

## Short Communication

# Diversity and Distribution of Herpetofauna in Banyu Nibo Waterfall, Nglanggeran, Gunung Kidul, Yogyakarta

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Submitted: 11 October 2019; Accepted: 17 February 2020; Published: 15 April 2020

### ABSTRACT

Banyu Nibo Waterfall is located near Nglanggeran, Gunung Kidul that well known for its eco-tourism development. The geographical and ecosystem condition could be providing a unique habitat for herpetofauna. Herpetofauna has important role in the ecosystem as food chain components and even as an environment bioindicator. The aim of this research is to assess the herpetofauna diversity in Banyu Nibo Waterfall as preliminary biodiversity data. The research was conducted using VES (*Visual Encounter Survey*) assisted by 500 meters transect line. As a result, 15 species were found, mainly distributed on the area with tree coverage.

**Keywords:** distribution, diversity, Gunung Kidul, herpetofauna, visual encounter survey

Herpetofauna (Reptiles and Amphibian) is one of the components which form the ecosystem, it has important roles in term of ecological and economical (Kusrini et al., 2003). The ecological role of herpetofauna is to maintain the balance of the ecosystem because the role of larger herpetofauna is as predators on the food chain. Some species also play a role as prey for the level of trophic in it. Some species of herpetofauna that are only found in certain specific habitat types (Iskandar, 1996).

Banyu Nibo Waterfalls is in Dusun Batur, Putat Village, Patuk District, Gunungkidul, Special Region of Yogyakarta. The height of this waterfall is about 50 meters and fast-medium water flow. This waterfall is located 150 away from the main road. The research was aimed to inventorying the diversity of herpetofauna in Banyu Nibo waterfall and to asses basic distribution of herpetofauna.

The research activity was carried out on 6-8 April 2018 with the location as an area open for ecotourism. The waterfall is full of rocks dominated by karstic and volcanic rocks with strong currents. In

some parts, there are some puddles due to dammed water for irrigating rice fields. The sampling area is at an altitude of 241-306 masl. At the time of sampling, the weather was clear during the day with a little cloud cover and the temperature was around 28°C. During the night it is cloudy and drizzles with temperature around 26°C.

Materials used were 70% ethanol for preservative solution and specimen's euthanasia, GPS Garmin etrex as a coordinate pointer, syringes for injecting solutions, 2 kg plastic and sacks as a temporary specimen container, permanent markers as stationery for marking the obtained samples, and jam bottle as a container for preserved specimens.

Night and Day sampling were conducted three times to obtain both diurnal, nocturnal also cathemeral species. Visual encounter survey assisted with 500 meters transect line was conducted for 2 hours in the morning started at 08.00 a.m. and in the evening started at 07.00 p.m. Specimen was identified based on Das (2010) for reptile species while Kusrini (2013) and Iskandar (1998) for amphibian. The coordinates were recorded using Avenza Maps. ArcGIS 10.1 was used for mapping. The observation resulted in 79 individual composed

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Table 1. Herpetofauna species observed in Banyu Nibo waterfall

Order/Suborder	Species	Number of Individual	Frequently Founded Habitat
Order Squamata; Suborder Lacertilia	<i>Bronchocela jubata</i>	11	Woody Tree: <i>Pterocarpus indicus</i> ; <i>Tectona</i> sp.; <i>Ficus</i> spp.
	<i>Cyrtodactylus marmoratus</i>	3	Rocks
	<i>Draco volans</i>	1	Palm
	<i>Eutropis multifasciata</i>	14	Rocks and grass
	<i>Gehyra mutilata</i>	1	Rocks
	<i>Gekko gecko</i>	6	Rocks
	<i>Hemidactylus frenatus</i>	2	Rocks and Banana leaf ( <i>Musa</i> sp.)
Order Squamata; Suborder Serpentes	<i>Varanus salvator</i>	1	River stream
	<i>Dendrelaphis pictus</i>	6	Woody Tree: <i>Ficus</i> spp.
Order Anura	<i>Xenochropis vittatus</i>	1	Pond
	<i>Chalcorana chalconota</i>	14	Rocks and floor vegetation: <i>Urtica</i> sp., <i>Dendrocnide</i> sp., <i>Asplenium</i> sp.
	<i>Duttaphrynus melanostictus</i>	1	Rocks
	<i>Fejervarya limnocharis</i>	2	Grass
	<i>Occidozyga lima</i>	12	Water puddle
	<i>Occidozyga sumatrana</i>	4	Water puddle and rice field

of 15 species. (Table 1).

Based on Figure 1, we divided the area into two area i.e. area with tree coverage (agroforest and small rice paddy inside woodland) and open agricultural field. A large proportion of community was distributed in area within tree coverage mainly in agroforest, except for *Eutropis multifasciata*, *Hemidactylus frenatus*, and *Occidozyga sumatrana*.

A large proportion of reptiles (Figure 2) mainly observed in area with tree coverage because they were arboreal species i.e *Dendrelaphis pictus*, *Bronchocela jubata*, *Draco volans*. Large proportions of *Cyrtodactylus marmoratus*, *Gehyra mutilata*, *Hemidactylus frenatus* and *Gekko gecko* (familia Gekkonidae) also with their clutches, were commonly observed in rocks along the stream. The occurrence of rocks and tree become important for the Gekkonidae to put their clutches (Das, 2010). During daytime, we observed a large proportion of *Eutropis multifasciata* tend to bask in rocks and open areas to optimize the heat absorption from solar radiation.

We observed *Chalcorana chalconota* perched on rocks and vegetation along the river stream. The species prefers the perching site in 0-1 meters from river stream (9 individuals). This observation matched with observation by Kurniati & Sumadijaya, 2011 on Mount Salak. *Chalcorana chalconota* on Mount Salak often found in microhabitats where there are many herbaceous plants on the riverbank. The individual tends to choose site around 0-1 meters from river but without specific preference on vegetation if the leaf and petiole were strong enough. Meanwhile, *Occidozyga lima* and *Occidozyga sumatrana* tend to inhabit more calm water including small water puddle and ricefield until 15-20 meters

away from river stream.

In conclusion, we observed 15 species of herpetofauna, which consists of five species of lizards (suborder Lacertilia), two species of snake (suborder Serpentes) and five species of frogs and toads (order Anura). Species communities were not evenly distributed, a large proportion of the community were distributed area with tree coverage i.e agroforest and forest area. *Eutropis multifasciata* and *Bronchocela jubata* were the most abundant reptiles in study sites. *Chalcorana chalconota* and *Occidozyga lima* were the most abundant amphibian in the study site.

## ACKNOWLEDGMENTS

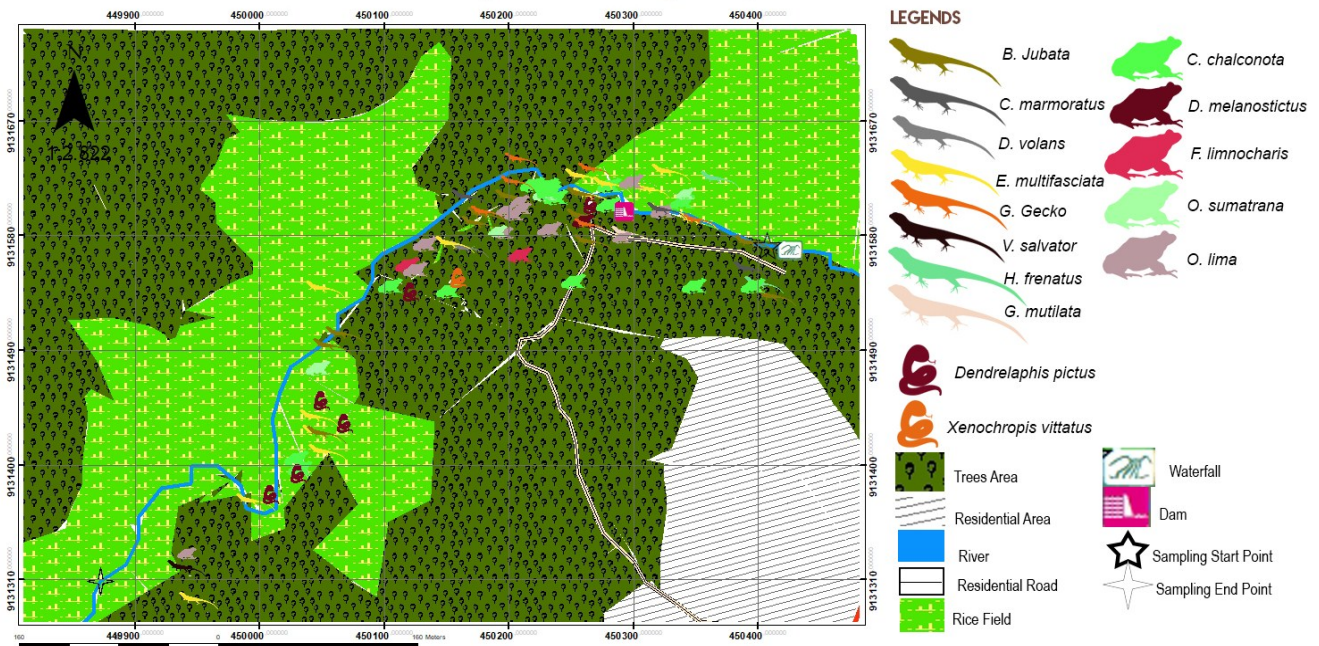
Thank you for the team which helped us in the completion of the study especially for Herpetofauna Expedition: Gunung Kidul Team Member from Herpetology Study Club

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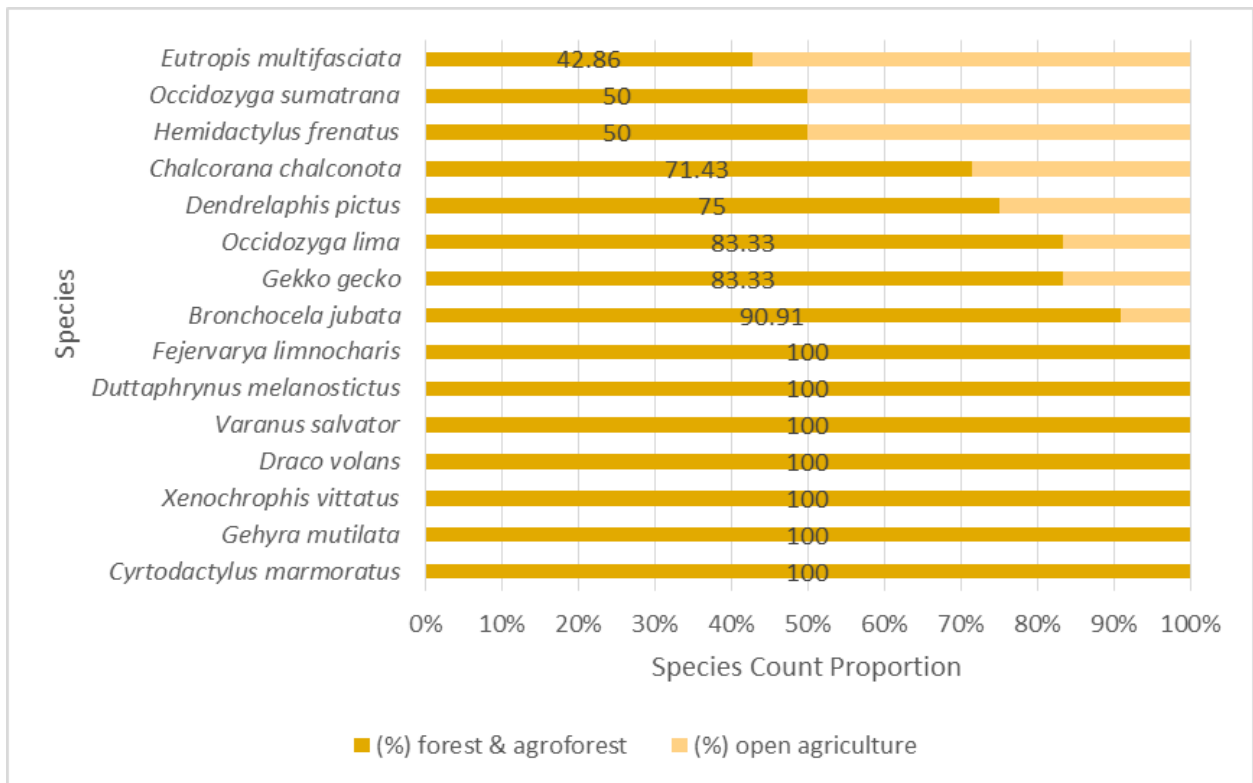
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(a)



(b)

**Figure 1.** Herpetofauna Distribution Map in Banyu Nibo Waterfall (a), with individual count proportion each species between open agriculture and area with tree coverage (b)





(a)



(b)



(c)



(d)

**Figure 2.** Species commonly found in Banyu Nibo a. *Bronchocela jubata* b. *Eutropis multifasciata* c. *Chalcorana chalconota* (d) *Occidozyga lima*