

Project Update: November 2022

Field survey and documentation

The herpetological field survey at Bromo Tengger Semeru National Park (BTSNP) was scheduled between August and October 2022, according to our plan. Due to the requirements of team preparation, volunteer selection, and the risk of extreme weather and disaster (e.g., flooding, landslide, eruption), we believe it will be more practical to extend and conduct the monthly field survey from August to January 2023. (Including the report of species presence from native locals beyond the scheduled plan). Our survey team is comprised of BTSNP and RPTN staff, the Bromo Tengger Semeru Herpetofauna Conservation (BTSHC) team, and a selected number of volunteers (Figure 1).



Figure 1. Our field survey team includes BTSNP and RPTN staff, BTSHC team, and volunteers.

We have collected the data of biodiversity of amphibians and reptiles, including the possible risk and major threat to their population (Figure 2).



Figure 2. In the BTSNP and its buffer zones, our field survey team is investigating the diversity of herpetofauna and collecting abiotic data.

From 5 August to 13 November 2022, we conducted field surveys at 16 survey sites, including Resort Pengelolaan Taman Nasional (RPTN) in BTSNP (RPTN Jabung, RPTN Trisula, RPTN Ranu Darungan, RPTN Senduro, RPTN Ranu Pane) and buffer zone on the edge of BTSNP (Coban Pelangi, Coban Siuk, Pronojiwo, Jarak Ijo, Coban Jodo, Coban Siuk, Pronojiwo, Wonokitri) (Figure 3).

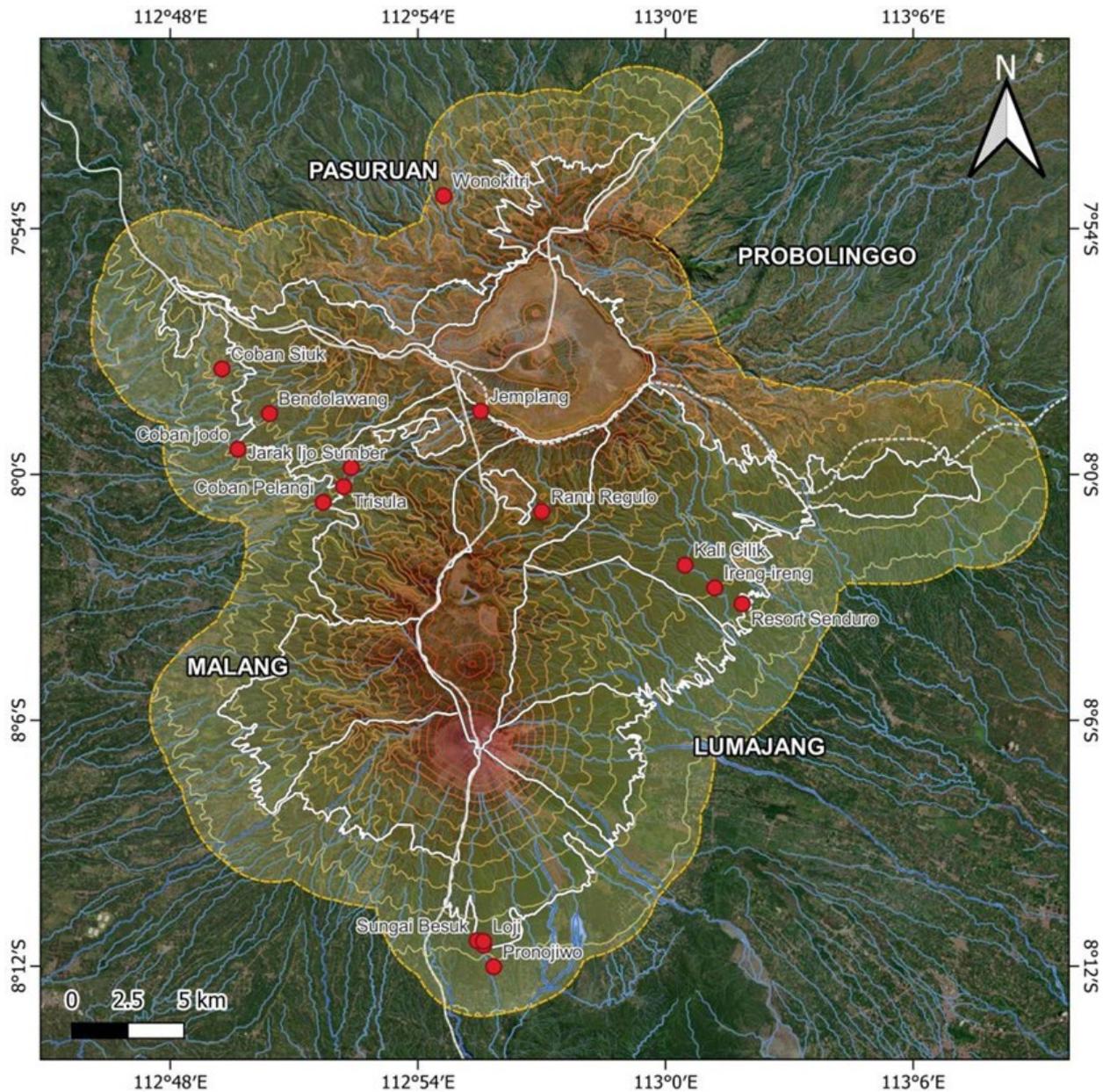


Figure 3. Geographical map showing the surveyed sites to date.

BTSNP's core zone (sanctuary and wilderness area) will be surveyed between the end of November and the start of December 2022. (i.e., Ranu Tompe, Ranu Kuning, Jokoniti).

Species assessment and inventory

Based on our current surveys on 15 survey sites (and report from native locals), we have encountered a total of 41 species of herpetofauna, including 17 amphibians (six families) and 24 reptiles (eight families) (Table 1).

Table 1. Checklist of species from our current survey in BTSNP.

Class	Order	Family	Species	IUCN	P.20	CITES		
Amphibia	Anura	Bufonidae	<i>Duttaphrynus melanostictus</i>	LC	-	-		
			<i>Leptohryne borbonica</i>	LC	-	-		
		Dicroglossidae	<i>Limnonectes microdiscus</i>	LC	-	-		
			<i>Occidozyga sumatrana</i>	LC	-	-		
		Megophryidae	<i>Leptobrachium haseltii</i>	LC	-	-		
			<i>Megophrys montana</i>	LC	-	-		
		Microhylidae	<i>Kaloula baleata</i>	LC	-	-		
			<i>Microhyla achatina</i>	LC	-	-		
			<i>Microhyla palmipes</i>	LC	-	-		
		Ranidae	<i>Bijurana nicobariensis</i>	LC	-	-		
			<i>Chalcorana chalconota</i>	LC	-	-		
			<i>Odorrana hosii</i>	LC	-	-		
			<i>Wijayarana masonii</i>	LC	-	-		
		Rhacophoridae	<i>Nyctixalus margaritifer</i>	LC	-	-		
			<i>Philautus aurifasciatus</i>	LC	-	-		
			<i>Polypedates leucomystax</i>	LC	-	-		
			<i>Rhacophorus reinwardtii</i>	NT	-	-		
		Reptilia	Squamata	Agamidae	<i>Bronchocela jubata</i>	LC	-	-
					<i>Draco volans</i>	LC	-	-
					<i>Gonocephalus kuhlii</i>	VU	-	-
Gekkonidae	<i>Cyrtodactylus petani</i>			DD	-	-		
Scincidae	<i>Dasia olivacea</i>			LC	-	-		
	<i>Eutropis multifasciata</i>			LC	-	-		
	<i>Eutropis rugifera</i>			LC	-	-		
	<i>Sphenomorphus sanctus tenggeranus</i>			LC	-	-		
					<i>Tytthoscincus temminckii</i>	LC	-	-
Colubridae	<i>Calamaria linnaei</i>			LC	-	-		
	<i>Ahaetulla prasina</i>	LC	-	-				

			<i>Coelognatus flavolineatus</i>	LC	-	-
			<i>Dendrelaphis pictus</i>	LC	-	-
			<i>Gonyosoma oxycephalum</i>	LC	-	-
			<i>Oligodon bitorquatus</i>	LC	-	-
			<i>Rhabdophis chrysargos</i>	LC	-	-
			<i>Sibynophis geminatus</i>	LC	-	-
			<i>Elapoides fusca</i>	LC	-	-
			<i>Tetralepis fruhstorferi</i>	VU	-	-
		Elapidae	<i>Bungarus candidus</i>	LC	-	-
		Pareidae	<i>Aplopeltura boa</i>	LC	-	-
			<i>Pareas carinatus</i>	LC	-	-
		Pythonidae	<i>Malayopython reticulatus</i>	LC	-	II
		Viperidae	<i>Trimeresurus puniceus</i>	LC	-	-

Note: IUCN (The International Union for Conservation of Nature's Red List of Threatened Species): DD (Data Deficient), LC (Least Concern), NT (Near Threatened), VU (Vulnerable); P.20 (Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.20/MENLHK/SETJEN/KUM.1/6/2018); CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora): II (Appendix II).

During the current surveys, we have revealed the potential for new record, endemic, and rare herpetofauna species (Figure 4).



Figure 4. We found the following endemic and rare herpetofauna during our survey: Java Forest Skink (upper left), Pearly Tree Frog (top right), and Fruhstorfer's mountain snake (bottom).

Education, workshop, and publication

Since one of our goals is to empower and inspire students and exchange information, we offer undergraduate students the capacity to improve field research, share research studies, and understand the importance of herpetofauna conservation in BTSNP through our volunteer programme (Figure 5). Five volunteers (out of 46 applicants) from local universities (i.e., Universitas Islam Negeri Maulana Malik Ibrahim Malang, Universitas Jember, Universitas Ahmad Dahlan Yogyakarta) were chosen to learn with our team to foster future generations of young and aspiring herpetologists.



Figure 5. Flyer for open recruitment volunteer for undergraduate student for this project.

Prior to the initial surveys, we held a training and workshop for the selected volunteers and BTSNP and RPTN staff in order to establish standard operational procedures, provide insight into field research, emphasise the significance of herpetofauna conservation, and provide an overview of the project. Under the training and workshop titled Basic Technique, Surveys, and Observation of Herpetofauna in Bromo Tengger Semeru National Park, we disseminated a series of discussions on the introduction to herpetology, the history and future of herpetology in Indonesia, the scope of herpetology research, monitoring and survey technique, photography technique, diversity and abiotic data management, and identification of herpetofauna species. This training and workshop was held at RPTN Ranu Darungan on 23–24 August 2022, with attendance of 10 BTSNP and RPTN staff and five volunteers (Figure 6).



Figure 6. Training & workshop in RPTN Ranu Darungan participated by BTSNP and RPTN staff, and selected volunteers.

This initiative was followed by the creation of a herpetofauna inventory, as well as regular monitoring and surveys in RPTN Ranu Darungan. Herpetofauna species discovered during the training and workshop were afterwards presented in West Bali National Park during Hari Konservasi Alam Nasional (HKAN) 2022 (Figure 7).

Our team also designed the Species Identification Card (SIC) as an educational tool to encourage and cultivate awareness of herpetofauna conservation while collecting secondary data from native locals and visitors (Figure 8). Other than visitors to BTSNP, the SIC primarily targeted the indigenous Tengger tribe residing within BTSNP.



Figure 7. Checklist of herpetofauna species as the training & workshop follow-up's in RPTN Ranu Darungan, presented in HKAN 2022 in West Bali National Park.

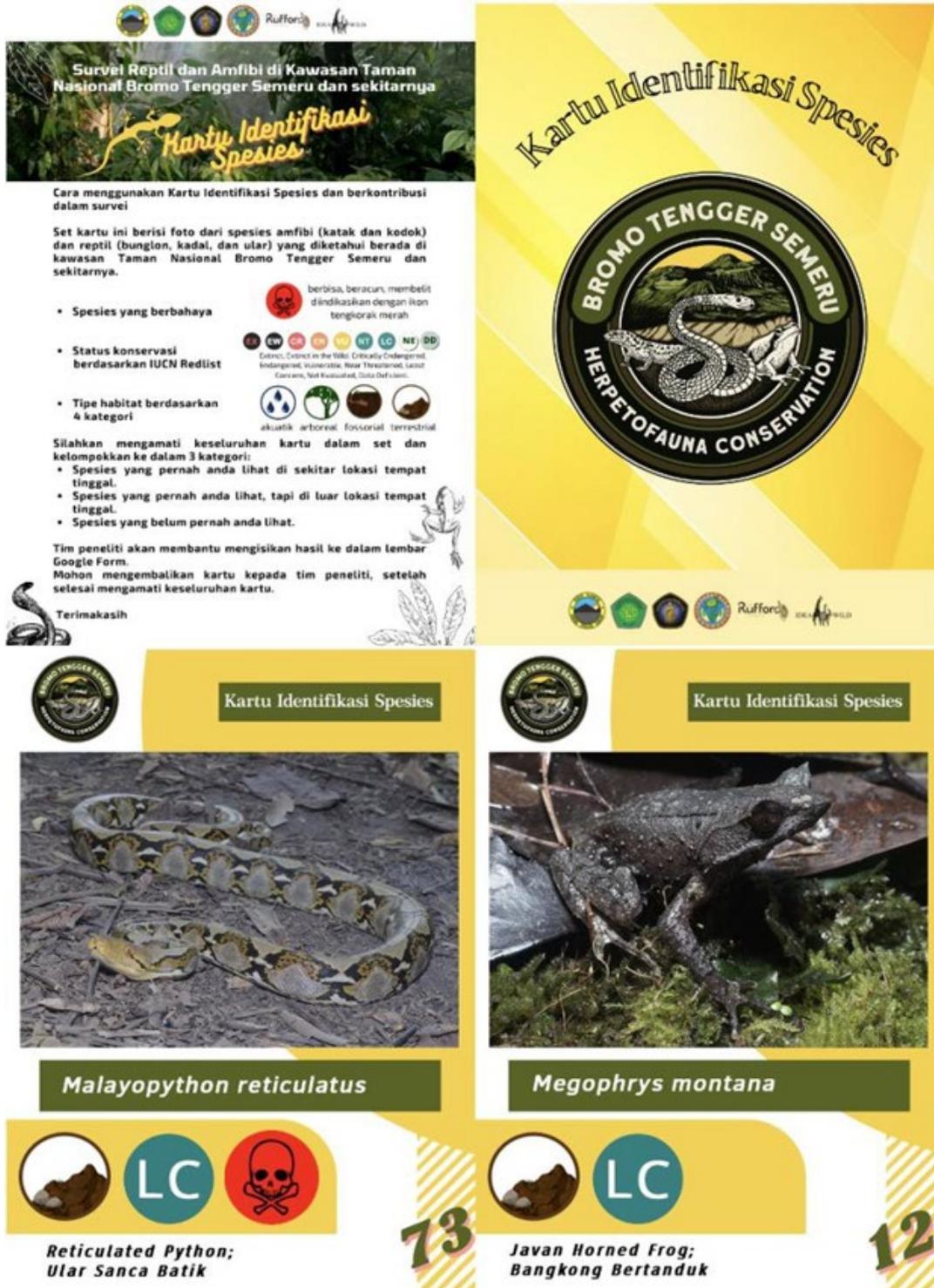


Figure 8. Design of Species Identification Card for this project.

Using a questionnaire, a survey will be undertaken along survey sites (i.e., Ranu Pani, Ngadas) in the enclaved zone to determine the perspectives of BTSNP locals and visitors regarding the conservation of herpetofauna.

Some of our finding (*Record on Tetralepis fruhstorferi*) has been accepted in internationally reputable journal (Russian Journal of Herpetology, Q2), and some others has been in a progress of writing and submitting.