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Methodology: The sample collection was carried out after direct observation. Using a motorized canoe, we docked on islands for sample collection as well as in the swampy areas of the Kinkole Islands. We also collected invasive species in the middle of the Congo River. The recorded species were classified either as alien species or as invasive alien species depending on the status in the study region. The botanical classification of the species was made according to APG III (2009). Environmental impacts have also been taken into account.

Results: Among the collected specimens 12 species were recognized as exotic and 2 species were found to be invasive alien species. These are Echinochloa pyramidalis and Eichhornia crassipes. These species pose a serious threat from the erosion of aquatic biodiversity. These species form a monospecific mat and eliminate native or autochthonous species from the aquatic or riparian flora.

Conclusion: the invasion of alien species is a consequence of human activities and a concern, as they affect all sectors of society. The invasion of these species presents a real challenge for environmentalists, economists, social scientists, agricultural engineers, and others. Hence the need to develop and implement robust risk analysis frameworks and environmental impact assessments.

Keywords: invasive alien plants, environmental impacts, pool malebo, kinshasa, DR. congo.

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I. Introduction

Invasive alien species are considered as the second cause of biodiversties's erosion, here seen as a decline in biodiversity just after habitat destruction and fragmentation (Genovesi and Shine, 2004). The socio-environmental impacts associated with plant invasions are increasingly recognized around the world and are expected to increase dramatically due to climate change or land use (Dukes & Mooney, 1999; Hellmann et al., 2008; Vicente et al., 2019) cited by Akodewou, (2019). Apart from their negative or positive impacts on biodiversity (Downey & Richardson, 2016; Mostert et al., 2017), invasive plants also have positive economic, social and ecological contributions (Wagh & Jain, 2018) and whose populations local people have a good knowledge. Local people assess the impact of invasive plants based on how their socio-economic needs are influenced by these species (Shackleton et al., 2007; Rai et al., 2012). In Africa, several invasive plant species are used by local populations who also have the knowledge to manage these plants. Depending on the uses made of it, better knowledge and management of invasive plants could help improve the living conditions of populations (Akodewou, op cit).

Species and ecosystems constitute the biological diversity of the earth, and are so important that their loss and degradation handicap nature. Species other than ours have a right to exist and to a place in the world. We are unable to determine which species are essential or redundant for the functioning of a given ecosystem and which will flourish in a changing world.

When a new species is introduced into an ecosystem, often the impact is not immediately apparent, it will take a fairly long period of time (5 years, 10 years) to realize its environmental impacts.

An alien species is a plant, animal, including fish, or micro-organism that has been introduced as a result of human activity, other than its natural range. They are sometimes referred to as alien species or non-native species (CBD, 2004).

In the Democratic Republic of the congo with regard to the socio-environmental considerations mentioned below , a floristic inventory of invasive exotic aquatic plants was carried out in August 2020 in 3 Islands of The malebo pool : Molondo, Mipongo, and Japon.

II. Site, Material and Methods

a) Study environment

The Malebo pool, formerly called Stanley Pool, (Figure 1), is the terminal part of the middle course of the Congo River (Teugels and Guégan, 1994). It stands at an average elevation of 272 m and ranges from 4° 05 to 4° 20 'South latitude and 15° 19' to 15 ° 19 'to 15° 32' East longitude. It is the widening of the Congo River located on the border between the Democratic Republic of Congo (Kinshasa city) and the Republic of Congo (Brazzaville City). The word pool is an English term meaning "swimming pool" or "lake". This term is used in Congo to designate the vast body of water located between Kinshasa and Brazzaville (Pwema K.V, 2014).

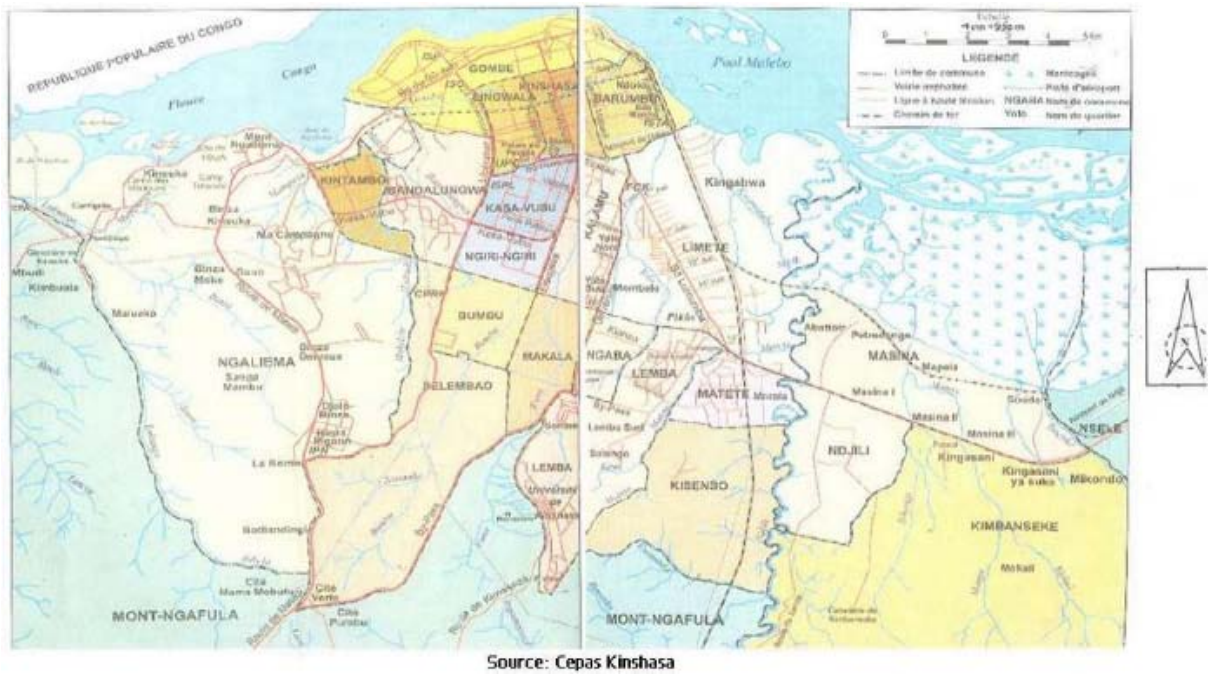

Figure 1: Kinshasa City and Pool Malebo

The Malebo Pool refers to the palm trees (*Borassus aethiopum* Mart, Syn. Borassus flabelifere), locally called Malebo, which abundantly displays the banks and islands of Pool Malebo as well as the alluvial plain of Kinshasa. Pool Malebo is dotted with numerous islets and temporary sandbanks (Lelo Nzuzi, 2008); Mbamou Island, which covers an area of approximately 180 km2, occupies the center. It is entirely part of the Republic of Congo and forms, in its eastern limit, the border with the Democratic Republic.

b) Climat

i. *Temperature and precipitation*

The Pool Malebo region have an equatorial to tropical climate (Léveque and Paugy, 1999). Two great seasons characterize the climate of this region. Three dry months (June, July, and August) and nine rainy months (September to May) with a short dry season that occurs between January and February. The most abundant precipitation is observed in November, December and March. The driest month is July.

The city of Kinshasa being in the climate of low altitude is characterized by a hot and humid tropical climate of type AW4 according to the classification of Köppen (Bultot, 1950). There is an alternation of two seasons: a dry season going from June to September and a rainy season going from September to the end of May.

c) Study material

i. *Field equipment*

The field work was summarized in the floristic inventory on Pool Malebo at the sites of Molondo, Mipongo and Japan. The collection and determination of aquatic botanical specimens required the following material;

- The Camera (Motorola (moto g (6) play 7791;
- Identification keys; as well as the flora of Central Africa;
- Knife; GPS (Etrex / Venture / Garmin; Made in Field notebook;
- Pen and pencil

d) Biological material

The plants collected constitute the biological material of this study.

e) Methods

i. *Flora study*

The identification of the plants in the field was done by ourselves; those whose identification was hardly possible on site - because the samples present were either botanically sterile (absence of flower and fruit) or lacking identification keys in our possession - were brought back. to the Laboratory of Systematic Botany and Plant Ecology in order to undergo a taxonomic verification for the specimens already identified in situ, as well as a suitable identification by comparison with the dead floristic collection kept at the Herbarium of the University of Kinshasa IUK and the national institute for agricultural study and research (INERA)for unidentified specimens in the field.

f) Ecological studies

i. *Biological types (BT.)*

The biological types are morphological arrangements by which plants show their adaptation to the environment in which they live (Dajoz, 1975). For (Mandango, 1981), phytogeographers are unanimous in affirming that biological forms explain the physiognomic and ecological organization of the vegetation of a territory or region.

The classification of biological types is inspired by Raunkiaer as adapted to tropical regions by Lebrun, (1947, 1960 and 1966) and taken up by Schnel (1971), taking into account the behavior of species to protect their buds or their young shoots during bad weather. season. The following types Biologys have been recognized in the florula of these islands s:

1. *Phanerophytes (Ph)*

These are trees, shrubs and lianas whose persistent shoots or buds are located at a notable distance on the air axes. They are endowed with a more or less long persistence.

The diversification of these biological types has made it possible to distinguish the following subdivisions:

- *Mesophanerophytes (MsPh):* trees whose renewal organs are located between 10 and 30m above the ground.
- *Microphanerophytes (McPh):* shrubs whose buds are located in the space between 2 and 10m above the ground.)
- *Nanophanerophytes (NPh):* sub-shrubs and bushes whose young shoots can be seen at a height of less than 2m.)
- *Climbing phanerophytes (Phgr):* they are twining lianas which climb to the top of trees by various means of attachment.

2. *Chaméphytes (Ch)*

They are herbaceous or subline plants whose perennial buds are located less than 50 cm above the ground.

It is:

- *Erect chaméphytes (Chd):* subline plants with an erect or erect aerial axis.
- *Climbing chaméphytes (Chgr):* these are under - woody plants whose herbaceous part wraps around a support.)
- *Prostrated chaméphytes (Chpr):* these are subline plants whose aerial axis, generally branched, remains lying on the ground at its base.
- *Creeping chaméphytes (Chrp):* these are subline plants with a stem lying on the ground, emitting adventitious roots at the nodes.
- *Chaméphytes cespiteux (Chces):* sub-woody plants with many stems from the base

3. *Hemicryptophytes (Hc)*

They are herbaceous plants whose renewal organs are sheltered at shallow depths in the soil. There are the following types:

- *Cespitose hemicryptophytes (Hces):* plants whose buds or young shoots are protected by shells from the evergreen leaves forming a sheath around the buds and young replacement axes.
- *Geophytes (G):* These are perennial herbaceous plants whose renovation buds remain buried in the soil during the unfavorable period. There are the following types:
- *Bulbous geophytes (Gb):* plants whose renovation organs are bulbs.
- Tuberous geophytes (Gt): plants whose perennial organs are made up of tubers.
- *Rhizomatous geophytes (Grh):* plants whose renovation organs are represented by rhizomes (underground stems).

4. *The Therophytes (Th)*

These are herbaceous plants that present the extreme case of adaptation to climatic rigors. The whole plant disappears or at least only remains in the seed state at the end of the favorable period for its development.

It is:

- *Cespitose Therophytes (Thces):* grasses forming radical or axial tufts.
- *Erect Therophytes (Thd):* plants with an aerial vegetative apparatus formed by an erect or erect stem.
- *Prostrate Therophytes (Thpr):* herbaceous plants whose stem is half-lying at its base.
- *Climbing therophytes (Thgr):* these are lianiform annuals.

5. *Hydrophytes (HD) these are plants with perennial organs located in water. We find*

Hydrophytes and pelophytes, the latter are rooted in the mud (mud).

i. *Types of diaspores (T.D).*

Diaspores are organs capable of regenerating, through various modes of dissemination, corresponding plant individuals. Based on the categorization of the morphological types of diaspores defined by Dansereau and Lems in Lejoly and Mandango, (1982), Schnel (1968) and, Lacoste and Salonon, (1998), the following types were recognized on the inventoried sites:

1 ° *Anemochoric plants*

The dissemination of plants is ensured by the wind.The types of diaspores recognized in this category are:

- *Pterochora (Ptero):* diaspores with aliform appendages scattered over short distances;
- *Pogonochores (Pogo):* diaspores with feathery or silky appendages like crested fruits and seeds, stipites or sessile with a slight tuft of hairs at the end;
- *Sclérochores (Scléro):* relatively light non-fleshy diaspores which can be carried by the wind over great distances.

2 ° *Zoochorous plants*

The dissemination of plants is ensured by animals, including humans. Their diaspores are represented.

- *Desmochores (Desmo):* hanging or adhesive diaspores. Sarcochores (Sarco): totally or partially fleshy diaspores.

3 *Autochthonous plants*

The transport of diaspores is under the effect of gravity; they are plants with an autonomous mechanism of dispersion. These are:

Ballochores (Ballo): diaspores expelled by the plant itself as a result of movements due to alternating pressure of drought and humidity.

Barochores (Baro): non-fleshy but heavy diaspores falling at the foot of the mother plant and regeneration takes place on site.

4. hydrochloric plants The transport of diaspores is provided by water. This transport can be either in fresh water, it is hydrochory, or in marine or brackish water, it is thalassochory. We recognized: the Pleochores (Pleo): diaspores equipped with a flotation device

g) Biological spectra

Biological spectra reflect the respective importance of biological types in the flora of a territory or within a plant community. A distinction is made between the raw spectrum and the weighted or real spectrum.

i. *Raw spectrum (S.B)*

The raw spectrum is determined by the number of species identified in each group in accordance with the eco-morphological criterion considered. The results obtained being expressed as a percentage according to the following formula:

S.B. =

h) Chorological study

The study of phytogeographic distribution (D.P) is inspired by the chorological divisions recognized for tropical Africa by the following authors: Lebrun, (1947, 1960 and 1966), MULLENDERS, (1954); EVRARD, (1968); AUBREVILLE, (1962); WHYTE, (1979) and DENYS, (1980).

1 ° *Species with very wide distribution*

- Cosmopolitan species (Cosm): plants found both in tropical and temperate zones of the world;
- Pantropical species (Pan): plants observed in all tropical regions of the globe;
- Afro-American species (Aa): plants found in Africa and tropical America;
- Paleotropical species (Pal): plants distributed in the tropics and subtropics of the old world (Africa, Asia);
- ✓ Afro-Malagasy species (Am): species from regions of tropical Africa and the island of Madagascar.

2 ° *Species of the Guinean base element*

These are plants distributed in the Guinean - Congolese region (region of African forests). This element consists of:

- *Guinean - Congolese species (GC):* plants found in all regions of the African equatorial forest (region from Guinea to Congo);
- *Guinean species (G):* plants whose distribution covers all of West Africa;
- ✓ *Congolese species (C):* endemic species in the Congo Basin.

III. Results

a) Floristic inventory of aquatic plants

The general floristic list of the different work sites indicates the presence of 19 species including 2 Pteridophytes and 17 Angiosperms, divided into 19 families, 12 orders. Classified according to the alphabetical enumeration of species, the floristic list of the presence and absence of species according to the study sites is given in Table 2.

The geographical coordinates taken by the brand GPS: (etrex/Venture/Garmin; which give the location of the sites where we collected our data, are included in the appendix.

Table 1 presents the general list of species listed on the different sites; they are classified into clades, orders and families in accordance with the new phyllogenetic classification system APG III, and the Pteridophytes determined according to CRONQUIST (1968). The floristic list of exotic species found among these species is given in Table 2, which presents 11 species also classified in alphabetical order.

The list of the most invasive alien species on the sites is given in Table 3 while Figure 2 represents the survey sites.

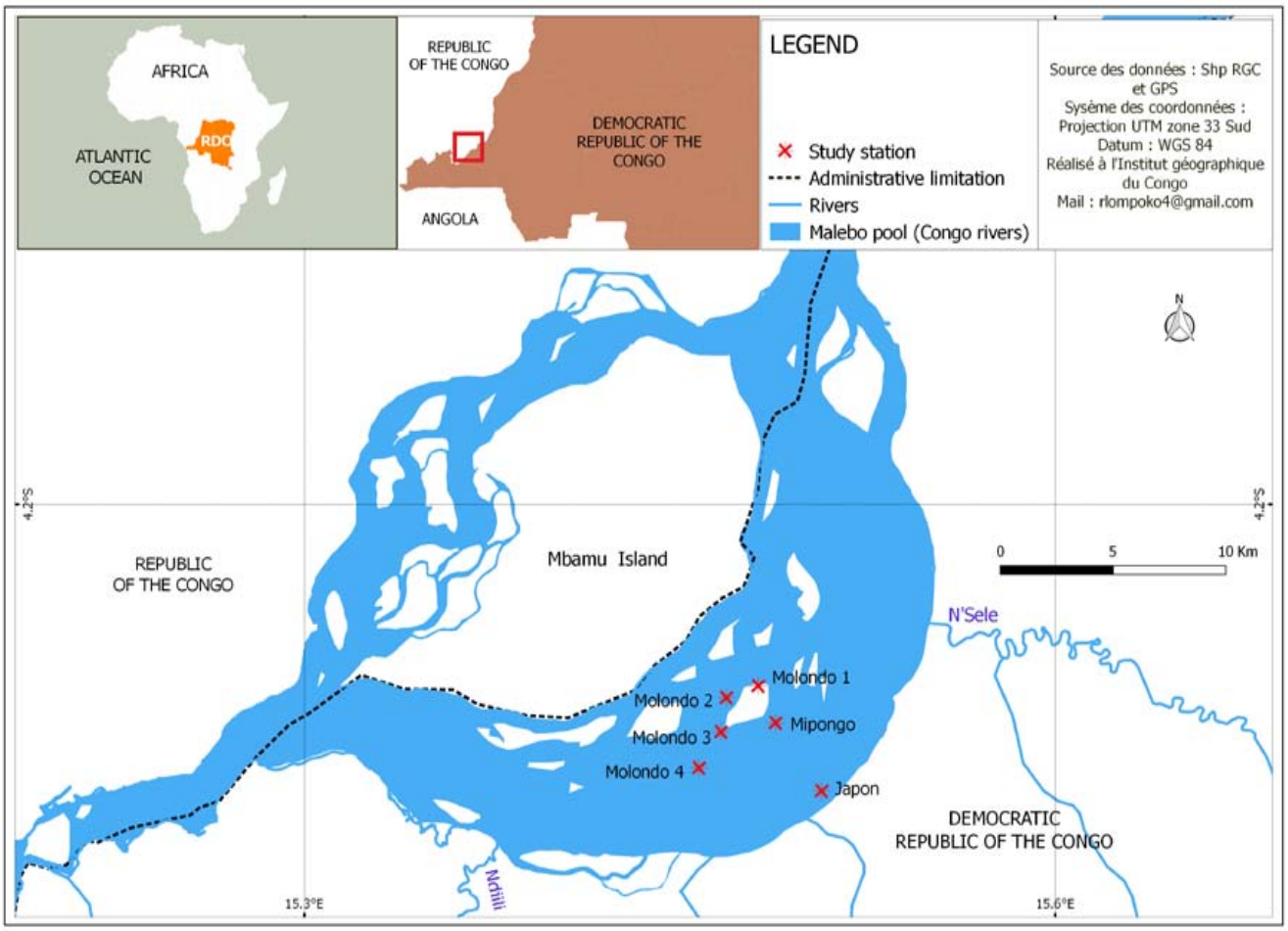

Figure 2: Mapping of prospecting sites

Table 1: General list of species recorded at the three Kinkole sites (Molondo, Mipongo, Japan)

Classification phylogénétique	TB	TD	DP
Clade Angiosperms			
Clade Rosidae/Malvidae			
O.1.Myrtales			
F1. Onagraceae	Chd	Sclero	GC
Es1. Ludwigia abyssica A. Rich.	Chd	Sclero	Aa
Es2..Ludwigia leptocarpa (Nutt) Hara			
Clade : True dicotyledonous core			
O.2. Caryophyllales	Ch	Sar	Pan
F2. Amaranthaceae			
ES3. Alternanthera sessilis (L.) DC.			
Clade : Lamidea	Hdfl	Ptero	Pan
O.4. Solanales			
F3. Convolvulaceae			
Es4. Ipomoea aquatica Forsk	Hd	Pleo	Pal
Clade : Angiosperms			
O.5Nymphaeales			
F4 Nymphaeaceae	Chrp	Scléo	Pan
Es5. Nymphaea lotus L			
Clade : Angiosperm	Hd	Scléo	Pan
O. 6.Commelinales			
F5 Commelinaceae	Hdfl	Pléo	Pan
Es6. Commelina diffusa Burm.F	Gt	Sarco	Pan
F6. Pontederiaceae			
Es7.Eichhornia crassipes (Mart)	Grh	Scléro	C
O.7.Alismatales			
F7. Araceae	Grh	Scléro	Pan
Es8. Pistia stratiotes L	Grh	Pléo	Pan
Es9. Colocasia esculenta (L) Schott			
O.8. Poales			
F8. Cyperaceae			
Es10. Cyperus papyrus L	ch	scléro	Pan
F9 Poaceae			
Es11. Echinochloa pyramidalis(Lam)			
Es12. Leersia hexandra (Sw)	Th	Scl	Pal
Clade : Tracheophytes			
Clade : Angiosperms			
Clade : Eudicots			
O.9. Caryophyllales			
F10 Polygonaceae			
Es13. Polygonum lanigerum	NnPh	Bal	At
O.10.Caryophyllales	NnPh	Bal	Am
F11Gisekiaceae			
Es14.Gysekia pharnaceiodes L.			
Clade : Angiospermes			
Clade : Dicotylédones vraies			
Clade : Noyau des dicotylédones vraies	Th	Scléo	Pan
Clade : Rosidées			
Clade : Fabidées			
O.11. Fabales			
F12 Fabaceae			
Es15.Aeschynomene fluitans L.	Grh	Pléo	Gc
Es16. Aechinomum sensitiva Swartz			
Clade : Asteridées	Hd	Pléo	Gc
Clade : Lamidées			

O.12.Gentianales F13 . Rubiaceae *Es17. Oldenlandia affinis* (Roem.&Schult.). Phyllum: Pteridophyta/ Filicopsida O.13. Selaginellales F14 Selaginellaceae *Es18.Selaginella myosorus* L O.14. Hydropteridales F15 Salviniaceae *Es19. Salvinia molesta* D.S.Mitchell			

Legend: biologiques Types (TB): Msph = Phanerophytes, Ch= Chamephytes, Th=Therophytes, Hc=Hemicryptophytes, Hd= Hydrophytes, Geophytes, Nanophanerophytes (NPh) .

Type of Diaspora (TD): Ptero= ptérochore, Pogo= Pogochore, Sclèro= Sclèrochore, Desmo= Desmochore, Sarco= Sarcochore, Ballo= Ballochore, Baro= Barochore, Plèo=Plèochore.

Phytogeographical Distribution (DP): Cosm= cosmopolit, pan= pantropical, Aa = Afro-americain, Pal= Paleotropicale, At=Afro-malgache, Gc= Guineo-congolese, Congolaise C= congolaise Am =Afro-malgache.

The table 1 presents the general list of aquatic plants collected in the various prospecting sites comprising 19 species divided into 15 families, 14 orders in two Phyllum including the Pteridophytes and Angiosperms.

Table 2: Comparison of the vegetation of the studied sites

Family / species	Molondo	Mipongo	Japon
Onagraceae			
1. *Ludwigia abyssica A. Rich.*	+	+	+
2. *Ludwigia leptocarpa* (Nutt) Hara	+	+	-
. Amaranthaceae			
3. *Alternanthera sessilis* (L)DC	+	+	+
. Convolvulaceae			
4. *Ipomoea aquatica* Forsk	+	+	+
. Nymphaeaceae			
5. *Nymphaea lotus* L	+	-	-
Commelinaceae			
6. *Commelina diffusa* Burm.F	+	+	+
Pontederiaceae			
7. *Eichhornia crassipes* (Mart)	+	+	+
Araceae			
8. *Pistia stratiotes* L	+	+	+
9. *Colocasia esculenta* (L) Schott	+	-	-
Cyperaceae			
10. *Cyperus papyrus* L	-	-	+
Poaceae			
11. *Echinochloa pyramidalis*(Lam)	+	+	+
12. *Leersia hexandra* (Sw)	+	-	-
Polygonaceae			
13. *Polygonum lanigerum*	+	+	+
Gisekiaceae			
14. *Gysekia pharnaceiodes* L.	-	+	+
Fabaceae			
15. *Aeschynomene fluitans* L.	+	-	-
16. *Aechinomum sensitiva* Swartz	-	+	+
Rubiaceae			
17. *Oldenlandia affinis* (Roem.&Schult.).	-	+	-
Selaginellaceae			
18. *Selaginella myosorus* (Sw.) Alston.	+	-	-
Salviniaceae			
19. *Salvinia molesta* D.S.Mitchell	+	+	+
Total espèces par site	15	13	12

Legend: + presence / - absence

b) Study of ecological spectra

i. *Raw spectra of biological types*

The various tables, showing the figures and calculations for each spectrum are given in appendix 1.

The spectrum of biological types is given in Figure 3 below.

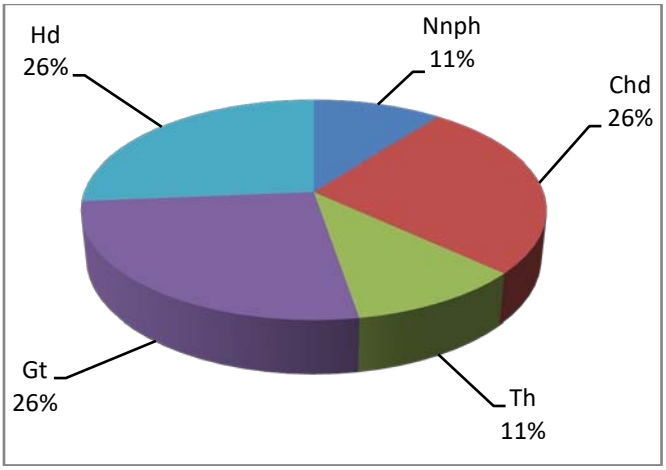

Figure 3: Raw spectrum of biological types

This diagram provides information on the strong dominance of Chaméphytes, Geophytes and Hydrophytes with respectively 26.3% each followed by Nanophanerophytes and Therophytes with a low representation (11%).

Figure 4 gives the chorological distribution of different inventoried taxa.

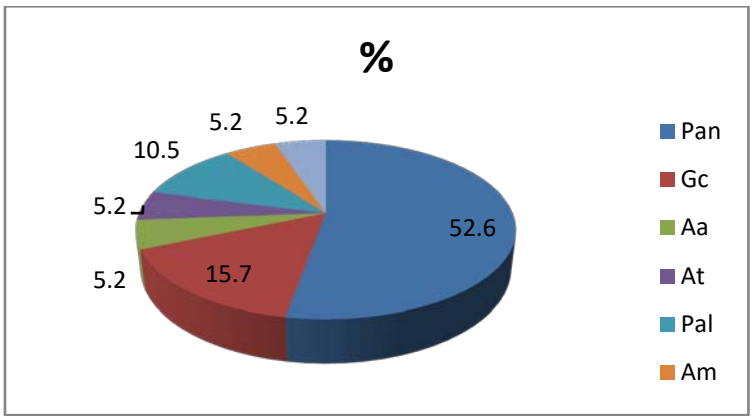

Figure 4: Raw spectrum of distribution types of phytochories

We note in this figure 4 the strong dominance of Pantropical species (52.6%), Guinean-Congolese species (15.7%) and Paleotropics (10.5%). The other phytochories are weakly represented with 5.2% respectively.

The raw spectrum of the type distribution of the diaspores of the species listed is given in figure 5

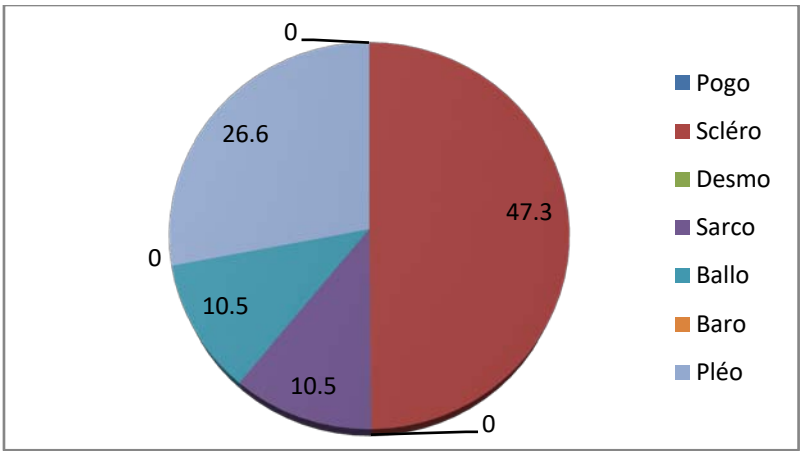

Figure 5: Raw spectrum of diaspora types

The data in Figure 5 show a clear predominance of sclerochoric species (47.3%), followed by Pleochores (26.6%), while sarcochores and ballochores respectively represent only 10.5 of the florula studied. Note the absence of desmochoric species.

Table 3 below shows the exotic species.

Table 3: Exotic species listed after the inventory

Family / species	D.P
. Amaranthaceae	
1 .*Alternanthera sessilis* (L)DC	Pan
. Convolvulaceae	
2. *Ipomoea aquatica* Forsk	Pan
. Nymphaeaceae	
3. *Nymphaea lotus* L	Pan
Commelinaceae	
4. *Commelina diffusa* Burm.F	Pan
Pontederiaceae	
5. *Eichhornia crassipes* (Mart)	Pan
Araceae	
6. *Pistia stratiotes* L	Pan
7. *Colocasia esculenta* (L) Schott	Pan
Poaceae	
8. *Echinochloa pyramidalis*(Lam)	Pan
9. *Leersia hexandra* (Sw)	Pan
Polygonaceae	
10. *Polygonum lanigerum*	Pan
Gisekiaceae	
11. *Gysekia pharnaceiodes* L.	Pan
Rubiaceae	
12. *Oldenlandia affinis* (Roem. & Schult.).	Pan

Legend: D.P=phytogéographic distribution / Pan : Pantropical

The two aliens exotic species are listed in the table 40

Table 4: Invasive alien species found at the three study sites

Invasive alien species	Observation
1 .*Echhornia crassipes* 2. *Echinochloa pyramidalis*	Very invasive: Mono specific mat formation always in association with *Echinochloa pyramidalis*

Photos of different sites illustrating species invasions in Pool Malebo are shown below.

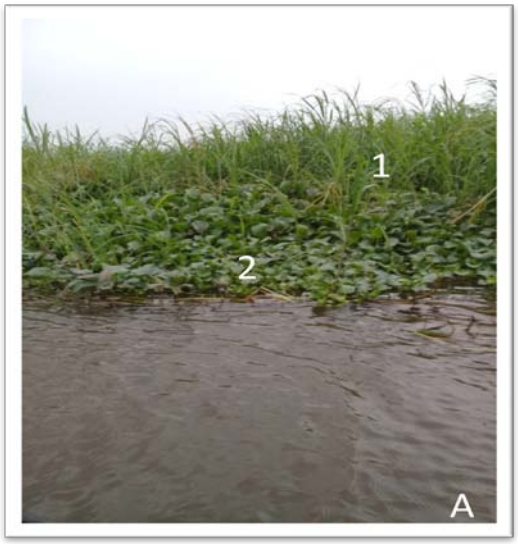

Photo A: *Eichhornia crassipes* (2) and *Echinochloa pyramidalis* (1)
(Photo Mukendi, 2020 Mipongo site)

B

Photo B: *Eichhornia crassipes* (2) and *Echinochloa pyramidalis* (1) (Photo Mukendi, 2020, Mipongo Site).

Photo C: *Echinochloa pyramidalis(1)* 2 and *Ipomoea aquatica (2)* (Photo Mukendi 2020). (Molondo collected site)

Photo: *Echinochloa pyramidalis* in the site de Molondo (Photo Mukendi, 2020)

Photo: *Eichhornia crassipes* and *Echinochloa pyramidalis* in Japon site (Photo Mukendi 2020)

IV. Discussion

The study of invasive aquatic exotic plants in the hydrographic network of the city of Kinshasa, at Pool Malebo, in the three islands (Molondo, Mipongo and Japon), at Kinkole, identifies 19 plant species including 12 exotic species and 2 species. Invasive alien. These results show that the aquatic flora of Kinshasa is polluted with the presence of many exotic species (63.16%). This is explained by the fact that aquatic environments are often open, and hydrochory is also one of the most effective modes of dispersal of diaspores.

The study conducted by of N'guessa and Pedia (CDB 2013) showed that the flora of Côte d'Ivoire contains 3853 plant species, including 240 species (6.2%) exotic or introduced. Of these, 20 species (8.3%) are invasive alien species. Ten species are found in the hydrographic network of Côte d'Ivoire. These are: Eichhornia crassipes, Echinochloa pyramidalis, Pistia stratiotes, Salvinia molesta, Nelumbo nucifera, Typha australis, Polygonum lanigenum var africanum, Bacopa crenata, Hydrolea glabra and Paspalum vaginatum (CDB, 2013).

In the Democratic Republic of Congo, this study on the vegetation of the islands of the river supports the work of Mbale et al, (2019), on the inventories of invasive exotic flora in Pool Malebo and other rivers including the Lukaya and La Funa which reveal Eichhornia crassipes and Echinochloa pyramidalis as invasive species.

The results of this study also show that out of the 19 plant species collected in general, 12 species are exotic and only 2 show invasive behavior. As in Ivory Coast, Eichhornia crassipes, and Echinochloa pyramidalis are part of the procession of exotic species but also invasive alien species.

In Benin, the water hyacinth, has been discovered in 1977 in the Sô river, became ten years later the worst aquatic plant. The population calls it "Togble" which means "the country is in ruins". It is one of two invasive aquatic alien plants that have been reported in Benin: Eichhornia crassipes and Pistia stratiotes (ANONYMOUS, 2004).

V. Conclusion

The floristic study of invasive alien aquatic plants in Kinshasa is part of the work relating to the achievement of the Aichi targets, Objectives 9 and 19 of the Nagoya 2010 protocol.

The present study is research involving a territory whose vegetation cover is increasingly being impacted by hydrological and anthropogenic parameters by the introduction of exotic species. Indeed, anthropogenic fishing, market gardening and rice cultivation activities on the banks of the Congo River sometimes lead to allocthon species being introduced into the aquatic environment of the islands of the river. The inventory of the flora prospected indicated the presence of 19 species in general, including 2 Pteridophytes and 17 Angiosperms, divided into 19 families, 14 orders.

The present study revealed the presence of 12 exotic plants, 2 of which are invasive in environments: *Eichhornia crassipes* and *Echinochloa pyramidalis*. These two species deserve increased surveillance, as they pose major challenges for the navigability of rivers, and the invasion of fishing sites, sometimes completely

modifying the spawning areas of fish. Ecological analysis revealed that this flower is predominantly dominated by Sclerochores and Pleochores.

Species recorded in Kinshasa highlighted the existence of a disturbed flora dominated by species with a very wide distribution which, over time, have supplanted those of the Guinean base element whose disappearance in the prospected perimeter confirms makes explicit the anthropogenic regressive evolution. The Congo Basin is very large, and the Congo River has several tributaries likely to be colonized by aquatic species. It is therefore recommended to widen the prospecting field in order to identify and list the exotic and/or invasive aquatic species of the Congo's aquatic flora. This study will be long-term, but it deserves to be undertaken before the aquatic ecosystems are sufficiently degraded, with the risk of losing many aquatic species in our country.

Botanists, biodiversity defenders and political decision-makers are therefore invited to become aware of this aspect of the problem, and to take appropriate measures to manage to protect the local aquatic flora, and avoid the invasion by exotic species of the aforementioned. flora.

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Annexes

Appendices

Photo Mukendi 2020 *Echinochloa pyramidalis sur le Pool Malebo*