UNIVERSITI TEKNOLOGI MARA

DETERMINATION OF MICROPLASTIC IN VARIOUS FRESHWATER FISH SPECIES FROM AGRICULTURE FISHPOND IN TANJONG KARANG, SELANGOR

NUR AMANY HUSNA BINTI ZARAWI

Project submitted in fulfilment of the requirement for
The degree of
Bachelor in Environmental Health and Safety
(Hons.)

Faculty of Health Science

January 2023

ACKNOWLEDGEMENT

In the name of ALLAH, the Most Gracious, The Most Merciful

Assalamualaikum and Alhamdulillah, all praise to Allah S.W.T The Supreme Lord of the Universe. Peace and blessing to Nabi Muhammad S.A.W., all prophets and their families. I praise Allah S.W.T. for the strength and His blessings in completing my study.

Thousands of thanks and love to my parents, Mr Zarawi bin Daud and , for their support and encouragement through thick and thin of my study. My deepest gratitude and appreciation to my dearest supervisor, Dr Siti Rohana Binti Mohd Yatim, who spent her time and efforts guiding and advising me from the beginning till the end of my research journey. Not to forget, I would like to thank all the lecturers in the Department of Environmental Health and Safety, Faculty of Health Sciences, who always shared their thoughts, knowledge and advice throughout my study at UiTM Puncak Alam. Only God can reward all of you with goodness.

My sincere thanks and appreciation go to all the department and laboratory staff, who fully cooperated and assisted me throughout my study. Special thanks to my friends from HS243, who always support and motivate my study. May our friendship last forever. Lastly, I would like to thank everyone directly and indirectly involved in this study. Thank You

TABLE OF CONTENTS

ABSTRACT

Microplastic (MP) contamination in fish species is one of the emerging environmental issues due to the increase in plastic pollution in the environment. As a result, this research looked into the abundance, properties, and variation of MPs in various commercial freshwater fish species from Tanjong Karang. Twelve fish from diverse feeding zones were taken to determine the variation in MPs ingestion rate between feeding zones. MPs were discovered in the gastrointestinal tracts (GIT) of 29.25% of all fish samples studied, which is greater than previously reported findings in other regions. *Anabas testudineus* has the highest concentration of MPs of any fish species. Microscopic examinations (Optical microscope Leica DM2500) revealed that MPs were dominated the film of morphotype and white colour. FTIR research revealed that the polymers discovered in fish GIT were high density polyethene and polypropylene. The results of this study demonstrate that demersal fishes had a higher concentration of MPs than benthopelagic and pelagic fishes, indicating that plastic ingestion in fish may be related to the feeding habitat. Our findings will assist people to understand which freshwater fishes and fishes from which feeding zones in Tanjong Karang are more contaminated with MPs for human consumption.

Keywords : *Freshwater, Abundance of MPs, Feeding zones, Feeding habitats, polymer, polyethene and polypropylene*

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Microplastics as plastic debris with particle sizes ranging from 1 μm to 5 mm (Sayed et al., 2021). According to Garcés-Ordóñez et al., (2022), microplastics may be formed in various colors and shapes, especially in water bodies such as oceans and lakes. In addition, to distinguish between microplastics and nano plastics, the size of nano plastics is 0.1 to 0.001 m, whereas microplastics are above 0.1 micrometers to 5 micrometers in dimension (Garcés-Ordóñez et al., 2022). As we know, plastic has an advantage because of its versatility and permanence. So, plastics are a main priority for humans. As of 2019, the production of plastic materials increased by 245-fold compared to 1950, which means plastic materials amounted to 388 million tons worldwide (Lam et al., 2022).

Microplastics' frequent occurrence has marked recent years in marine ecosystems as emerging contaminants that have attracted widespread concern, in freshwater ecosystems and terrestrial ecosystems (Lv et al., 2019). Hence, agriculture is one of most significant contributors to microplastic pollution in the terrestrial ecosystem. This is also proven b Li et al., (2022), where microplastic abundances in aquatic animals are correlated to abundances in farmland.