ASSESSING THE DIVERSITY OF FISH SPECIES IN RELATION TO THE PHYSIO-CHEMICAL PARAMETERS AND HUMAN ACTIVITIES IN PETTA STREAM, PETTA SUBCOUNTY-TORORO DISTRICT.

BY

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DECLARATION

I, OKONGO EMMANUEL do hereby declare that this is my own research work and has never been presented to any other institution of learning for any award.

Signature …… Date ……

Okongo Emmanuel

APPROVAL

This is to certify that this research report entitled "**assessing the diversity of fish species in relation to the physio-chemical parameters and human activities in Petta stream, Petta sub county-Tororo district**" is of Okongo Emmanuel.

Supervisors signature …… date ……..

Kifuko Richard

DEDICATION

I dedicate this report to my dear parents Mr. Owor Christopher and Mss Anyango Janet and my brother engineer Okoth Geoffrey for their guidance, motivation and support throughout my academic journey

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My sincere appreciation goes to the almighty God for the health, wealth and breath granted to me to enable me pen down this report.

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FWI	Freshwater Initiative
EC	Electric conductivity
DO	Dissolved oxygen
FW	Fresh water
SACs	species-area curve

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ABSTRACT

The study aimed at assessing the diversity of fish species in relation to the physio-chemical parameters and human activities in Petta stream, Petta sub county-Tororo district. One fish farmer and six fisher men participated in the study. The study objectives were to find out the dominant methods of fishing in Petta stream, identify the different fish species and species richness in the stream, relate the existence of the different fish species with the physio-chemical parameters and human activities in/around the stream, and identify the best conservation methods for fish in the stream. Data was collected by conducting an interview, and sampling using basket method of fishing. The collected data was analyzed using description and statistically using tables, column graphs and pie charts. The study found out that the dominant methods of fishing in Petta stream are basket fishing and angling with rod. Clarias gariepinus (Otwangi), Clarias anguillarus (Konye), Neobola (Opari), Eel (Kunga) and lungfish (Mamba) were found to be the fish species present in the stream, with Neobola, Clarias gariepinus, Clarias anguillarus, lungfish and Eel being the most abundant and diverse respectively.

The PH of the stream was found to be alkaline, EC was found to be relatively consistent in the entire stream, DO was found to be more than the required limit and has negative influences toward these stream eco-systems with temperature being one of the controlling factors, which alter the functions of the aquatic ecosystem, and its influences on the growth and distribution of flora and fauna.

There are direct/indirect relationships between the physiochemical parameters, human activities with the species diversity and abundance.

CHAPTER ONE: INTRODUCTION

1.1 Background

Biodiversity is the quantity, variety and distribution across biological scales ranging through genetics and life forms of populations, species, communities and ecosystems (Mace et al., 2005). Biodiversity is often used as a measure of the health of biological system. But habitat loss and environmental degradation causes rapid decline in biological diversity which is a critical challenge for the modern era (Vyas et al., 2012). Freshwater biodiversity is now in a state of crisis, a consequence of decades of human exploiting rivers with over fishing, pollution and development activities. Degradation of stream and riverine ecosystem causes ultimate destruction to the structure and function of stream biota (Stoddard et al., 2006).

Different fresh water exhibit different fish species which include among others Nile perch, Silver cyprinid, Nile tilapia, lungfish, catfish, Eel, Oreochroesculentus, Clarias, Sprat with Nile perch and Tilapia being the most common species in Uganda freshwater.

Diversity at the species level is often expressed as species richness-the number of different Species in a community, ecosystem, or region. Although other aspects of species-level biodiversity, such as composition and evenness, are also important, number of species is of special interest because of its relevance to conservation biology. It is currently estimated that dozens of species are extirpated each day with the possibility of losing 30–50% of all species by the middle of this century [Center for Biological Diversity, http://www.biologicaldiversity.org/programs/biodiversity/elements_of_ Biodiversity/extinction crisis/]. This crisis affects nearly all taxonomic groups, and it is especially severe for freshwater fishes that inhabit lotic ecosystems. Many of these fishes are imperiled because of habitat degradation and fragmentation, flow modifications, translocation of species, over-exploitation, and pollution (Colwell, 2013).

It is important to accurately estimate the species richness of fish as a baseline for assessing the effectiveness of conservation and management programs. Because the number of species is invariably underestimated by sampling, a variety of techniques are used to estimate true species richness, including occupancy models and depletion methods. However, the most commonly used techniques are based on the species-area relationship (SAR), which describes the increase in number of species that occurs as sample area, increases. The SAR is attributable largely to passive sampling effects and habitat heterogeneity. Passive sampling effects, which predominate at small spatial scales, occur because sampling larger areas yields more individuals, which increases the likelihood of encountering more species. Habitat heterogeneity is important because more habitats are encountered as the sample area grows, and different habitats often support different species.
The SAR is graphically depicted as a species-area curve (SAC).

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