Using "Young of the Year" Fish As Bio monitors For Pollution In Selected Aquatic Environments In Lagos State

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Introduction

More than 6 billion pounds of garbage, end up in oceans every year, with domestic and industrial sewage being the leading cause of polluted water. Therefore, nearly 97% of the world's water is salty or otherwise undrinkable. Another 2% is locked in ice caps and glaciers [1].

Fishes have been known to be the most significant biomonitors in aquatic systems for the estimation of metal pollution level [2]. Also, fish are located at the end of the aquatic food chain, which makes it easier for bioaccumulation of metals in their systems, and for transfer to humans or other higher animals, through food, leading to chronic diseases [3].

Pollution can directly kill or harm fish, by changing the makeup of its habitat or by killing off its sources of food, or causing plant or algae overgrowth that starve the fish of oxygen, due to the presence of excess nutrients. Heavy metals in water lead to immature growth, and affects the respiratory system of fish, which stumps its ability to locate food or avoid predators [4].

"**Young of the Year**" fish, also known as 'Juvenile fish', is known as the immature offspring of fish. **Bio monitors** are organisms that provide quantitative information on the quality of the environment around it.

Aim of the Study

To show that young fish can be used as bio-monitors for heavy metal pollution in aquatic environments.

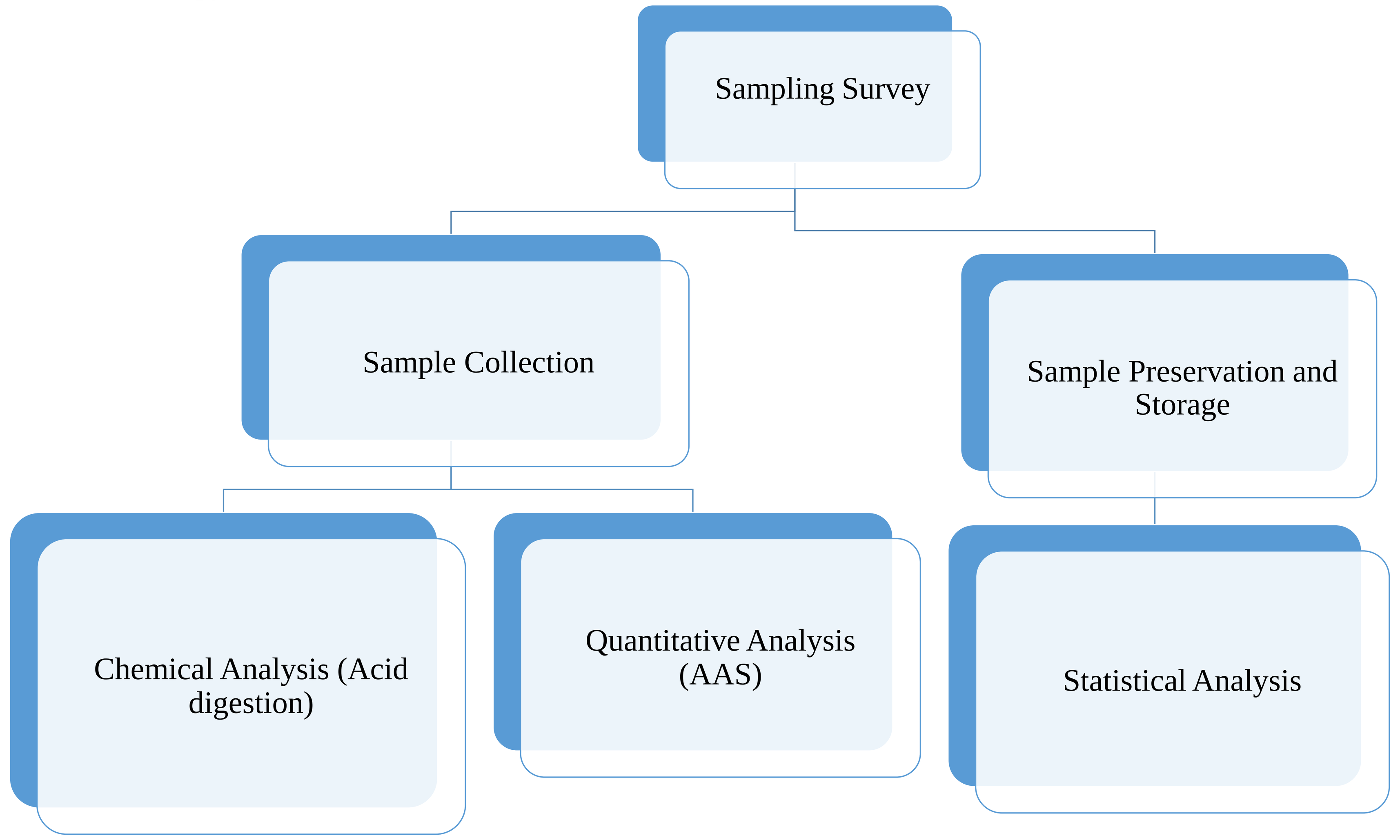
Fig 1: Sewage dump into a water body.

Fig 2: Young Tilapia

Research Questions

- What are the effects of heavy metal pollution in young fish?
- Why should young fish be used instead of adult fish to monitor pollution?

Methodology



Results

TABLE 2: Concentration of heavy metals in sediments for Badagry, Langbasa and Liverpool.

Heavy Metals	Badagry (mg/l)	Langbasa (mg/l)	Liverpool (mg/l)
Cu	0.97±1.2	0.20±0.1	0.56±0.4
Fe	46.6±8.3	50.6±35	51.1±20
Zn	5.46±5.3	0.28±0.2	5.05±1.5
Pb	9.84±4.8	1.56±1.3	12.0±21
Ni	3.48±1.9	6.26±4.0	5.52±0.9
Cd	0.20±0.1	0.06±0.0	0.37±0.4

TABLE 3: Concentration of heavy metals in fish for Badagry, Liverpool and Langbasa.

Heavy Metals	Badagry (A&B) (mg/l)	Liverpool (C&D) (mg/l)	Langbasa (E&F) (mg/l)
Cu	0.57±0.3	0.23±0.1	0.56±0.1
Fe	2.26±1.3	0.17±0.1	4.79±0.6
Zn	9.20±2.9	8.15±2.4	12.3±2.1
Pb	0.64±0.0	0.00±0.0	0.00±0.0
Ni	1.08±0.2	1.16±0.0	1.19±0.2
Cd	0.03±0.0	0.00±0.0	0.04±0.0

Discussion

- Six metals namely copper (Cu), iron (Fe), zinc (Zn), lead (Pb), nickel (Ni), and cadmium (Cd) were analysed in sediment and fish samples, with the use of a Flame Atomic Absorption Spectrometer (FAAS).
- . In sediment, the highest concentration was for Fe for all the sites. Pb and Ni also had high values for all the sites. Zn was higher for Badagry and Liverpool market.
- The mean concentrations of Cu, Pb, and Cd in the fish samples did not exceed the allowable limits of WHO. The values of Fe, Zn and Ni, however, had higher concentrations, with Zn being the highest in all the sites.

Conclusion

This study shows that young fish can be effectively used to monitor pollution, as they are prominent in oceans and seas, and show early signs of contaminants in their system.

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