

RESEARCH PAPER**OPEN ACCESS****Environmental and socio-economic impacts of pollution by *Eichhornia crassipes* (Mart.) Solms in the waters of Dams No. 2 and No. 3 in the city of Ouagadougou, Burkina Faso****Florent Y. Lankoande^{*1}, Jerome T. Yameogo², Asseta Tabsoba³, S. E. I. Bama¹**¹*Département de Vulgarisation et de Communication Agricole, Institut du Développement Rural, Université Nazi Boni, Bobo-Dioulasso, Burkina Faso*²*Laboratoire Bioressources, Agrosystèmes et Santé de l'Environnement (LaBASE), Université Nazi Boni, Bobo-Dioulasso, Burkina Faso*³*Direction Générale de la Préservation de l'Environnement, Ministère de l'Environnement, De l'Eau et de l'Assainissement, Burkina Faso***Key words:** *Eichhornia crassipes*, Pollution, Impacts, Dam, Burkina FasoDOI: <https://dx.doi.org/10.12692/jbes/27.5.59-68>**[Published: November 08, 2025]****ABSTRACT**

Wetlands, essential habitats for biodiversity, provide important resources and environmental services and play a role in combating climate change. However, in Burkina Faso, dams No. 2 and 3 in Ouagadougou, in the central region, Kadiogo province, are experiencing degradation due to the invasive presence of *Eichhornia crassipes*. To assess the environmental, social, and economic impacts of the invasion of *Eichhornia crassipes* on the local populations around dams No. 2 and 3 and on their activities, a methodology was set up. This methodological approach was based on a mixed-methods strategy, including, on one hand, semi-structured interviews with local residents and institutional officials, and on the other hand, a water sampling campaign. The study results revealed that these dams were being filled in by an invasion of *Eichhornia crassipes*, leading to decreased fish yields, the emergence of waterborne diseases, disruptions in boating activities, congestion of irrigation infrastructure, reduced navigable areas, and the appearance of diseases in livestock. The most concerning pollution parameters are suspended solids (14.8 mg/l to 22.2 mg/l), nitrites (0.166 mg/l to 0.233 mg/l), Chemical Oxygen Demand (128.4 mg/l to 59.4 mg/l), 5-day Biological Oxygen Demand (40.2 mg/l to 20.4 mg/l), fecal streptococci (16,760 CFU/100 ml to 13,000 CFU/100 ml), fecal coliforms (28,053.8 CFU/100 ml to 23,226.4 CFU/100 ml), and *Escherichia coli* (860 CFU/100 ml to 720 CFU/100 ml). The analysis results did not reveal any significant difference between the different sampling points for all parameters, except for pH and TSS. These results are important for the preservation of these wetlands and the implementation of an ecological management strategy aimed at restoring these environments.

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INTRODUCTION

The issue of water is a topic of growing international concern and debate. The International Conference on Water and the Environment held in Dublin highlighted the indispensability of water for life on Earth, its scarcity, its increasing value, and the need for its management (Keller, 2008). This importance of water for life gives wetlands several functions, including maintaining biodiversity, supplying water, regulating the hydrological regime, and so on. In Burkina Faso, a Sahelian country where water resources are limited, there is a progressive disappearance and pollution of wetlands (Yamba, 2021) due to the diversity and multiplicity of pollution sources (Kerim, 2006), thereby increasing the prevalence of waterborne diseases (Aissaoui, 2013). The phenomenon of climate change, accelerated urbanization, population growth, industrial expansion, and agricultural development constantly lead to a certain degradation of the quality of surface and groundwater resources, thus jeopardizing their availability and limiting their use for future generations (Rousset, 2007). In addition to these challenges is the phenomenon of biological invasions, which have also experienced significant growth since the early 1990s (IUCN, 2000). Considered the second leading cause of destruction of terrestrial and aquatic ecosystems worldwide, invasive plants are found in all countries around the world. Wetlands are particularly vulnerable to invasions (Moyle and Light, 1996; Van Der Velde *et al.*, 2006).

Although these represent less than 6% of the earth's surface, 24% of the world's most invasive plants are species related to aquatic environments (Zedler and Kercher, 2004). In Burkina Faso, several aquatic environments are invaded by plant species that cause numerous problems, including the covering of water surfaces, limiting light penetration, and the clogging and drying out of stagnant waters (Etien and Arfi, 1996). Invasive plants cause significant losses across a variety of economic sectors. Most of this damage is related to the decrease in land value and agricultural productivity, as well as the expenses allocated to controlling these invaders (Pergl *et al.*, 2016). Indeed, the presence of invasive plants in agricultural fields

leads to a decrease in their productivity due to competition with cultivated plants (Pimentel, 2011). At dams No. 2 and 3 in Ouagadougou, Burkina Faso, *Eichhornia crassipes* is one of these invasive aquatic plants that grows on the surface of water bodies and in wetlands. *Eichhornia crassipes*, originally from the Amazon basin, has since the 1950s become a true scourge on waterways in Africa (Dagno *et al.*, 2007). Its proliferation causes serious ecological, economic, and health consequences. The social repercussions of invasive plants mainly concern impacts on human health and well-being, the degradation of the quality of natural spaces used for aesthetic and tourism purposes, the loss of enjoyment of these environments, and the obstruction of certain recreational and tourism activities (ACIA, 2008). In terms of health, it creates an environment conducive to the emergence of certain diseases such as malaria and schistosomiasis and is home to venomous snakes (Navarro *et al.*, 2000). It is therefore wise to pay special attention to this biological invasion, which has negative impacts on biodiversity, ecosystem functioning, health, and the economic activities of local populations. The main objective of this study was to assess the environmental, social, and economic impacts related to the invasion of the waters of Dams No. 2 and 3 in the city of Ouagadougou by *Eichhornia crassipes*, and the effects of this species on local populations and their activities.

MATERIALS AND METHODS

Presentation of the study area

The study was conducted in Ouagadougou, the capital and an urban municipality with a special status in Burkina Faso. It is located in the central region, in the province of Kadiogo, between 1°28' west longitude and 12°20' to 10°26' north latitude. It is bordered to the north by the rural municipalities of Pabré and Loubila, to the east by Saaba, to the south by Koubri and Komsilga, and to the west by the rural municipality of Tanghin Dassouri (Nikiema, 2012). It covers an area of 518 km², or 0.2% of the national territory (INSD, 2010).

Population and sampling

The sampling targeted various local socio-economic actors who could be affected by water pollution,

including farmers, fishermen, livestock breeders, traders, restaurateurs, and household heads. For determining the sample, the formula of Anderson *et al.* (2008) was used with a 95% confidence level. The final sample consisted of 185 people, randomly selected from a comprehensive list of 356 local residents and dam users.

$$n = \frac{Z^2 * P * Q * N}{e^2 * (N-1) + Z^2 * P * Q} \quad (1)$$

Where

n : Sample size

N : Estimated population size

Z : Margin coefficient (margin from the confidence threshold)

e : Margin of error

P : Proportion of households assumed to have the desired characteristics. This proportion, ranging from 0.0 to 1, is the probability of an event occurring. In the case where no value for this proportion is available, it will be set at 50% (0.5).

Q = 1-P: We assume that P = 0.50, so Q = 0.50; At a 95% confidence level; Z = 1.96 and the margin of error is e = 0.05

$$n = \frac{1,96^2 * 0,5 * 0,5 * 356}{0,05^2 * (356-1) + 1,96^2 * 0,05 * 0,05} = 185 \quad (2)$$

Data collection tools

An interview guide was designed for institutional stakeholders, including the General Directorate for Environmental Protection (DGPE), the city hall, the National Office for Water and Sanitation (ONEA), and the Nakambé Water Agency. The aim was also to assess the actions and initiatives taken in favor of sustainable management and protection of the city's water resources, the role of institutional actors, the state of resources and causes of degradation, the strategy and challenges of managing water bodies, and the impacts of water pollution. A questionnaire was developed and administered with questions related to their satisfaction, water quality, probable causes of water hyacinth proliferation, sources of reservoir pollution, and the perceived impacts of this proliferation.

Water sampling and measured parameters

Water sampling is a crucial step in assessing the quality of water resources. In total, 150 samples were

collected according to the month and the site for all the dams (Table 1).

Table 1. Sampling points

Dams	Point	Longitude	Latitude
Dam 2	Point 1	1°33'8,5824"O	12°23'13,38"N
	Point 2	1°31'11,74"O	12°23'19,59"N
	Point 3	1°31'49,04"O	12°23'17,99"N
Dam 3	Point 1	1°30'48,82"O	12°23'19,36"N
	Point 2	1°30'14,11"O	12°23'17,52"N
	Point 3	1°30'29,38"O	12°23'25,33"N

Sterilized one-liter bottles were used for bacteriological analyses, while bottles washed and rinsed with distilled water were used for physicochemical analyses. The sampling depth chosen was 10 cm. These samples were kept at a constant temperature in a refrigerator at 4°C until analysis. The parameters studied were physical parameters (temperature (T°), hydrogen potential (pH), conductivity, suspended matter), chemical mineral parameters (ammonium, orthophosphates, nitrate, nitrite), and bacteriological parameters (fecal coliforms, total coliforms, fecal streptococci).

Data analysis

The data analysis combined a descriptive approach and inferential statistical tests. The data from questionnaires and interviews were subjected to descriptive analysis (percentages, charts) using Excel, summarizing the characteristics of residents and the perceived impacts of pollution. At the same time, the comparison of physico-chemical and bacteriological parameters between sampling sites was carried out using Analysis of Variance (ANOVA) with XLSTAT 2023 software. The condition of homogeneity of variances was verified beforehand using a Fisher test. The objective was to determine, for each parameter, the existence of significant differences between the sites (significance level $p \leq 0.05$).

RESULTS

Socioeconomic characteristics of local residents

Fig. 1 presents the socio-professional categorization of the local residents. Merchants were the most represented (25.95%), followed by housewives (20%), farmers (horticulturists 7.03% and vegetable growers 11.35%), civil servants

(13.51%), fishermen (12.43%), livestock breeders (7.03%), and restaurateurs (2.70%).

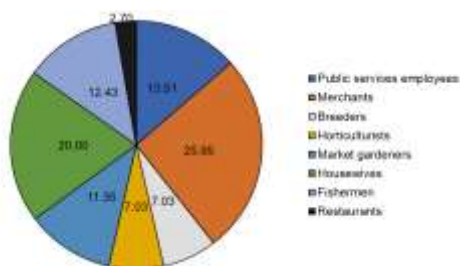


Fig. 1. Socioeconomic profiles of respondents

Impacts of *Eichhornia crassipes*

Fig. 2 presents the influence of *Eichhornia crassipes* on the environment. Five (5) nuisances were reported by the respondents. Filling in of water bodies was the most cited (58.92%), followed by loss of biodiversity (16.22%). Also noted were the destruction of habitats for aquatic organisms (11.35%), siltation of environments (7.57%), and finally, eutrophication of environments (5.95%).

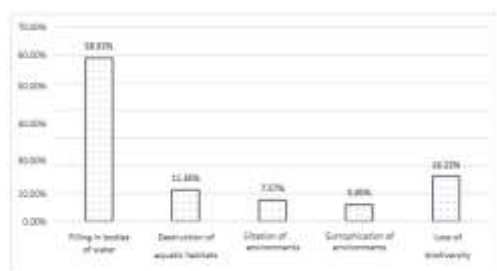


Fig. 2. Influence of *Eichhornia crassipes* on the environment

Fig. 3 shows the effects of *Eichhornia crassipes* on human health. As for the public health nuisances, they mainly concern the emergence and resurgence of so-called waterborne diseases such as diarrhea (32.43%), malaria (25.41%), cholera (18.92%), stomach aches (15.14%), and allergies (8.11%).

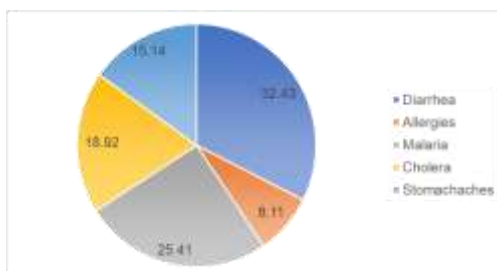


Fig. 3. Effects of *Eichhornia crassipes* on human health

Fig. 4 shows the perception of the social impacts of *Eichhornia crassipes*. Socially, the impacts are interference with water activities (14.05%), a decrease in the site's aesthetic value (56.22%), and unpleasant odors (29.73%).

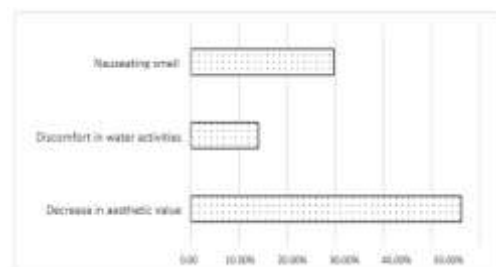


Fig. 4. Perception of the social impacts of *Eichhornia crassipes*

The impacts of *Eichhornia crassipes* on income-generating activities are shown in Table 2. In agriculture, there is congestion of irrigation works (55.88%) and a reduction in water flow velocity along hydraulic channels (44.12%). In the livestock sector, the issues are the occurrence of livestock diseases (53.85%) and reduced access to water for the animals (46.15%). In the fishing sector, the impacts of pollution include a reduction in navigable areas (39.13%), a decrease in fish catch yields (34.78%), and fish mortality (26.09%).

Table 2. Impacts of *Eichhornia crassipes* on livelihoods

Activities	Impacts	Frequency (%)
Agriculture	Clogging of irrigation works	55.88
	Reduction of the water flow rate at the hydraulic axes	44.12
Fishing	Decline in fishing yield	34.78
	Limitation of fishing areas	39.13
	Fish mortality	26.09
Breeding	Outbreak of disease in livestock	53.85
	Limiting livestock access to water	46.15

Analysis of physicochemical parameters

Table 3 presents the results of the analysis of the physicochemical parameters of dam water. The study revealed a non-significant difference ($p > 0.05$) in the average water temperature of dams 2 and 3 depending on the sampling points.

Table 3. Variation of physicochemical parameters at different sampling points

Sampling point	Temperature (°C)	pH	Conductivity (μS/cm)	Calculated TSS (mg/l)	Ammonium (mg/l)	Nitrate (mg/l)	Nitrite (mg/l)	Orthophosphates (mg/l)
Point 1	28.76±0.88 ^a	7.82±0.32 ^a	412±47.12 ^a	31.8±3.42 ^a	0.55±0.30 ^a	4.31±1.75 ^a	0.18±0.28 ^a	0.80±0.32 ^a
Point 2	29.19±1.30 ^a	7.79±0.21 ^a	442±121.53 ^a	31.2±2.65 ^a	0.89±0.70 ^a	2.16±1.73 ^a	0.17±0.31 ^a	0.70±0.34 ^a
Point 3	28.20±2.28 ^a	7.07±0.45 ^b	300±111.80 ^a	29.9±3.32 ^a	1.06±0.95 ^a	3.82±0.80 ^a	0.23±0.25 ^a	0.71±0.44 ^a
Point 4	29.04±2.09 ^a	7.57±0.27 ^a	447.82±227.46 ^a	30.7±2.09 ^a	1.24±0.97 ^a	8.35±12.51 ^a	0.20±0.33 ^a	0.73±0.65 ^a
Point 5	29.17±0.86 ^a	7.61±0.17 ^a	468.8±78.39 ^a	30±2.16 ^a	0.96±0.52 ^a	2.48±1.30 ^a	0.17±0.22 ^a	0.94±0.43 ^a
Point 6	29.40±3.00 ^a	7.01±0.49 ^b	374±42.49 ^a	23.4±3.58 ^b	0.37±0.69 ^a	3.14±2.37 ^a	0.18±0.23 ^a	0.78±0.63 ^a
Norms	18-40	6.5-8.5	2000	25	1.5	50	0.2	3.4
Probability	0.93	0.001	0.29	0.002	0.43	0.5	0.99	0.97
Significance	No	Yes	No	Yes	No	No	No	No

No significant difference between the sampling points with the same variables (a).

Significant difference between sampling points with different variables (a, b).

Temperature values ranged from 29.40°C at point 6 to 28.2°C at point 3. The results show a variation in pH, ranging from 7.82 at point 1 to 7.01 at point 6. The pH observed in areas under water hyacinth at points 6 and 3 is slightly lower than the pH observed in open water. No significant difference in pH was observed among the different sampling environments at the 5% significance level. Conductivity at the sampled sites ranged from 468.8 μS/cm at point 5 to 300 μS/cm at point 3. No significant difference in conductivity was found between areas under water hyacinth and open water areas at the 5% significance level. The results reveal for the Total Suspended Solids (TSS) average concentrations ranging from 31.8 mg/l to 23.4 mg/l, with a significant difference between sampling environments at the 5% threshold. The average concentrations observed in the environments under water hyacinth at point 6 and point 3 are significantly higher than those observed in open waters. As for the variation of average ammonium ion concentrations, it ranges from 1.24 mg/l at point 4 to 0.37 mg/l at point 6. The evaluation of nitrate content shows a concentration ranging between 8.35 mg/l at point 4 and 2.16 mg/l at point 2. The results show the evolution of nitrites in the water samples. The average nitrite concentrations are 0.23 mg/l at point 3 and 0.17 mg/l at point 2. The levels are below the Burkinabe standard of 0.2 mg/l, except at points 3 and 4. The average concentrations of orthophosphates range from 0.94 mg/l at point 5 to 0.70 mg/l at point 2.

DISCUSSION

Socio-environmental and economic impacts of the spread of water hyacinth

The primary activity of the respondents in this study is commerce. These results differ from those of Bissoue *et al.* (2017) in the Nyong River, in the commune of Mbalmayo in Cameroon, where the main activity of the stakeholders was agriculture. Regarding the impact of *Eichhornia crassipes* on the environment, the filling in of water bodies, loss of biodiversity, and destruction of the habitat of aquatic organisms, as well as sedimentation and eutrophication of environments, were reported as nuisances. These results are similar to those of Bissoue *et al.* (2017), who showed that the invasion of watercourses by invasive plants leads to a loss of biodiversity and hinders canoeing activities in the invaded sites. Indeed, water hyacinth rapidly increases its spatial distribution by developing densely within existing plant communities (Kercher and Zedler, 2004). According to Bissoue *et al.* (2017), silting is responsible for the decline in water sports activities due to the risk of drowning. For Rutabagaya (2017), *Eichhornia crassipes* leads to the accumulation of organic debris in stagnant waters, causing oxygen depletion pollution, carbon and phosphorus pollution, which results in eutrophication. Hassane (2010) demonstrated that the floating mat formed by *Eichhornia crassipes* reduces the water's oxygen level to a rate intolerable for many species. The impacts of *Eichhornia crassipes* on public health mainly concern the

emergence and resurgence of so-called waterborne diseases such as diarrhea, malaria, cholera, stomach aches, and allergies. These results confirm Ndour *et al.* (2019), who show that *Ceratophyllum demersum* L. promotes the emergence or resurgence of so-called water-borne diseases such as bilharzia, schistosomiasis, diarrhea, and stomach aches in cases of falling water levels. Labrada and Fornasari (2002) state that *Eichhornia crassipes* constitutes a major public health problem, as it can create a micro-habitat favorable to several human disease vectors. On the social level, reported impacts include disruption of water activities, a decrease in the aesthetic value of the environment, and foul odors. Indeed, the invasion of riverbeds negatively affects the visual appearance of reservoirs. According to Bissoue *et al.* (2017), the filling in of water bodies leads to a decrease in water activities and the emergence of foul odors (Thiebaut, 1997). The negative impacts on fishing are the decline in fishery yields, the limitation of navigable areas, and fish mortality. These results confirm those of Bissoue *et al.* (2017), who showed that the invasion of spawning areas hosting strictly herbivorous fish species by invasive plant species reduces site biodiversity and consequently leads to a decrease in fishery yields. Regarding livestock farming, the outbreak of animal diseases represents the main impact. This result is similar to that of Ndour *et al.* (2019) who showed that the consumption of water infested with *Ceratophyllum demersum* L. causes liver fluke in livestock. The clogging of irrigation works and the reduction of water flow velocity in hydraulic channels are the problems hindering agricultural activities attributable to the proliferation of *Eichhornia crassipes*. This result can be explained by the fact that the species, due to its ability to grow and spread along water bodies forming a green mat (E-Gendy *et al.*, 2005), leads to a decrease in water flow velocity or stream discharge, thereby making it difficult to irrigate farmland.

Physico-chemical parameters

The average temperature values measured at the sampling points range from 28.20°C to 29.40°C. They comply with the decree on discharge standards and

do not pose a risk for water potabilization. These results are close to those reported by Rutabagaya (2017), which ranged between 27.75°C and 28.95°C at dam No. 2. Indeed, the optimal climatic conditions for the sexual reproduction of *Eichhornia crassipes* are around 90% air humidity and a temperature between 22.5 and 35°C. The lack of variation from one point to another could be explained by the fact that there were no differences in depth when collecting the water samples. The measured pH values range between 7.01 and 7.82. They fall within the guideline values defined by Decree 2001-185 on pollutant discharge standards in air, water, and soil in Burkina Faso. This water trend is conducive to the growth of water hyacinth. According to Fortier (2007), water with a pH between 5 and 8.5 is favorable for the development of water hyacinth. These results are very close to those of Neya (2011), who recorded values between 7.73 and 7.83 in Lake Ziga.

However, they are lower than those reported by Aissaoui (2013), who found values around 8.4 in Algeria. In view of the standards, all the obtained pH values are acceptable. However, for points in open water (1, 2, 4, and 5), a slight tendency of pH towards alkalinity was noted. Conductivity is one of the means of validating the physicochemical analyses of water. The average values recorded during the analyses are lower. The highest value is 468.8 µS/cm at point 5, and the lowest is 300 µS/cm at point 3, both below the guide value (1000 µS/cm) set by decree 2001-185. These results are higher than those of Ouattara *et al.* (2012) and Sanogo *et al.* (2018), who recorded values in Ziga ranging from 60 µS/cm to 77 µS/cm and from 70 µS/cm to 250 µS/cm, respectively. This low conductivity can be explained by the sampling period (the dry season), because according to Abba *et al.* (2012), there is no dilution phenomenon in the dry season. This indicates that the concentration of dissolved ions in reservoir waters is relatively constant. The average suspended matter contents for the sites range between 31.8 and 23.4 mg/l. These values are significantly higher than those found by Sanogo *et al.* (2020), which hover around 14.125

mg/l, and by Tapsoba *et al.* (2016), who found an average value of 18 mg/l in Ouagadougou. The average contents are also higher than the guideline value (25 mg/l) set by decree 2001-185 for all points, except for point 6. The presence of TSS could be explained by suspended dust in the air due to the Harmattan (Sanogo *et al.*, 2020), and by the expected anthropogenic activities near the dams. There is a significant difference between the TSS of the different environments at the 5% threshold. This significant difference can be attributed to the impact of *Eichhornia crassipes* on water quality. Point 6 showed a value below the guideline value. This could be explained by the phenomenon of natural dilution or sedimentation in the absence of disturbance. According to IBGE (2005), fish suffocation is often the result of high levels of suspended solids due to the accumulation of toxic substances (heavy metals, pesticides, mineral oils, polycyclic aromatic hydrocarbons). Regarding nitrites, their levels ranged between 0.23 mg/l and 0.17 mg/l. All measured average values hover around the national standard, which is set at 0.2 mg/l. The values at points 3 and 4 exceed this standard, unlike those at the other points. Our results are higher than those of Neya (2011), who reported values close to 0.043 mg/l in Ziga, and Tapsoba *et al.* (2016), who found 0.13 mg/l at Dam No. 03 in Ouagadougou. For the points below the standard, the low nitrite levels may be explained either by low ammonium oxidation or by low nitrate reduction. According to Rodier (1984), nitrites are considered intermediate ions between nitrates and nitrites and ammoniacal nitrogen, which explains the low quantities found in aquatic environments. However, concerning the sampling points exceeding the standard (points 3 and 4), these high concentrations could be attributed to the degradation of animal proteins, domestic effluents (such as urea), and urban runoff. The presence of nitrites indicates significant eutrophication, manifested by excessive growth of filamentous algae covering the bed of the dams, leading to increased water turbidity and decreased dissolved oxygen levels (Errochdi *et al.*, 2012). Additionally, high nitrite concentrations often indicate the presence of toxic substances and signify a

critical state of water pollution. Nitrites are particularly harmful to young fish. The situation is considered very critical when concentrations exceed 3 mg/l (Lisec, 2004).

The concentrations of nitrate ions obtained in this study range from 2.16 to 8.35 mg/l. All of these concentrations are well below the national standard (50 mg/l). Ouattara *et al.*, (2012) and Aissaoui (2013) found values lower than ours, around 2 mg/l respectively at the Ziga dam and in Algeria. Indeed, the presence of nitrates in surface waters can be linked to inputs of agricultural origin through the leaching of nitrate-based fertilizers, or to the transformation of ammonium into nitrates from domestic discharges or animal waste carried by runoff (El Ouali Lalami *et al.*, 2011). The low nitrate content could be explained by the reduction of nitrates to nitrites by denitrifying bacteria. Nitrates act as a fertilizer for plants, which assimilate nitrogen in the form of NO_3^- (Djermakoye, 2005). Ammonium concentrations range from 1.24 mg/L at point 4 to 0.37 mg/L at point 6. Tapsoba *et al.* (2016) found an average of 0.26 mg/L at dam No. 03 in Ouagadougou, while Sanogo *et al.* (2020) recorded an average value of 1.625 mg/L in Ziga, which is higher than the guideline value. Although no major danger is reported at the moment, since the recorded concentrations are below the guideline value of 1.5 mg/L, the ammonium (NH_4^+) level is concerning if the trends continue. Ammonium levels in water bodies could be related to the biological breakdown of nitrogenous organic matter (phytoplankton, plant debris), leaching of nitrogen fertilizers, as well as discharges of solid and liquid waste from homes and industries.

Regarding orthophosphates, concentrations range from 0.70 to 0.94 mg/L. These results are consistent with those of Rutabagaya (2017), who obtained an average content of 0.8737 at dam No. 2. In this regard, these values indicate a low level of pollution in the dams, as they are well below the Burkinabe standard of 3.4 mg/L. For the parameters nitrates, nitrites, ammonium, and orthophosphates, our results show no significant difference between the

sampling sites at the 5% threshold. Indeed, these parameters are indicators of water pollution, generally associated with anthropogenic sources such as agriculture, industrial activities, or urban discharges. If the levels of these substances are roughly similar across different sampling points, it indicates that the waters of the dams are fully exposed to sources of pollution.

CONCLUSION

This study provided insight into the ecological and socio-economic impacts associated with the invasion of *Eichhornia crassipes* at dams No. 2 and 3 in Ouagadougou. The results obtained show that *Eichhornia crassipes* has a considerable influence on the environment, human health, and social aspects, causing the filling in of the dam water bodies, the emergence and resurgence of so-called waterborne diseases such as diarrhea, and disruption to water-based activities. The harmful effects include the clogging of irrigation facilities, a decrease in fish catch, the restriction of navigable areas, and the emergence of livestock diseases. These problems have significant impacts on agricultural, fishing, and livestock activities, which are sources of employment for the populations living near the site. This study also provided an overview of the physical and chemical quality of the waters of dams No. 2 and 3. The water samples collected show generally poor quality that does not meet the required standards and is conducive to the growth of *Eichhornia crassipes*. The most concerning parameters are TSS and nitrites, whose average levels remain significantly high. In the face of these challenges, it is essential to raise awareness among the local population about hygiene and sanitation practices, while encouraging the adoption of effective methods to manage the proliferation of *Eichhornia crassipes* and other invasive species.

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