areas Management (GEF-IWCAM) project in the Driver's River Watershed Management Unit in the eastern end of the island in 2006-09. The mechanism is designed to provide watershed practioners, government agencies, NGOs, funding agencies and ordinary citizens, a simple, practical and flexible method of achieving sustainable watershed management using lessons learnt from previous projects as well as watershed initiatives, locally and regionally. There are 10 components in the WAMM and first five were implemented within the Black River Lower Morass Ramsar Site are: engaging communities, governance approach, reconnaissance of resources, capacity building through training and establishing indicators for assessment and evaluation. The last five components will be implemented between September and December 2011.

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water quality	Implemented
Water regime monitoring	Implemented

A Water Quality Monitoring, Early Warning and Response Programme spearheaded by NEPA and its partners has been implemented in the Black River Watershed inclusive of the Ramsar Site since 2010. The programme aims to effectively monitor and manage the natural resources within the Black River Basin. Long-term monitoring of the basin is essential to detect changes in this system so as to provide the basis for its proper management to generally safeguard public health and the ecological character of the area inclusive of the Black River Lower Morass Ramsar Site (BRLMRS). One major objective of the training exercises was to develop a cadre of individuals within local communities, designated as "First Responders" or "River Guardians", who collect water samples as soon as possible after a pollution incident and prior to the arrival of the formal response mechanism. Representatives from NEPA, other agencies and institutions have also been solicited to form a core technical group responsible for the transport and analysis of these samples.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

Asprey, A. and G. Robbins. 1953. The Vegetation of Jamaica. Ecological Monograph 23 (4). pp. 390-393.

Douglas, C. 1991. Black River Report. In: A Study for a System of Natural Protected Areas for Jamaica.

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Garrick, L.D. 1986. The Black River Lower Morass – a threatened wetland. Oryx, 20(3):155-160.

Grontmij, 1964. Black River Morasses Reclamation Project. Government of Jamaica, Kingston, Jamaica.

Johnson, Althea. 1988. The Artisanal Fishery of the Black River Lower Morass Jamaica: Traditional System of Resource Management. Edited by McGregor, Barker, Evans.

Jones, R., P. Wilson-Kelly, and M. Anderson. 1992. Wetlands Management in Jamaica. In: A.E. Lugo and B. Bayle eds. Wetlands Management in the Caribbean and the Role of Forestry and Wetlands in the Economy. Institute of Tropical Forestry and the Caribbean National Forest. pp 36-39.

Massa, A.K. and A.H. Sutton. 1999. Black River Managed Resource Protected Area, St. Elizabeth, Jamaica – Management Plan. Prepared for the Natural Resources Conservation Authority (NRCA) and United States Agency for International Development (USAID) Development of Environmental Management Organisations Project (DEMO).

Neufville, Z. 1990. Black River Morass Seriously Endangered. The Jamaica Record.

Petroleum Corporation of Jamaica. 1983. Summary Report, Environmental Feasibility Study of Peat Mining in Jamaica.

Proctor, G.R.1964. The Vegetation of the Black River Morass. Unpublished paper.

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Sutton, A.H and B. Hay, B. 2003. Surveys of Migratory Ducks in Jamaican Wetlands. Phase 2.

Wade, B. 1985. The Black River: Waterway, Wetlands and a Way of Life. Jamaica Journal L7 (4); 10-23.

Webber, D., R. Maharaj, K. Gayle, A. Morgan, C. Campbell, S. Azan. 2002. Towards the Management of the Black River Morass (Ramsar Site): Gathering Biological, Social And Economic Data. Prepared for Natural Resources Conservation Authority (NRCA).

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<no file available>

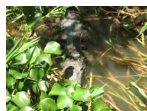
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6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Black River Lower Morass (NEPA, 24-09-2018)



Black River Lower Morass (NEPA, 24-09-2018)



Black River Lower Morass (NEPA, 24-09-2018)



Black River Lower Morass (NEPA, 24-09-2018)

6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation 1997-10-07