



Species Composition of Amphibians (Order Anura) in Baturraden Botanical Garden, Banyumas

Erik Prasetyo, Umniyyatuz Zulfa, Rizky Zulfa Roihana, Septiana Anggraini, Rina Wahyuningsih, Wahyu Mustika Dewi, Zanuvar Abdul Hamid, Annisa Nurjannah, Annisa Lintang Malinda, Erna Muktisari, & Nurliana

Biology Department, Universitas Negeri Semarang, Semarang, Central Java, Indonesia

Abstract

Baturraden botanical garden is located in Kemutuk Lor village, Baturraden district, Banyumas in the southern slopes of Mount Slamet. This area is mostly composed by the forest cover (natural forests and production forests) and has a high water abundance so in accordance with the habitat of amphibians (order Anura). This study aims to determine the species composition of amphibians (order Anura) in the area of the Baturraden botanical garden. This research was conducted in July 2015 using the Visual Encounter Survey (VES) method by making three line transects. Results of the study found 8 species of amphibians (order Anura) from 5 families that were families from Megrophryidae (*Leptobrachium haseltii*), Bufonidae (*Leptophryne borbonica*), Dicroglossidae (*Limnonectes kuhlii*), and (*Limnonectes microdiscus*), Ranidae (*Hylarana chalconota* and *Odorrana hosii*) and Rhacophoridae (*Polypedates leucomystax* and *Rhacophorus margaritifer*). Family composition is dominated from family Dicroglossidae and Ranidae.

Article History

Received 12 October 2020
Accepted 31 December 2020

Keyword

amphibians, anura, Baturraden, species composition

Introduction

Baturraden botanical garden is located on the southern slope of Mount Slamet. Mount Slamet is one of the still active volcano in Central Java. Administratively, Mount Slamet in five areas, that are Banyumas, Tegal, Pemalang, Brebes, and Purbalingga. The southern slope areas of Mount Slamet in the district of Banyumas has the most extensive forest cover of the five regions. Forest coverage in this region is composed of the natural forest cover / forest protection and production of a resin (*Agathis dammara*) and pine (*Pinus mercurii*) (Soemarno and Girmansyah, 2012). Mount Slamet is also an area of forest catcher as well as the source of the watershed (Gunawan, 2012). Such conditions allow regions of Baturraden botanical garden have potential high richness of amphibian species (orders Anura).

Amphibian is one of fauna the constituent ecosystems and biodiversity is that can live in marine habitat, land, until arboreal. The existence of amphibians can be used as bio-indicators of environmental quality, because amphibians have sensitive skin that is prone to environmental changes. Anura is a tailless amphibians which consists of a group of frogs and toads. Anura is a group of animals that require the availability of water in its life cycle, for

growth and development. Anura plays an important role in the food chain and maintain the balance of the ecosystem. Anura has role as predators of insects and insect larvae and is not directly useful for reducing the natural human being insect pests and agricultural plantations or insect vectors of disease (Stebbins and Cohen, 1997).

Documenting the amphibian species (orders Anura) in this region are rare. Previous data collection has been done is on the southern slope of Mount Slamet by Riyanto (2010), Ratna and Wijaya (2013) as well as on the eastern slopes by Riyanto and Trilaksono (2012). Based on this, then do research to determine the species composition of amphibians (order Anura) in the area of the Baturraden botanical garden and is expected to be considered in conducting advanced research.

Materials and Methods

Study area Sample collection

Time and Location

The research was held on July 04th – 06th, 2015. Location of research in the Baturraden Botanical Garden, Kemutuk Lor village, Baturraden District, Banyumas Regency, Central Java, Indonesia. Research location map can be seen in Figure 1 below.

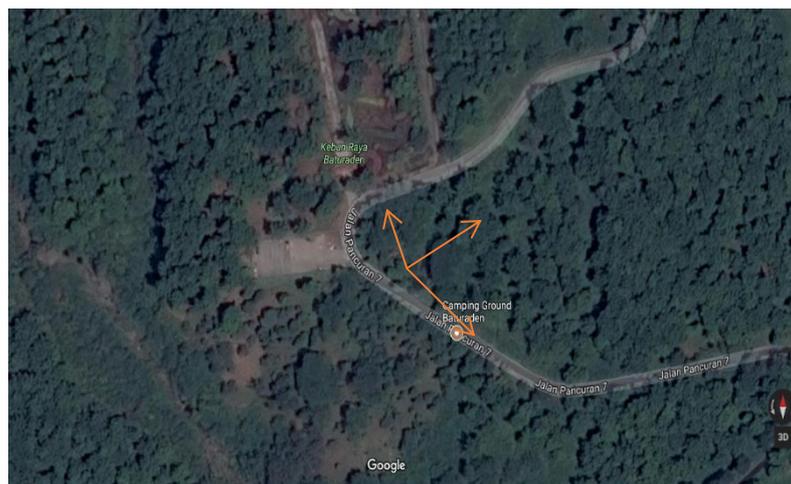


Figure 1. Research Location Map of Baturraden Botanical Garden

Collecting Data

The method used in this research is the Visual Encounter Survey (VES) that record all species of amphibians are found along the aquatic and terrestrial observation (Heyer et al., 1994). Used 3 line transects that are area around the mess / lodging, around the frogs garden and around liana gardem. For terrestrial habitat made line transect along the 1000 m, while the aquatic habitat made line transect 500 m. Observations were carried out at night starting at 07.30 – 11.00 p.m. Sampling was done through direct observation of amphibians, the arrest of individuals put in a plastic bag, and documentation with the camera.

Analysis Data

The data of the research results analyzed include: the species name, time, number of species, activity, the size of the *snout vent length* (SVL) and environmental factors (temperature, altitude, and humidity). Amphibians that were found subsequently identified using identification guide books Iskandar (1998). Analysis of the data used for the study of

amphibians (order Anura) is a comparative analysis of the species and conservation status.

Results and discussion

Results

The found of amphibians (order anura) in this research consists of 5 families, 7 genera and 8 species. The results found 8 species of Anura, which is included in 5 families (Table 1), that were from family Megophryidae (*Leptobrachium hasseltii*), Bufonidae (*Leptophryne borbonica*), Dicroglossidae (*Limnonectes kuhlii* and *Limnonectes microdiscus*), Ranidae (*Hylarana chalconota* and *Odorrana hosii*), and Rhacophoridae (*Polypedates leucomystax* and *Rhacophorus margaritifer*).

Table 1. List Of Amphibians Species (Order Anura) and Conservation Status

No	Species	Family	Habitat	Conservation Status (IUCN)
1	<i>Leptobrachium haseltii</i>	Megophryidae	Terrestrial	Least Concern (LC)
2	<i>Leptophryne borbonica</i>	Bufonidae	Semi Aquatic	Least Concern (LC)
3	<i>Limnonectes microdiscus</i>	Dicroglossidae	Semi Aquatic	Least Concern (LC)
4	<i>Limnonectes kuhlii</i>	Dicroglossidae	Semi Aquatic	Least Concern (LC)
5	<i>Hylarana chalconata</i>	Ranidae	Semi Aquatic	Least Concern (LC)
6	<i>Odorrana hosii</i>	Ranidae	Semi Aquatic	Least Concern (LC)
7	<i>Polypedates leucomystax</i>	Rhacoporidae	Arboreal	Least Concern (LC)
8	<i>Rhacoporus margaritifer</i>	Rhacoporidae	Arboreal	Least Concern (LC)

Discussion

Research on the southern slopes of Mount Slamet previously been done by Riyanto (2010) and Ratna & Wijaya (2013), while on the eastern slopes by Riyanto and Trilaksono (2012). In the 2010 study in the area Katenger found 16 species of Anura, whereas in 2013 found 13 species of Anura. In a study in 2012 on a climbing lane Bambang, Serang River, and Tuntunggunung River area found 14 species.

The species of Anura were found on the eastern slopes of Mount Slamet (2012), but was not found on the southern slope, that were *Microhyla palmipes*, *Hylarana ruficeps*, and *Occidozyga sp.* The species of Anura were found on the southern slopes of Mount Slamet in 2010 and 2013, but was not found in this study that were *Duttaphrynus melanostictus*, *Phrynooidis aspera*, *Megophrys montana*, *Microhyla achatina*, *Huia masonii*, *Fejervarya cancrivora*, *Fejervarya limnocharis*, *Limnonectes macrodon*, *Philautus aurifasciatus*, *Polypedates otiophilus*, and *Rhacophorus reinwardtii*. Anura species that have not been found in previous studies (2010 and 2013) on the southern slopes of Mount Slamet was ***Leptophryne borbonica***.

The different species of Anura were found allegedly caused by different types of habitat examined / observed. In a previous study examines the natural forest habitat, production forests, rice fields and albicia garden. While this study examined the type of habitat that focus on production forests, so that the number of species found Anura less than previous studies.

Baturraden botanical garden's area there are many waterways so as to allow amphibians (order Anura) aquatic types can proliferate more optimal than with other types

Anura, causing the family that dominates the composition is family Dicroglossidae and Ranidae (type of aquatic). For conservation status on the IUCN, all amphibians (order Anura) status *Least concern* (8 types).

Conclusions

Composition species of amphibians (order Anura) in Baturraden botanical garden found 8 species belonging to 5 families. Family is dominated Dicroglossidae and Ranidae family. Amphibians (order Anura) were identified in this study is *Leptophryne borbonica*. The conservation status of all kinds is the *least concern*.

References

- Başkale, Eyup & Uğur K. 2009. *Richness and Distribution of Amphibian Species in Relation to Ecological Variables in Western Aegean Region of Turkey*. 17: 25-31.
- Gunawan, D. 2012. Komunitas Herpetofauna di Lereng Gunung Slamet, Jawa Tengah. *Ekologi Gunung Slamet*. Jakarta: LIPI Press. Hal 31 – 40.
- Halliday, T. and K Adler. 1986. *The Encyclopedia of Reptiles Amphibians*. Andromeda Oxford Ltd. England.
- Iskandar, D. T. 1998. *Amfibi Jawa dan Bali*. Bogor: Puslitbang Biologi- LIPI.
- Kurniati, H. 2003. *Amphibians & Reptiles of Gunung Halimun National Park West Java, Indonesia*. Reseach Center for Biology-LIPI. Nagao Natural Environment Foundation-NEF. Cibinong
- Munir, M. 2011. *Kekayaan Jenis Amfibi pada Beberapa Tipe Habitat di Gunung Ungaran, Jawa Tengah*. Semarang: Green Community
- _____. 2012. *Amfibi Gunung Ungaran Jawa Tengah*. Semarang: Green Community.
- Putra, K., et al. 2012. Komunitas Anura (Amphibia) pada Tiga Habitat Perairan di Kawasan Hutan Harapan Jambi. *Jurnal Biologi Uniersitas Andalas*. Vol 1 (2). Desember: Hal 156 – 165.
- Ratna, A. A. G. dan E. A. P. W. Wijaya. 2013. Survei Awal Keanekaragaman Ordo Anura di Desa Ketenger, Batu Raden, Jawa Tengah. *Indonesian Journal of Conservation*. Vol. 2. No. 1. Hal 84 – 90.
- Riyanto, A, dan W. Trilaksono. 2012. Komunitas Herpetofauna di Lereng Timur Gunung Slamet, Jawa Tengah. *Ekologi Gunung Slamet*. Jakarta: LIPI Press. Hal 151 – 160.

- Riyanto, A. 2010. Komunitas Herpetofauna dan Potensinya bagi Sektor Ekowisata pada Kawasan Ketenger–Baturraden di Selatan Kaki Gunung Slamet, Jawa Tengah. *Biosfera*. Vol. 27. No. 2. Hal: 60 – 67.
- Soemarno, S. dan D. Girmansyah. 2012. Kondisi Kawasan Hutan Alam Gunung Slamet, Jawa Tengah. *Ekologi Gunung Slamet*. Jakarta: LIPI Press. Hal 41-61.
- Stebbin, R. C. and N. W. Cohen. 1997. *A Natural History of Amphibians*. New Jersey: Princeton University Press. Page 316.
- Yani, A., *et al.* 2015. Keanekaragaman Jenis Amfibi Ordo Anura di Kawasan Hutan Lindung Gunung Semahung Kecamatan Sengah Temila Kabupaten Landak Kalimantan Barat. *Jurnal Hutan Lestari*. Vol 3 (1). Hal: 165 – 20.
- Zug, G. R. 1993. *Herpetology: An Introductory Biology of Ampibians and Reptiles*. Academic Press. London, page: 357 – 358.