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Molasses Attracted Insect Taxa in Selected Areas of Songculan Lagoon, Songculan, Dauis, Bohol, Philippines

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ABSTRACT

Insects are the most diverse among the animal group, and it's amazing adaptability led to its enormous diversity and wide distribution. Such diversity enables this vigorous group to take advantage of all available resources of food and shelter. This study aimed to identify insect taxa found in Songculan Lagoon, Songculan, Dauis, Bohol, Philippines; identify the insect taxa up to order level; and determine and compare the number of insects among stations. This study was limited to insect taxa identification up to order level. Sampling involves molasses bait traps hanged on plants in the area. The results identified five (5) insect taxa namely: Hymenoptera, Coleoptera, Diptera, Lepidoptera and Blattodea.

Keywords: *Insect taxa, Molasses bait traps, Songculan Lagoon*

1. INTRODUCTION

Insects alone account for nearly 55% of all species known to science [1]. These organisms' adaptability and diversity are important in the maintenance of biotic communities and play a major role in the evolution [2].

Insects belong to the Phylum Arthropoda, Class Insecta. These invertebrates have more or less elongated and cylindrical body form and are bilaterally symmetric. It has segmented body divided into three distinct regions or tagmata: head, thorax, and abdomen [3]. The head bears a single pair of antennae, mouthparts, compound eyes and zero, two or three ocelli [4]. Insects have no lungs, but breathe through tiny holes in the body wall. Insects smell with their antennae, some taste with their feet, some were with special organs in the abdomen, front legs or antennae. Insects are the only invertebrates with wings, which marked on the influence upon the success of these species. Most insects are terrestrial, although a few occupy aquatic habitats during part of their existence, and only the ocean has eluded extensive explanation [3].

Fermented sugar baits are well-known as attractants for many insect species. These were used in monitoring and detection of economically important lepidopteran pest [5]. These feeding attractant require that specific active chemicals be isolated, identified, and produced synthetically and used as a lure in traps used to monitor pest populations; as a lure in traps designed to "trap out" a pest population; as a broadcast signal intended to disrupt insect mating; conversely as an attractant in bait containing an insecticide [6].

In some other countries like Thailand, they encourage the use of Integrated Pest Management methods using molasses bait that trap major insects that damage the cabbage crop. This minimizes farmers' over dependence on pesticides in crop protection and to avoid harmful effects on human and ecosystems [7].

Thus, the data generated in this study on identification of insect taxa in Songculan lagoon would raise awareness on insect abundance in the area. Since, no previous studies were conducted, this study provided baseline information and helped in appropriate conservation and management to protect the lagoon's biodiversity.

2. MATERIALS AND METHODS

2.1 Study Area

Songculan Lagoon (9°38'2"N 123°50'3"E) is located in the uppermost part of the town of Dauis, which is at the southwest part of Bohol, Philippines with an estimated area of 509,624 sq. meters. The lagoon has rich vegetation, including trees and shrubs, which is predominantly dominated by dense population of mangroves. Five randomly selected stations were the molasses bait traps were installed where chosen. Station 1 (9.634297044828989, 123.83929974984896), Station 2 (9.63405348811758, 123.83880210954464), Station 3 (9.63391048246847, 123.83838879828704) and Station 4 (9.633648000057391, 123.83788753642501), Station 5 (9.633537467256309, 123.83751312961182).

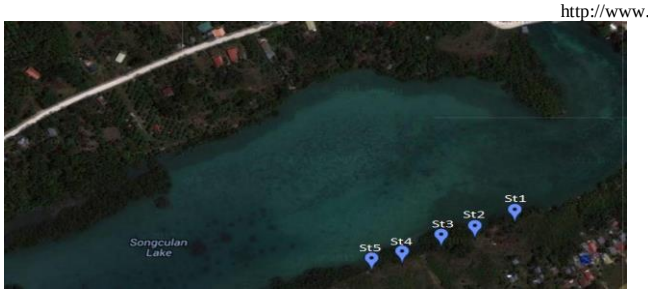

Fig 1: Map of Songculan Lagoon

2.2 Installation and Collection of Molasses bait traps in the Sampling

This study used hanging molasses bait traps adapted from "*Beetles*" by White, 1983 [8]. A total of five molasses bait traps was randomly installed around the lagoon in the morning and were collected the next day. The collections were conducted in three sampling days in the month of September. The trapped insects were stored in vials with rubber stopper and preserved in 70% alcohol [14].

Identification of Insect Taxa. Insect samples collected were brought to the Holy Name University Biology Laboratory and were identified up to the order level using a dichotomous key [9,12,13].

3. RESULTS AND DISCUSSION

Table 1: Insect Taxa collected among Stations in Songculan Lagoon

Sampling 1	Hymenoptera(Ant)	Lepidoptera(Moth)	Diptera(Fruitfly)	Diptera(Fly)	Blattodea(Cockroach)	Coleoptera(Beetles)
Station 1	18	1	0	0	0	0
Station 2	12	0	0	0	0	0
Station 3	20	0	3	0	0	3
Station 4	7	0	2	0	0	0
Station 5	27	0	0	1	1	0
Sampling 2						
Station 1	0	1	2	0	0	2
Station 2	0	2	1	0	0	1
Station 3	4	1	0	3	1	5
Station 4	3	0	1	0	2	1
Station 5	0	0	0	0	0	2
Sampling 3						
Station 1	0	0	0	0	0	0
Station 2	1	1	1	0	0	3
Station 3	0	0	0	0	0	0
Station 4	1	1	0	1	1	1
Station 5	1	0	0	1	4	0

Five (5) insect taxa were identified in Songculan Lagoon namely; Hymenoptera, Lepidoptera, Diptera, Coleoptera and Blattodea. These insects were trapped into molasses bait. In the day 1, five (5) insect taxa were determined, which included Lepidoptera, Hymenoptera, Coleoptera, Diptera, and Blattodea which has the highest number of individuals collected in Songculan Lagoon. For the day two (2) and three (3), five (5) taxa were determined namely Lepidoptera, Hymenoptera, Blattodea and Diptera, with day three (3) having the least number of individuals collected in Songculan lagoon.

Among the insect taxa identified only Coleoptera, Hymenoptera, Diptera, Lepidoptera and Blattodea where present among stations in Songculan Lagoon. The most abundant organism among sampling days belongs to Hymenoptera as shown in Table 1. The abundance of the insects in Songculan Lagoon could be associated to the following environmental factors which affect trap catches, and these are: temperature, rainfall, wind speed and direction influence attractant release (from lures) and insect flight. Many insects fly and respond to semiochemicals only at a certain time and only then if temperatures at that time exceed a minimum level (often 50 to 60º F) [6]. Furthermore, these fermented sugar baits are well-known as attractants for many insect species. Insects use many different semiochemicals, chemicals that convey messages between organisms [5,6,10]. Although semiochemicals may seem analogous to tastes or smells perceived by humans, the use of such compounds by insects is characterized by a high degree of sensitivity and specificity. Chemicals that act as attractants or carry other messages across distances are volatile (quick to evaporate) compounds. When released to the air, they can be detected by certain insects (those receptive to a specific compound) a few inches to hundreds of yards away. Chemicals that carry messages over considerable distances are most often used in pest management. First, semiochemicals may carry messages either within or between species [11,15] and this could explain to the attracted insects trapped in this study.

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