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RESEARCH ARTICLE

A DECADE AFTER THE ONDOY: A TIMELINE OF THE KNIFE FISH OUTBREAK IN LAGUNA LAKE (2009-2019)

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Abstract

This study deals with the outbreak of the knife fish in the Laguna Lake. It covers the years 2009 up to 2019. The main objective of this study is to come up with a timeline based from government reports and meso level accounts regarding one problem faced by the Laguna Lake and its Fisherfolks. According to reports and respondents, the knife fish entered the lake after the typhoon Ondoy in 2009. By 2011 there were significant numbers of knife fish being caught in the lake, by 2012 their presence was already considered an outbreak and ever since; the Bureau of Fisheries and Aquatic Resources (BFAR), the Laguna Lake Development Authority (LLDA) have implemented several policies to control the outbreak such as; releasing funds for the retrieval of the knife fish, conducting of trainings for value adding of the knife fish, information drives, and building of facilities that will process the knife fish into fish balls, hotdogs, kikiam, burger patties etc. In 2015, The National Students Training Program II (NSTP II) students of UPLB under the College of Arts and Sciences conducted a study entitled "Cultural Heritage Mapping of 5 Fisher-folk Communities in Los Baños" and it was evident that still, the major problem of the fisherfolks is the knife fish outbreak. In March 2019 another interview was conducted in San Antonio Bay by Card-MRI Development Institute (CMDI) students and the presence of the knife fish was still alarming. Furthermore, according to the respondents fishing is no longer their main source of livelihood.

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Introduction:-

Laguna Lake is the largest lake in the Philippines as it is part of NCR, Rizal and Laguna. It is one of the major sources of livelihood before and during the colonial period, as many historians believe, most civilization thrive near bodies of water. It also played a major part in transportation during the Spanish period as evidenced in some of the accounts of Jose Rizal. The researcher also believes that it will play a major part in transportation in the near future. However, it is now in a doomed state, problems such as water pollution, chemical wastes from factories, the presence of houses residing in the 5 meter radius of the lake and the presence of a number of invasive species such as the Arroyo, Janitor Fish, Chinese Soft Back Turtle, and the most recent and most potent specie, the Knife Fish.

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Image 1:- Laguna Lake and Locale of the study. (google map retrieved March 2019).

The Knife fish is a freshwater species which are commonly used/breed as ornamental pets. According to Towers (2013) they originated from South America and Southeast Asia specifically in Thailand, Borneo, Malaysia, India and Sumatra. They can be found in still waters and ironically, can survive with low oxygen. Furthermore, for them to survive they have to eat a lot. The consensus is, the Knife fish was accidentally/purposely introduced in Laguna de Bay in 2009, coinciding with the super typhoon Ondoy.



Image 2:- Knife fish caught from the Lake taken from newsinfo.inquirer.net.

Towers (2013) also mentioned that there were reports as early as 2011 from the fisherfolks stating the knife fish being a pest, as it feasts on tilapia and bangus which are two main commodities caught from the lake. As a result, majority of the catch of the fisherfolks from 2011-2015 was comprised of knife fish which was not acceptable for the fisherfolks because the knife fish only sells for P10-20/kg while bangus and tilapia is usually more than P100.00/kg in local markets.

It is aggressive and carnivorous. Still, as revealed by Towers (2013) a knife fish can grow up to 100 cm in length and 5kg in weight in the wild. According to BFAR-National Inland Fisheries Technology Center (BFAR-NIFTC), for it to grow 1kg it must consume 7kgs of different types of fishes to grow to a kilogram. In addition, it also rapidly reproduces with a fecundity of 20,000 eggs/kg of fish.

Data from the LLDA (Laguna Lake Development Authority) and the LGUs (Rizal and Laguna local Government Units) in 2015 showed that there were 5,768 fisherfolks affected by the knife fish presence in the lake. The extent of

the effect runs from Rizal, NCR to Laguna. The LLDA, in their survey in 2011, mentioned that the knifefish comprised 40.34% of the catch in the open water that equates to P3,151.45 kg/day lost for the fisherfolks.

The Bureau of Fisheries and Aquatic Resources (BFAR,2013) conducted a study and found out the following morphological and biological characteristics on the collected specimen of knife fish: (1) that the knifefish is highly carnivorous. (2) can reproduce at a very high rate. (3) In order for it to grow 1kg it must consume 7kgs of indigenous fishes and crustaceans in the lake. Thus,the fisherfolks are losing Php 1,030.00 per kilo of knifefish produced.

Significance of the Study:

This Study aims to:

1. Create a timeline based from the reports of the Bureau of Fisheries and Aquatic Resources (BFAR), the Laguna Lake Development Authority (LLDA) and interviews of the fisherfolks (Meso Level) in order to have a comprehensive view of the current state of the lake pertaining to the outbreak of the Knife Fish
2. Analyse the programs being implemented BFAR and LLDA in solving the outbreak of the Knife fish
3. Formulate policy recommendations

Review of Related Literature:

The knife fish otherwise called as the clown knife fish (*Chitalachitala*) can be normally found in India, Pakistan, Bangladesh, Nepal, Thailand and Indonesia. Its population was in rapid decline in those areas and was even considered as endangered in India according to Sarkar(2009). In India it is highly priced, cultivable, have high conservation significance and has high demand, this is the reason why it led to its rapid decrease in population, which called for a move for the conservation of the species. In the early 90's, the knife fish has found its way to Florida, U.S.A. and is considered as an invasive species there. According to Krueger (2018) in 2010 and 2011, many knife fish died due to the unusually cold winter weather, but the species now appears to be expanding its range, this just shows the resiliency of this species. Still, according to Krueger (2018) The Knifefish is a popular aquarium fish, that can grow to over 3 feet long. It is also a popular food fish in the places where it can be normally found, that was why it's still unclear how it came to Florida's waterways. In addition, the Knife fish has the ability to withstand in respect to availability of food items in different aquatic habitat according to Sarkar (2009). This freshwater fish is nocturnal and known to eat any live prey (usually other fish) that it can fit in its mouth. Krueger (2018) stated that in Florida it prefers canals, reservoirs or ponds with little to no current and some vegetation or debris to hide in.

Methodology:-

This study used reports of the Bureau of Fisheries and Aquatic Resources(BFAR), The Laguna Lake Development Authority(LLDA) and secondary sources based from key informant interviews made in 2015 and 2019. NSTP II students of UPLB under the College of Arts and Sciences conducted a study entitled "Cultural Heritage Mapping of 5 Fisher-folk Communities in Los Baños from August to December 2015 and it was evident that still, one of the major problems of the fisherfolks is the knife fish outbreak. Those Barangays were chosen because they were lakeshore barangays, although there are six lakeshore barangays in Los Banos including Baybayin, but according to FARMC and the barangay captain of the barangay, there are no registered fishermen in his barangay, meaning people in their barangay were only fishing for leisure and not for livelihood. In March 2019 another interview was conducted in San Antonio Bay, and the presence of the knife fish is still alarming and according to the respondents and as such fishing isn't their main source of livelihood as it is no longer enough to feed the family.

The Respondents of the study in the 2015 study were the fishermen who are members of the Fisheries and Aquatic Resources Management Council(FARMC), above 50 years old, married, and bonafide residents of Los Banos. Programs have been implemented since 2012 but up to until 2015.The 2015, NSTP II students of UPLB under the College of Arts and Sciences conducted a study entitled "Cultural Heritage Mapping of 5 Fisher-folk Communities in Los Baños from August to December 2015 and it was evident that still, one of the major problems of the fisherfolks is the knife fish outbreak. Those Barangays were chosen because they were lakeshore barangays, although there are six lakeshore barangays in Los Banos including Baybayin, but according to FARMC and the barangay captain of the barangay, there are no registered fishermen in his barangay, meaning people in their barangay were only fishing for leisure and not for livelihood. In August 2018 another interview was conducted in San Antonio Bay, and the presence of the knife fish is still alarming and according to the respondents and as such fishing isn't their main source of livelihood as it is no longer enough to feed the family.In the 2019 study there were 12 respondents who were fishermen, and residents of San Antonio Bay who were members of FARMC.

Data analysis:

This study used a descriptive analysis based from government reports, records and secondary data by various studies of the NSTP2 students of the college of arts and sciences, University of the Philippines Los Baños AY 2015-2016 and CARD MRI Development Institute, BS Accountancy Students of Readings in Philippine History AY 2018-2019.

Results and Discussion:-

The knifefish was introduced to the lake purposely or accidentally in 2009 during/after the typhoon Ondoy. However, there was one key informant who mentioned that even before the typhoon, the knife fish were already present in the lake, particularly in the province of Rizal. 2010 was the first recorded sighting of the knife fish in the lake and according to the data of BFAR as of 2012-2013, The Considerable presence of knife fish is observed in Calamba City and in the lakeside towns of Los Baños, Bay, Victoria, Pila, and Pangil which is reducing the harvest (Tilapia and Bangus) in the lake. Local fishermen estimate 30% of their total harvest composed of the knife fish, weighing as much as 10 to 20 kilos. The increased population of knife fish in the lake appears to reduce the catches of local fish species such as tilapia, bangus, carp, ayungin, shrimps, and the like as the latter are being eaten by the said exotic fish. By 2013-2015, according to the report of the BFAR and LLDA they have controlled the outbreak however, there was a contradiction between the report of the BFAR and LLDA and what the fisherfolks are telling.

The BFAR and LLDA are funded by the government to take care of the Fisheries and aquatic resources and the Laguna Lake, and what they are reporting is that they are doing their jobs. According to their report they conducted training for value adding, turning the knife fish into fishballs, kikiam, nuggets and burger patties. In addition they were and still are continuing to release funds for the massive retrieval of the knife fish, in which they are paying the fisherfolks 10-20/kg of knifefish however, the fisherfolks are telling otherwise, what they are doing wasn't enough to alleviate the problem of the fisherfolks with regards to the presence of the knifefish in the lake. As it was, the situation will worsen; it may even lead to the total extinction of high value fishes in the Lake according to the 2015 respondents.

And four years later:

According to the 2019 respondents, government projects thru BFAR are still being implemented and felt by the fisherfolks however, since 2016 they have been inconsistent and because of this inconsistency the situation of the fisherfolks in Laguna de Bay has continued to worsen, according to the fisherfolks before the outbreak they were able to catch 300-500 kilos of fish when they go out for fishing, now they are lucky to even catch 5 kilos of fish in a day all of which they attribute to the high decline of catch to the knife fish. Furthermore, the fisherfolks are telling that fishing is no longer their main source of livelihood, that they have now engage into other means of keeping a living.

Timeline:

2009	Introduction of Knife fish (Typhoon Ondoy)
2010	Few sightings of the knife fish
2011	Reports of knife fish being a pest
2012	20-30% of fish catch are knife fish
2013	Economic utilisation of Knife fish (nuggets, patties, kikiam, and siomai)
2014-2015	70% of catch are knife fish
2016-2018	Numbers of knife fish are still high, higher than the number of commercial high value fish being caught, and the help coming from the government is inconsistent.
2019	Fishing is no longer the main source of livelihood; fisherfolks are engaging with another livelihood for them to survive. The fisherfolks attribute this to the knife fish

The consensus is that prior to the typhoon Ondoy in 2009 there were no records of sightings of the knife fish in the lake, it was only after the typhoon sightings of the fish were reported, as early as 2011, fisherfolks were already reporting that the presence of the knife fish in the lake is alarming. By 2012 fisherfolks were reporting that their catches were composed of 20-30% knife fish and such they were considered as a pest because they were eating valuable fishes in the lake. In 2013, economic utilization was done to add value to the knife fish. In 2014-2015 the

report of the BFAR and LLDA was that they were able to control the outbreak however, in the meso level, the fisherfolks are reporting that their catch was then composed of 70% knife fish. from 2016-2018 the support of the government projects such as value adding and buying of the knife fish were inconsistent and by 2019 according to the fisherfolks, Fishing is no longer the main source of livelihood and that fisherfolks are engaging to another livelihood for them to survive. The fisherfolks attribute this to the knife fish.

Conclusion and Recommendation:-

The Laguna Lake, the Philippines Largest lake is doomed, and the BFAR and LLDA are failing to save it, as backed up by the statements of the fisherfolks. Value-adding is not enough to lessen the presence of the knife fish in the Lake. The knife fish presence is still significant and that the BFAR and LLDA should look for more scientific and effective means of controlling if not eliminating the outbreak such as maybe partnering with international/Foreign researchers that may know more effective means of controlling the outbreak. Seeking help and obtaining information from the nations where the knife fish originated from and involving the DOST. Public information drive is highly recommended to give more awareness to the people.

Furthermore, it is recommended that laws on the importation of these kinds of animals and quarantine laws should be reviewed and be strictly implemented in order to avoid other outbreaks of invasive species. The nation's largest lake is in trouble, it was worsened by the presence of the knife fish and this should be taken as a national issue that needs to be addressed.

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