



WERE THEY SEA SNAKES OR MARINE EELS? : CASE STUDY FROM KALLADI, BATTICALOA

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1. INTRODUCTION

Before giant waves of Indian Ocean tsunami slammed into Sri Lanka and India coastlines the in 2004 and 2011, abnormal and strange behaviours of those wild and domestic animals fled to safer places noticed. Such a similar incident of massive school of snake like aquatic creatures were noticed in various places in Batticalao lagoon especially Kallady, Nawalady and Manmunai area. Thereafter, had many puzzled and rumours spreading associate with tsunami. The belief that animals can sense impending danger by detecting subtle or abrupt shifts in the environment (Green, 2019). Further this believe strengthen by relatively few animals have been reported dead, however, reviving speculation that animals somehow sense impending disaster. Animals' more acute hearing and other senses might enable them to hear or feel the Earth's vibration, tipping them off to approaching disaster long before humans realize what's going on (National Research Council, 2011). A tsunami may be preceded by migration of bottom living aquatic species but it is not always true. Researchers there have long studied animals in hopes of discovering what they hear or feel before the earth shakes (Heaton and Hartzell, 1987). Authors put forward some ideas about whether the snake like creature observed in Batticalao lagoon is sea snakes or any other sea creature and is there any link to tsunami.

There are 107 species of snakes found in Sri Lanka (including terrestrial, freshwater, brackish water and sea snakes) (Maduwage et al., 2022). These include endemic (i.e. 54 species found only in Sri Lanka which are not found anywhere in the world). These are included within 12 families. Of these, venomous snakes belong to five families. Sea snakes belong to the subfamily Hydrophiinae of the family Elapidae, which includes the cobra and kraits. There are 17 species of sea snakes found in Sri Lanka. The habitats of these are found in the coral reefs and sea grass beds (Gregg et al., 2007).

Sea snakes have a more adaptation for aquatic life. The flattened paddle-shaped tail on the side of the abdomen facilitates its forward movement. This type of tail is not found in other ground, freshwater, and brackish snakes. These include eyes with valve in nostril sides, and is accompanied by a salivary gland. They also have a left lung equal to the length of their entire body. Sea snakes have the ability to excrete nitrogen through their skins. Due to this, nitrogen protects the air bubbles from getting into the body. Sea snakes found in Sri Lanka range in length from 75 cm to 300 cm.

Sea snakes are generally more venomous than land snakes. Some land snakes in the world are more venomous than sea snakes. But in Sri Lanka, sea snakes are more venomous than land snakes. Some snakes are 15 times more venomous than cobras. The venom of sea snakes, neurotoxins and myotoxins effects the nervous system and the muscular system.



The eel is included in order Anguilliformes, which has 4 subspecies, 20 families, 111 species, and 800 species. The genus found in Kalladi is likely to be considered to belong to the genus *Callechelys* belonging to the family Ophichthidae. There are 15 species in this family. These are tropical marine life, found at a depth of 4–35 m (Somaweera and Somaweera, 2009). They are endemic to the Indo-Pacific Ocean, common in western Atlantic, western and eastern Florida, Puerto Rico, the Bahamas, Senegal, and Ivory Coast. The fish has a slender cylindrical body with distinct fissures and anterior, anal, and caudal fin. They are also mistakenly identified as colored sea snakes because they are found in some different colors with dots and lines. This is commonly known as snake eels.

Mature eel spawns and hatches the larva, which are carried hundreds of miles away by ocean currents or sometimes due to climate change and released into rivers. Thousands invade these rivers and stay until the sexual mature, then return to their native places. They lay their eggs there and die. This life cycle is not common for all species of eel.

2. METHODOLOGY

Suspected samples were collected with assistance of experienced fishermen closer to the Kalladi bridge. Samples were kept in plastic container along with same water and transported immediately to the Department of Zoology, Faculty of Science, Eastern University, Sri Lanka. Alive samples were kept for laboratory condition to observe the behavioural pattern while died samples further undergo to microscopic investigation to confirm its ultra-structures. Photographs were taken whenever necessary. For the exclusion and confirmation, the following taxonomic keys were used (De bruin et al., 1995).

3. RESULTS AND DISCUSSION

The following observation related anatomy and behaviours lead to observed snake like creature is eel not a snake (Figure 1).

- The snake's body is cylindrical, but the head may have a flatter appearance, depending on the species. In addition, the tail end of the snake is often paddle-shaped but in the collected creature they are much flatter, in the vertical sense, than a snake. In addition, these fish's heads tend to be longer and sharper.
- In the captured specimens the gills were clearly visible. This is a nature of fish. It is through this that respiration takes place. Snakes do not have these gills.
- Fins also noted in the collected creature while sea snakes never have. In observed species having single and continuous, stretching down the dorsal, anal and caudal sides
- Although both of these creatures have scales, they are unique in their own way. For one, each have different patterns and colors. Secondly, the scales of a snake are much easier to see as the pattern is clearly visible to the naked eye. The collected species no any special coloration and smoother scale less appearance.
- The other clear different encountered in the collected creatures' teeth pattern. Razor-sharp small teeth observed in collected specimen while snakes having prominent long curved fang teeth
- Sea snakes often look more like a swimming rope, but collect alive specimen appear more like a ribbon, in shape, texture, and movement

- Further closed observation of movement if eel school in a rhythmic and definite pattern in case if it is movement related to any disaster definitely by disrupting pattern

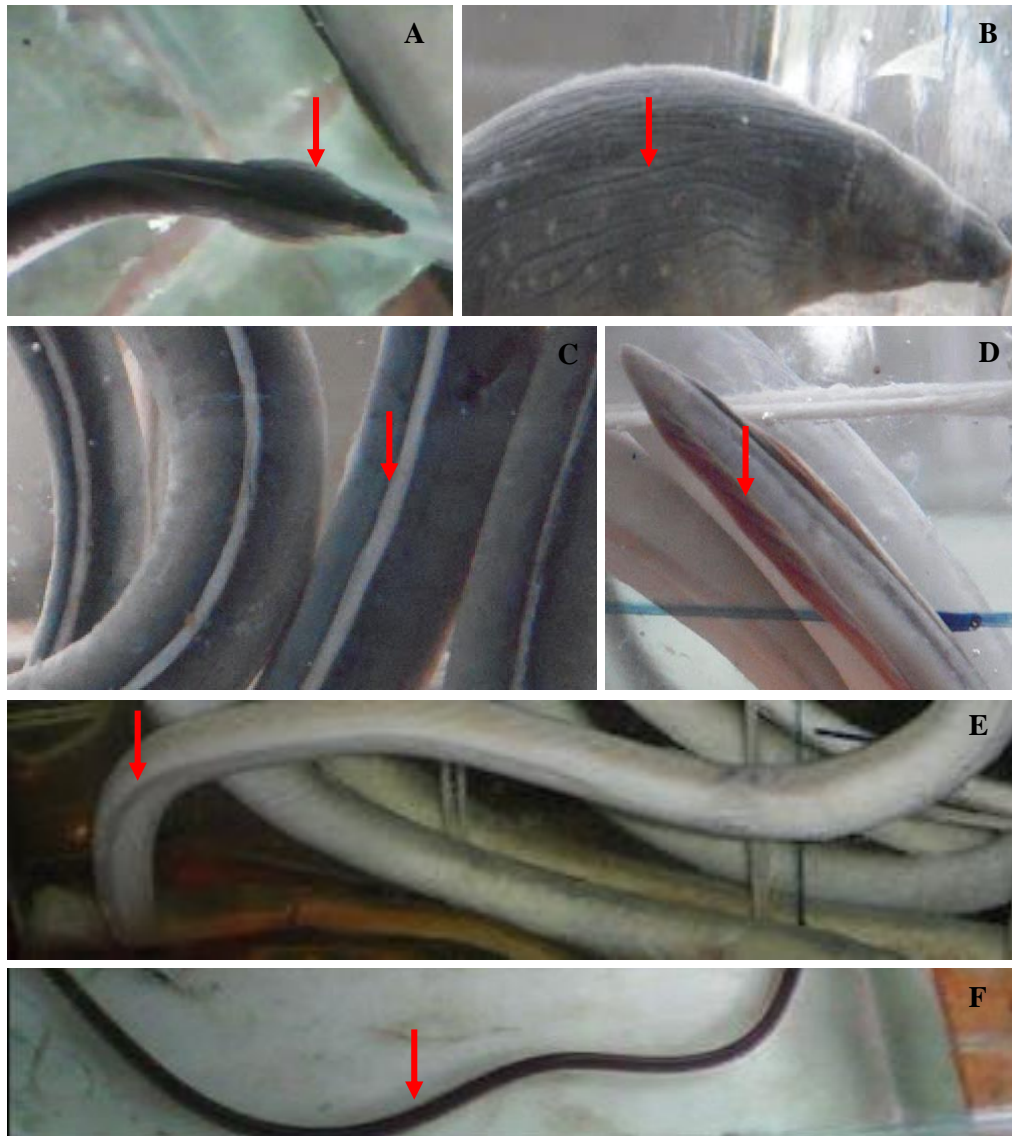


Figure 1: A -Longer and sharper head, B - Presence of gill, C – Presence of dorsal fin, D – Presence of caudal fin, E – Presence of ventral fin, F – Ribbon like movement

4. CONCLUSION

The snake like creatures found under the Kalladi Bridge and adjacent waters were eels and were not sea snakes. No scientific evidences were not available to confirm the movement of observed creature related tsunami. Not all abnormal behaviours related to disasters might warrant migration, which needs further research.

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