



Identification of Gastropod Pests on Ornamental Plants and Their use as a Learning Media

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ABSTRACT

Molluscs are a very diverse group, with at least 85,000 named species and it is estimated that up to 200,000 species occur worldwide. They also inhabit almost all ecosystems. The most well-known mollusc classes are Gastropods (snails), Bivalves (clams, oysters, mussels, and clams) and Cephalopods (squid, cuttlefish, octopus, and nautilus). Among the mollusks the most interesting are the snails. A number of land snails are often found in residential areas. Most snails are either beneficial or harmless. However, some snails have been found to eat economically important plants and become pests, including pests for ornamental plants. This research aim was (1) to determine the species of gastropods as pests on ornamental plants, (2) to determine the increase in student understanding in learning to the use of direct observation of gastropods. Gastropod sampling locations were determined at five points from Puuk Village; by selecting one point each in one resident's house yard located on the east, west, north, south and center of the village. The data on the types of gastropods that have been collected is proven to exist at the research location by photographing the types, then Identification Samples that have been obtained at the location are then identified and described. To measure and determine the increase in student understanding in learning, this method was carried out after all series of observations in the field were completed by filling in electronic forms. There are two species of gastropods found as pests on ornamental plants in Puuk village; *Achatina fulica* and *Bradybaena similaris*. The learning process becomes better, because students are enthusiastic about directly observing species of invertebrate animals.

Keyword: *Gastropoda, ornamental plants, learning process.*

1. INTRODUCTION

Animals are divided into two groups in general, namely vertebrate animals and invertebrate animals. Vertebrate animals are a group of animals that have backbones, while invertebrate animals are a group of animals that do not have backbones. Invertebrates are a very large group of animals and have around 12 million types of living species. Butterflies, ants, spiders, bees, starfish, and snails are some examples of animals that do not have a backbone [1].

In the taxonomy of living things, invertebrate

animals are included in the animal kingdom. After the kingdom, there are phyla or divisions consisting of 9 groups, namely protozoa, porifera, coelenterata, platyhelminthes, nemathelminthes, annelids, arthropods, echinoderms, and mollusks [2]. Mollusks are a very diverse group, with at least 85,000 named species and it is estimated that there are up to 200,000 species worldwide. They also inhabit almost all ecosystems [2].

The most well-known mollusc classes are Gastropods (snails), Bivalves (clams, oysters, mussels, and clams) and Cephalopods (squid, cuttlefish, octopus,

and nautilus). Among molluscs, the most interesting are snails. They can live well in aquatic environments (sea and freshwater) and land. Other snails are amphibious, moving freely between wet and dry habitats [3]. A number of land snails are often found in residential areas. Most snails are either beneficial or harmless. However, some snails have been found to eat economically important plants and become pests, including ornamental plant pests [4].

Gampong Puuk is a village with most of the population being farmers. The village is very beautiful because almost every yard of the house is planted with various kinds of ornamental plants. Most housewives have a hobby of planting ornamental plants, apart from making their yard beautiful, it also brings in additional income. Many buyers from other villages and city residents come to Gampong Puuk to buy ornamental plants. Recently, residents have been complaining about snail pests which are destroying many ornamental plants. If it is not immediately dealt with, one day the ornamental plants will become extinct and residents will suffer financial losses.

Based on this description, it is important to identify Gastropod Pests in ornamental plants, so that we can find out what types of gastropod animals are found so that they can be used to get an idea of how to deal with these gastropod pests, also provides an overview of the process of direct observation of Gastropods on ornamental plants which can support the learning process in the Vertebrate Zoology Course. Students will more easily understand the characteristics of invertebrate animals, especially in the Gastropoda mollusks class, through direct observation. This research aim was (1) to determine the species of gastropods as pests on ornamental plants, (2) to determine the increase in student understanding in learning to the use of direct observation of gastropods.

2. MATERIALS AND METHODS

Gastropod sampling locations were determined at five points from Puuk Village Pidie District by selecting one point each in one resident's house yard located on the east, west, north, south and center of the village.

All types of gastropods in the area were then captured as samples for identification. Sampling was carried out using the hand-shorting method, because gastropods are animals with low mobility. Sampling was carried out every day within a period of one week (7 days).

Data collection in this research can be obtained from the following methods: (1) Observation Field observations are carried out to determine the location or place of research by going to the field and seeing the research location to be researched, (2) The data on the types of gastropods that have been collected is proven to exist at the research location by photographing the types, (3) Identification Samples that have been obtained at the location are then identified and described. (4) To measure and determine the increase in student understanding in learning, this method was carried out after all series of observations in the field were completed by filling in electronic forms (*Google Form*).

3. RESULTS AND DISCUSSION

Based on observations, 2 species of gastropods were found that attack plants, The species of pests observed in 5 observations every 7 days are presented in Table 1.

No	Species of gastropods	Family	number of gastropods found.					total
			P 1	P 2	P 3	P 4	P 5	
1	Snails	Achatinidae	10	12	5	8	15	50
2	Bush snails	Bradybaenidae	60	55	70	20	58	263
	total species of gastropods found in every observation		2	2	2	2	2	10
Total of gastropods found								313

Table 1. Types of Gastropods and Number of Gatropods Found



Species of gastropods	description
1. Bekicot (<i>Achatina Fulica</i>) 	The body structure consists of a bilaterally symmetrical snail house or shell, a head, and two pairs of tentacles – one pair of longer tentacles has eyes at the ends. Snails have a radula located in the mouth which functions to eat leaves. has a brown shell [7].
2. <i>Bradybaena similaris</i> 	smaller than a snail, the shell is white and brown, has 2 tentacles, has a circular shell shape [7].

Table 2: Morphological identification of gastropod pests on Puuk village

Bush snails are more common than snails, because their smaller size and light weight [5] make it easier for these snails to eat the leaves of ornamental plants not only at the base of the plant but even down to the tops, while snails are only found on ornamental plants on the ground, because they are easy to reach and because their larger size has more limited movement [6].

Bush snails can even be found in very large numbers in hanging ornamental plant pots. morphological identification of gastropod pests on Puuk village can be seen in table 2.

The two species are in the same phylum and class, they differ in ordo, family and genus. The following is the taxonomy of the two gastropods obtained [1].

1. *Achatina fulica*

Kingdom : Animalia
 Phylum : Mollusca
 Class : Gastropoda
 Ordo : Stylommatophora
 Family : Achatinidae
 Genus : *Achatina*
 Species : *Achatina fulica*

2. *Bradybaena similaris*

Kingdom : Animalia
 Phylum : Mollusca
 Class : Gastropoda
 Super Family : Helicoidea
 Family : *Bradybaenidae*
 Genus : *Bradybaena*
 Species : *Bradybaena similaris*

Two species of Gastropods and the results of the identification of these two types of Gastropods are additional learning for students. Students use these two species as examples of gastropod class animals in learning about invertebrate zoology. Gastropods really support learning activities because they are easy to get and are not disgusting animals, easy to observe morphology, ethology, even the anatomy [7]. Apart from being able to provide an independent learning experience by exploring the surrounding environment, it also provides a new learning atmosphere that doesn't always have to be in the room. The percentage of students achieving the level of understanding before and after making direct observations regarding the types of Gastropods increased, almost 90% of respondents experienced an increase in understanding. The gastropods found in Puuk village really support the learning process. Students are enthusiastic and make learning activities more meaningful, and learning outcomes improve.

4. CONCLUSION

- 4.1 There are two species of gastropods found aspests on ornamental plants in Puuk village; *Achatina fulica* and *Bradybaena similaris*.
- 4.2 The learning process becomes better, because students are enthusiastic about directly observing species of invertebrate animals.

AUTHORS' CONTRIBUTIONS

Authors 1 and 2 contributed to the data analysis and finalization of the article, and Author 3 contributed to the data collection.

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