

Final Evaluation Report

Your Details	
Full Name	Pham The Cuong
Project Title	Exploration of the herpetofauna in Phu Yen Province, Vietnam
Application ID	39056-1
Date of this Report	30 December 2023

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Discovery of new species or new distribution records of reptiles and amphibians for Vietnam and studied sites.				A new reptile species (<i>Cyrtodactylus tayhoaensis</i>) was described from Phu Yen Province. In addition, 14 species were recorded for the first time from Phu Yen Province, comprising four species of amphibians
Providing an updated checklist of reptiles and amphibians in Krong Trai Nature Reserve, Phu Yen Province.				The 106 species comprising 40 species of amphibians and 66 species of reptiles were recorded from Krong Trai Nature Reserve in this project. The herpetofauna of Krong Trai Nature Reserve contains a high number of conservation concern species with 26 globally or nationally threatened at different levels including 11 listed in the IUCN Red List (2023), 12 listed in the Red Data Book of Vietnam (2007), 10 listed in Government Decree No. 84 (2021), 11 listed on CITES (2023), and eight currently known only from Vietnam.
Providing data on phylogenetic relationships of some cryptic or complex groups, supporting taxonomic clarification of the species complexes.				We analysed phylogenetic relationships of some cryptic species such as <i>Cyrtodactylus</i> , <i>Leptobarachella</i> , and <i>Nanohyla</i> species from Phu Yen Province.
Providing updated data on distribution patterns, similarity between the species composition of the herpetofauna communities based on geographic sites, habitat types, and altitudinal gradient.				Distribution of species according to habitat types in Krong Trai NR: 67 species recorded in evergreen forests are rarely affected; 41 species recorded in secondary forests are recovering; 18 species recorded in shrubs and grasslands. Distribution of species according to altitudinal gradient in Krong Trai NR: 45 species recorded at altitudes below 300 m and 82 species recorded at altitudes between 300 and 600 m.

Identification of important conservation sites.				In Krong Trai Nature Reserve, two priority locations for conservation are the evergreen forests area belonged to Son Phuoc Commune and the evergreen forests area belonged to Krong Pa and Ea Cha Rang communes.
Evaluate major threats to the herpetofauna in Krong Trai Nature Reserve, Phu Yen Province.				Two major threats to the populations of reptiles and amphibians in Krong Trai Nature Reserve are habitat loss/ degradation (cultivated activities, illegal timber logging, coal mining, road construction) and illegal wildlife hunting for food and trade local market
Providing recommendations for conservation measures.				From the results of this study, managers will plan future policies and they can also provide information to justify and obtain funding for conservation activities from the Vietnamese Government and other NGOs for their conservation work.

2. Describe the three most important outcomes of your project.

a) Our new findings bring the number of herpetofauna species in Krong Trai Nature Reserve, Phu Yen Province to 106 belonging to 22 families and four orders, comprising 40 species of amphibians (seven families, two orders) and 66 species of reptiles (15 families, two orders), with ecological notes for each species.

Species of conservation concern: among 106 recorded species of reptiles and amphibians from Krong Trai Nature Reserve, Phu Yen Province, Vietnam, 26 species are globally or nationally threatened at different levels.

IUCN Red List (2023): 11 species, including three critically endangered, two endangered, two vulnerable and four near threatened.

Red Data Book of Vietnam (2007): 12 species, including two critically endangered, six endangered and four vulnerable.

Decree 84 (2021): 10 species, including one listed in Group IB and nine species listed in Group IIB.

CITES (2023): 11 species listed in Appendix II.

Endemism: eight species are currently known only from Vietnam.

b) New finding: As a result of this research, a new reptile species (*Cyrtodactylus tayhoaensis*) was described from Phu Yen Province. Additionally, 14 species were recorded for the first time from Phu Yen Province, comprising 4 species of amphibians (*Xenophrys truongsoneensis*, *Kaloula indochinensis*, *Hylarana taipehensis*, *Theilerma truongsoneense*) and 10 species of reptiles (*Acanthosaura murphyi*, *Lycodon cardamomensis*, *Oligodon ocellatus*, *Oligodon cinereus*, *Oligodon saintgironsi*,

Sinomicrurus macclellandi, *Calloselasma rhodostoma*, *Protobothrops mucrosquamatus*, *Cuora mouhotii*, *Pelodiscus variegatus*).

c) We analysed phylogenetic relationships of some cryptic species in the genera *Cyrtodactylus*, *Leptobarachella*, and *Nanohyla*. The results show that the new species (*Leptobarachella duyenae* sp. nov.) is genetically distinct from other species in the genus (16S rRNA gene) with a genetic distance $\geq 4.34\%$. The population of *Cyrtodactylus* from Krong Trai Nature Reserve, Phu Yen Province can be distinguished from congeners with approximately $\geq 11\%$ genetic divergence based on a fragment of the mitochondrial ND2 gene. The population of *Nanohyla* from Phu Yen Province can be distinguished from congeners by approximately $\geq 9\%$ genetic divergence based on a fragment of the mitochondrial 16S rRNA gene.

d) We provided a list of herpetofauna species, also a list of threatened and endemic species, population status, distribution pattern, as well as threats to species such as habitat loss and illegal hunting thus helping scientists knowledgeable management and effective conservation plans. We discussed with directorates of Krong Trai Nature Reserve about current threats to biodiversity. We reported to the authorities about relevant matters of forest protection and wildlife conservation that need to be improved in future.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

- The survey site is a transition from the Central Highlands to the coastal area, with complicated terrain and steep slopes that are difficult to access. One field trip was conducted in the rainy season, but the research team is experienced in field surveying for many years in Vietnam and has been led by a local ranger and two local guides who are experts on the mountainous terrain in the study area.
- The study area is inhabited by ethnic minority people who have a habit of hunting for food and trade and are difficult to contact. But we worked closely with local forest rangers and the village chief (the person who is in charge of the village and well-educated) in interviews and propaganda.

4. Describe the involvement of local communities and how they have benefited from the project.

Before conducting the field survey excursion, we had a meeting and discussion with the management board of the reserve and the head of the village to inform them about the purposes of our work in the area. We had a training session for four rangers and three technical staff of the nature reserve on biodiversity monitoring and investigation skills on herpetology (including information such as: an introduction to the diversity of reptiles and amphibians of Vietnam, how to plan and organise the survey and monitoring, preparation of equipment and tools, methodology, how to choose the time, survey sites and habitats, how to collect data and images, how to input and analyse data, how to quickly identify species and some documents that can be used to identify species). During the survey, one technical staff and two

local guides joined in our excursion. They help us identify the survey sites and distribution locations of reptiles and amphibian species within protected areas.

In addition, interviews were also conducted with local guides about their experience of wildlife use, their opinions about cause of the rarity or disappearance of wildlife species, and how to protect them in the nature reserves. We also explained the importance of biodiversity and nature conservation during the interviews and field surveys. We also encouraged them not to hunt threat of wildlife species and not to hunt during the breeding season.

5. Are there any plans to continue this work?

We would like to conduct further field surveys on the population status, ecological, and threat assessment of threatened species reptiles and amphibians in Phu Yen Province. An application for 2nd RSG will be submitted to investigate the population status, ecological, and threat assessment of some species threat and endemic species Phu Yen Province as *Physignathus cocincinus*, *Gekko truongi*, *Gekko phuyenensis*, *Cuora mouhoti*, *Sacalia quadriocellata*, and *Limnonectes phuyenensis*.

We also are doing molecular analyses and diet ecology of some groups (e.g., *Micryletta*, *Odorrana*, *Gekko*, *Oligodon* genera). Molecular data and diet ecology will be used for describing new species and understanding the ecology of reptiles and amphibians in Phu Yen Province.

6. How do you plan to share the results of your work with others?

The report was submitted to the management boards of Krong Trai Nature Reserve and the Department of Agriculture and Rural Development of Phu Yen Province. Responses from management boards indicated that our report is an essential reference for preparing operation plans for this protected area in the future. We are willing to provide further technical support for biodiversity research and conservation in Krong Trai Nature Reserve.

Two papers have been published:

Do D.T, Do Q.H, Le M.D., Ngo H.T., Ziegler T., Nguyen Q.T. & Pham C.T. (2023). A new species of *Cyrtodactylus* (Squamata: Gekkonidae) from Phu Yen Province, Vietnam. *Zootaxa*, 5271 (3): 503–524.

Do D.T., Pham C.T., Nguyen T.Q. & Ziegler T. (2023). New records of poorly known kukri snakes from southern Vietnam including the proof of the first living individual of *Oligodon moricei* (Squamata: Colubridae). *Russian Journal of Herpetology*, 30 (2): 72–78.

One manuscript was submitted to peer-reviewed journals:

Hidden biodiversity in the tropical rain forests: Two new species of *Leptobranchella* Smith 1925 (Anura: Megophryidae) from Vietnam was submitted in *Raffles Bulletin of Zoology*.

Academic publications and press releases after that have been attracting the attention/investment of governmental agencies and NGOs about the conservation value of forests in Krong Trai Nature Reserve, Phu Yen Province

7. Looking ahead, what do you feel are the important next steps?

Investigation of the population status, ecological, and threat assessment of threatened species of reptiles and amphibians are urgently needed to be conducted in Krong Trai Nature Reserve. Management boards of this nature reserve encouraged us to do further field surveys and, more importantly, to publish our research results to attract the attention of international and national agencies, in particular the provincial government.

We need to support equipment and improve capacity for forest rangers in the reserve.

We Need to educate local people not to hunt wildlife through posters and panels.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

I used the RF logo for my presentations at the Graduate University of Science and Technology, Vietnam Academy of Science and Technology, and the University of Science, Vietnam National University, Hanoi. In addition, staff and local people in Krong Trai Nature Reserve were also informed about the support of RF for biodiversity research and conservation through this project.

9. Provide a full list of all the members of your team and their role in the project.

Dr. Pham The Cuong. Dr. Pham The Cuong. I worked as the leader taxonomist of the team; I participated in the field work design and species identification; synthesized data and writing papers and reports. I worked as the leader in the implementation of citizen science activities.

Dr. Do Trong Dang from Phu Yen University, a co-investigator of this project is an expert on taxonomy, biogeography, and conservation of reptiles and amphibians.

Mr. Nguyen Quoc Huy, a young scientist from the Vietnam National Museum of Nature participates in the field work and data analysis.

Mr. Phan Quang Tien, a young scientist from the Institute of Ecology and Biological Resources participates in the field work and data analysis.

Ms. Do Hanh Quyen, a young scientist from the Institute of Ecology and Biological Resources also participates in the data analysis and writing activities.

One young scientist from Phu Yen University (Ms. Nguyen Thi Kim Tinh) participated in this research to collect the data for her's master thesis.

In addition, four rangers and three technical staff of nature reserves will be trained in the following skills: 1) developing a survey plan, 2) selecting survey sites, 3) setting up survey transects in the forest, 4) data collecting in the field, and 5) species identification.

10. Any other comments?

Specimen examination and analysed phylogenetic relationships usually takes more time than previously assumed. Therefore, some more publication results from the project will be sent to RF in the future.

We thank The Rufford Foundation for support of our biodiversity research and conservation in Vietnam.

Below:

- Photos
- List of threatened and endemic species recorded from Krong Trai Nature Reserve, Phu Yen Province.
- List of reptile and amphibian species recorded from Krong Trai Nature Reserve, Phu Yen Province.



Survey team 2. © Hoang Van Chung.



Survey team 1. © Hoang Van Chung.



Sacalia quadriocellata. © Phan Quang Tien.



Rhacophorus annamensis. © Pham The Cuong.



Physignathus cocincinus. © Nguyen Quoc Huy.



Pelodiscus variegatus. © Photo Pham The Cuong.



Ophiophagus Hannah. © Nguyen Quoc Huy.



Limnonectes phuyenensis. © Do Trong Dang.



Limnonectes dabanus. © Pham The Cuong.



Leiolepis rubritaeniata. © Ngo Ngoc Hai.



Gekko truongi. © Pham The Cuong.



Gekko phuyenensis. © Pham The Cuong.



Dixonius vietnamensis. © Pham The Cuong.



Cyrtodactylus tayhoensis. © Pham The Cuong.



Cyclemys oldhamii. © Nguyen Quoc Huy.



Cuora mouhoti. © Nguyen Quoc Huy.



Camping in forest. © Hoang Van Chung.

List of reptile and amphibian species recorded from Krong Trai Nature Reserve, Phu Yen Province

No	Scientific name	Common name	Vietnamese name
	AMPHIBIA	AMPHIBIANS	LỚP LŨỖNG CƯ
	ANURA	FROGS	BỘ KHÔNG ĐUÔI
	1. Bufonidae	Toads	Họ cóc
1.	<i>Duttaphrynus melanostictus</i> (Schneider, 1799)	Asian Common Toad	Cóc nhà
2.	<i>Ingerophrynus galeatus</i> (Günther, 1864)	Cambodia Toad	Cóc rừng
	2. Megophryidae	Asian Toads	Họ Cóc bùn
3.	<i>Leptobrachium banae</i> Lathrop, Murphy, Orlov & Ho, 1998	Bana Spadefoot Toad	Cóc mảy ba na
4.	<i>Leptobrachium</i> sp.	Spadefoot Toad	Cóc mảy
5.	<i>Leptobrachella</i> sp.	Leaf Litter Toad	Cóc mảy
6.	<i>Ophryophryne gerti</i> Ohler, 2003	Gertis' Mountain Toad	Cóc núi got
7.	<i>Ophryophryne hansii</i> Ohler, 2003	Hans' Mountain Toad	Cóc núi han-x
8.	<i>Xenophrys truongsongensis</i> Luong, Hoang, Pham, Nguyen, Orlov, Ziegler & Nguyen, 2022	Truongson Horned Toad	Cóc mắt trường sơn
	3. Microhylidae	Rice Frogs	Họ nhái bầu
9.	<i>Glyphoglossus guttulatus</i> (Blyth, 1856)	Blotched Burrowing Frog	Ễnh ương đóm
10.	<i>Glyphoglossus molossus</i> Günther, 1869	Broad-lipped Frog	Nhái lưỡi
11.	<i>Kaloula indochinensis</i> Chan, Blackburn, Murphy, Stuart, Emmett, Ho, and Brown, 2013	Indochinese Brown Bullfrog	Ễnh ương đồng dương
12.	<i>Kaloula pulchra</i> Gray, 1831	Asian Painted Frog	Ễnh ương thường
13.	<i>Microhyla heymonsi</i> Vogt, 1911	Heymon's Narrow-mouthed Frog	Nhái bầu hây môn
14.	<i>Microhyla mukhlesuri</i> Hasan, Islam, Kuramoto, Kurabayashi & Sumida, 2014	Mukhlesur's Narrow-mouthed Frog	Nhái bầu hoa

No	Scientific name	Common name	Vietnamese name
15.	<i>Microhyla picta</i> Schenkel, 1901	Painted Narrow-mouth Frog	Nhái bầu vẽ
16.	<i>Microhyla pulchra</i> (Hallowell, 1861)	Beautiful Narrow-mouthed Frog	Nhái bầu vân
17.	<i>Microhyla</i> sp.	Narrow-mouthed Frog	Nhái bầu
18.	<i>Micryletta</i> sp.	Paddy Frog	Nhái bầu nhẵn
	4. Dicroglossidae	Fork-tongued Frogs	Họ Ếch nhái chính thức
19.	<i>Fejervarya limnocharis</i> (Gravenhorst, 1829)	Asian Rice Frog	Ngoé
20.	<i>Hoplobatrachus rugulosus</i> (Wiegmann, 1834)	Common Lowland Frog	Ếch đồng
21.	<i>Limnonectes phuyenensis</i> Pham, Do, Le, Ngo, Nguyen, Ziegler & Nguyen, 2020	Phu Yen Wart Frog	Ếch nhéo phú yên
22.	<i>Limnonectes dabanus</i> (Smith, 1922)	Annam Wart Frog	Ếch gáy dô
23.	<i>Limnonectes poilani</i> (Bourret, 1942)	Poilan's Frog	Ếch poi lan
24.	<i>Occidozyga martensii</i> (Peters, 1867)	Marten's Puddle Frog	Cóc nước nhẵn
25.	<i>Occidozyga lima</i> (Gravenhorst, 1829)	Green Puddle Frog	Cóc nước sần
	5. Ranidae	True Frogs	Họ Ếch nhái
26.	<i>Amolops spinapectoralis</i> Inger, Orlov, and Darevsky, 1999	Spiny Torrent Frog	Ếch bám đá gai ngực
27.	<i>Hylarana attigua</i> (Inger, Orlov & Darevsky, 1999)	Similar Frog	Ếch at-ti-gua
28.	<i>Hylarana guentheri</i> (Boulenger, 1882)	Guenther's Stream Frog	Chẫu
29.	<i>Hylarana milleti</i> (Smith, 1921)	Dalat Forest Frog	Chàng mi-le
30.	<i>Hylarana nigrovittata</i> (Blyth, 1856)	Black-striped Stream Frog	Ếch suối
31.	<i>Hylarana taipehensis</i> (Van Denburgh, 1909)	Taipei Grass Frog	Chàng đài bắc
32.	<i>Odorrana gigatympana</i> (Orlov, Ananjeva & Ho, 2006)	Big-eared Odorous Frog	Ếch màng nhĩ khổng lồ

No	Scientific name	Common name	Vietnamese name
33.	<i>Odorrana morafkai</i> (Bain, Lathrop, Murphy, Orlov & Ho, 2003)	Morafkai Cascade Frog	Ếch mo-rap-ka
34.	<i>Rana johnsi</i> Smith 1921	Johns' Frog	Hiu hiu
	6. Rhacophoridae	Flying Frogs	Họ Ếch cây
35.	<i>Kurixalus banaensis</i> (Bourret, 1939)	Bana Bubble-nest Frog	Nhái cây ba na
36.	<i>Polypedates mutus</i> (Smith, 1940)	Burmese Whipping Frog	Ếch cây mi-an-ma
37.	<i>Rhacophorus annamensis</i> Smith, 1924	Annam Flying Frog	Ếch cây trung bộ
38.	<i>Theلودerma vietnamense</i> Poyarkov, Orlov, Moiseeva, Pawangkhanant, Ruangsawan, Vassilieva, Galoyan, Nguyen & Gogoleva, 2015	South-Vietnamese Bug-eyed Frog	Ếch cây sần việt nam
39.	<i>Theلودerma truongsoneuse</i> (Orlov and Ho, 2005)	Truong Son Bug-eyed Frog	Nhái cây trường sơn
	GYMNOPHIONA		BỘ KHÔNG CHÂN
	7. Ichthyophiidae	Caecilians	Họ Ếch giun
40.	<i>Ichthyophis nguyenorum</i> Nishikawa, Matsui & Orlov, 2012	Nguyen's Caecilia	Ếch giun nguyên
	REPTILIA	REPTILES	LỚP BÒ SÁT
	SQUAMATA	SQUAMATA	BỘ CÓ VẢY
	SAURIA	LIZARDS	
	8. Agamidae	Agamid Lizards	Họ nhông
41.	<i>Physignathus cocincinus</i> (Cuvier, 1829)	Green Water Dragon	Rồng đất
42.	<i>Acanthosaura capra</i> Günther, 1861	Green Pricklenape	Ô rô capra
43.	<i>Acanthosaura murphyi</i> Nguyen, Do, Hoang, Nguyen, McCormack, Nguyen, Orlov, Nguyen & Nguyen, 2018	Murphy Pricklenape	Nhông murphy
44.	<i>Calotes bachae</i> Hartmann, Geissler, Poyarkov, Ihlow, Galoyan, Rödder & Böhme, 2013	Lizard	Nhông bách

No	Scientific name	Common name	Vietnamese name
45.	<i>Calotes versicolor</i> (Daubin, 1802)	Common Garden Lizard	Nhông xanh
46.	<i>Draco indochinensis</i> Smith, 1928	Indochinese Flying Lizard	Thằn lằn bay đông dương
47.	<i>Leiolepis rubritaeniata</i> Mertens, 1961	Reeves' Butterfly Lizard	Nhông cát
	9. Gekkonidae	Geckos	Họ Tắc kè
48.	<i>Cyrtodactylus tayhoaensis</i> Do, Do, Ngo, Ziegler, Ngo, Nguyen & Pham, 2023	Tay Hoa Bent-toed Gecko	Thạch sùng ngón tây hòa
49.	<i>Cyrtodactylus</i> sp.	Bent-toed Gecko	Thằn lằn chân ngón
50.	<i>Dixonius vietnamensis</i> Das, 2004	Vietnam Leaf-toed Gecko	Thạch sùng lá việt nam
51.	<i>Gehyra mutilata</i> (Wiegmann, 1834)	Common Four-clawed Gecko	Thạch sùng cụt thường
52.	<i>Gekko gekko</i> (Linnaeus, 1758)	Tokay Gecko	Tắc kè
53.	<i>Gekko phuyenensis</i> Nguyen, Nguyen, Orlov, Murphy, & Nguyen, 2021	Phu Yen Marbled Gecko	Tắc kè phú yên
54.	<i>Gekko truongi</i> Phung & Ziegler, 2011	Truong's Gecko	Tắc kè trường
55.	<i>Hemidactylus frenatus</i> Schlegel, 1836	Common House Gecko	Thạch sùng đuôi sần
56.	<i>Hemidactylus platyurus</i> (Schneider, 1792)	Flat-tailed House Gecko	Thạch sùng đuôi dẹp
	10. Scincidae	Skinks	Họ Thằn lằn bóng
57.	<i>Eutropis longicaudatus</i> (Hallowell, 1856)	Long-tailed Sun Skink	Thằn lằn bóng đuôi dài
58.	<i>Eutropis macularius</i> (Blyth, 1853)	Grass Sun Skink	Thằn lằn bóng đốm
59.	<i>Eutropis multifasciatus</i> (Kuhl, 1820)	<i>Grass Sun Skink</i>	Thằn lằn bóng hoa
60.	<i>Scincella melanosticta</i> (Boulenger, 1887)	Black-spotted Smooth Skink	Thằn lằn cổ
61.	<i>Sphenomorphus maculatus</i> (Blyth, 1853)	Spotted Forest Skink	Thằn lằn phê-nô đốm

No	Scientific name	Common name	Vietnamese name
62.	<i>Subdoluseps</i> sp.	Agile Skink	Thằn lằn chân ngắn
	11. Varanidae	Monitor Lizards	Họ Kỳ đà
63.	<i>Varanus nebulosus</i> (Gray, 1831)	Clouded Monitor	Kỳ đà vân
	12. Pythonidae	Pythons	Họ Trăn
64.	<i>Python molurus</i> (Linnaeus, 1758)	Indian Rock Python	Trăn đất
	13. Typhlopidae	Blind Snakes	Họ Rắn giun
65.	<i>Indotyphlops braminus</i> (Daudin, 1803)	Flowerpot Snake	Rắn giun thường
	14. Colubridae	Colubrids	Họ Rắn nước
66.	<i>Ahaetulla prasina</i> (Reinhardt, 1827)	Gunther's whip Snake	Rắn roi thường
67.	<i>Amphiesma stolatum</i> (Linnaeus, 1758)	Buff Striped Keelback	Rắn sãi thường
68.	<i>Boiga guangxiensis</i> Wen, 1998	Cat Snake	Rắn rào quảng tây
69.	<i>Boiga multomaculata</i> (Boie, 1827)	Many-spotted Cat Snake	Rắn rào đốm
70.	<i>Coelognathus radiatus</i> (Boie, 1827)	Radiated Ratsnakes	Rắn sọc dưa
71.	<i>Dendrelaphis ngansonensis</i> (Bourret, 1935)	Nganson Bronzeback	Rắn leo cây ngân sơn
72.	<i>Dryocalamus davisonii</i> (Blanford, 1878)	Blanford's Bridal Snake	Rắn dẻ
73.	<i>Fowlea flavipunctata</i> (Hallowell, 1860)	Yellow-Spotted Keelback	Rắn nước đốm vàng
74.	<i>Hebius boulengeri</i> (Gressitt, 1937)	Boulenger's Keelback	Rắn sãi bau len go
75.	<i>Lycodon cardamomensis</i> Daltry & Wüster, 2002	Wolf Snake	Rắn khuyết
76.	<i>Lycodon capucinus</i> Boie in Boie, 1827	Common Wolf Snake	Rắn khuyết thường
77.	<i>Lycodon laoensis</i> Günther, 1864	Laotian Wolf Snake	Rắn khuyết Lào
78.	<i>Lycodon subcinctus</i> Boie, 1827	Malayan Banded Wolf Snake	Rắn khuyết đai

No	Scientific name	Common name	Vietnamese name
79.	<i>Oligodon cinereus</i> (GÜNTHER, 1864)	Günther's Kukri Snake	Rắn kiếm
80.	<i>Oligodon ocellatus</i> (Morice, 1875)	Striped Kukri Snake	Rắn kiếm vân đen
81.	<i>Oligodon saintgironsi</i> David, Vogel & Pauwels, 2008	Saint Gironns' Kukri Snake	Rắn kiếm xanh-gi-ron
82.	<i>Oligodon</i> sp.	Kukri Snake	Rắn kiếm
83.	<i>Ptyas korros</i> (Schlegel, 1837)	Indo-Chinese Rat Snake	Rắn ráo thường
84.	<i>Ptyas mucosa</i> (Linnaeus, 1758)	Oriental Ratsnake	Rắn ráo trâu
85.	<i>Ptyas multicincta</i> (Roux, 1907)	Many-banded Green Snake	Rắn nhiều đai
86.	<i>Rhabdophis chrysargos</i> (Schlegel, 1837)	Specklebelly Keelback	Rắn hoa cỏ vàng
87.	<i>Rhabdophis subminiatus</i> (Schlegel, 1837)	Red-necked Keelback	Rắn hoa cỏ nhỏ
	15. Homalopsidae		Họ Rắn bông
88.	<i>Enhydris enhydris</i> (Schneider, 1799)	Rainbow Mud Snake	Rắn bông súng
89.	<i>Hypsiscopus plumbea</i> (Boie, 1827)	Rice Paddy Snake	Rắn bông chì
	16. Lamprophiidae	Mock Vipers	Họ Rắn hổ đất
90.	<i>Psammodynastes pulverulentus</i> (Boie, 1827)	Common Mock Viper	Rắn hổ đất nâu
	17. Pareasidae	Slug Snake	Họ Rắn hổ mây
91.	<i>Pareas formosensis</i> (Van Denburgh, 1909)	Formosa Slug Snake	Rắn hổ mây
92.	<i>Pareas margaritophorus</i> (Jan, 1866)	Mountain Slug Snake	Rắn hổ mây ngọc
	18. Elapidae	Kraits	Họ Rắn hổ
93.	<i>Bungarus candidus</i> (Linnaeus, 1758)	Blue Krait	Rắn cạp nia nam
94.	<i>Bungarus fasciatus</i> (Schneider, 1801)	Banded Krait	Rắn cạp nong
95.	<i>Naja kaouthia</i> Lesson, 1831	Monocled Cobra	Rắn hổ mang một mắt kính

No	Scientific name	Common name	Vietnamese name
96.	<i>Ophiophagus hannah</i> Cantor, 1836	King Cobra	Rắn hổ chúa
97.	<i>Sinomicrurus macclellandi</i> (Reinhardt, 1844)	MacClelland's Coral Snake	Rắn lá khô thường
	19. Viperidae	Vipers	Họ Rắn lục
98.	<i>Calloselasma rhodostoma</i> (Kuhl, 1824)	Malayan Pit Viper	Rắn choàm quạp
99.	<i>Protobothrops mucrosquamatus</i> (Cantor, 1839)	Brown spotted Pit Viper	Rắn lục cườm
100.	<i>Trimeresurus albolabris</i> (Gray, 1842)	White-lipped Tree Viper	Rắn lục mép trắng
	TESTUDINES	TURTLES	BỘ RÙA
	20. Geoemydidae	Pond Turtles	Họ Rùa đầm
101.	<i>Cuora mouhotii</i> (Gray,1862)	Keeled Box Turtle	Rùa sa nhân
102.	<i>Cyclemys oldhamii</i> (Gray, 1863)	Oldham's Leaf Turtle	Rùa đất sê-pôn
103.	<i>Mauremys sinensis</i> (Gray,1834)	Chinese Striped-necked Turtle	Rùa cổ sọc
104.	<i>Sacalia quadriocellata</i> (Siebenrock, 1903)	Four-Eyed Turtle	Rùa bốn mắt
	21. Testudinidae	Tortoises	Họ Rùa núi
105.	<i>Indotestudo elongata</i> (Blyth, 1853)	Elongated Tortoise	Rùa núi vàng
	22. Trionychidae	Softshell Turtles	Họ Ba ba
106.	<i>Pelodiscus variegatus</i> Farkas, Ziegler, Pham, Ong & Fritz, 2019	Soft-shelled Turtle	Ba ba yếm đóm

**List of threatened and endemic species recorded from Krong Trai
Nature Reserve, Phu Yen Province**

No	Scientific name	Common name	IUCN (2023)	RBVN (2007)	CITES (2023)	Decree 84 (2021)	Endemic
1.	<i>Ingerophrynus galeatus</i>	Cambodia Toad		VU			
2.	<i>Glyphoglossus molossus</i>	Broad-lipped Frog	NT				
3.	<i>Microhyla picta</i>	Painted Narrow-mouth Frog					+
4.	<i>Limnonectes phuyenensis</i>	Phu Yen Wart Frog					+
5.	<i>Amolops spinaepectoralis</i>	Spiny Torrent Frog					+
6.	<i>Odorrana gigatympana</i>	Big-eared Odorous Frog					+
7.	<i>Ichthyophis nguyenorum</i>	Nguyen's Caecilia					+
8.	<i>Physignathus cocincinus</i>	Rồng đất	VU	VU	II		
9.	<i>Acanthosaura capra</i>	Green Pricklenape	NT				
10.	<i>Acanthosaura murphyi</i>	Murphy Pricklenape					+
11.	<i>Gekko gekko</i>	Tokay Gecko		VU	II	IIB	
12.	<i>Gekko phuyenensis</i>	Phu Yen Marbled Gecko					+
13.	<i>Gekko truongi</i>	Truong's Gecko					+
14.	<i>Varanus salvator</i>	Clouded Monitor		EN	II	IIB	
15.	<i>Python molurus</i>	Indian Rock Python	NT	CR	II	IIB	
16.	<i>Coelognathus radiatus</i>	Radiated Ratsnakes		VU			
17.	<i>Ptyas korros</i>	Indo-Chinese Rat Snake	NT	EN			
18.	<i>Ptyas mucosa</i>	Oriental Ratsnake		EN	II	IIB	
19.	<i>Bungarus fasciatus</i>	Banded Krait		EN			
20.	<i>Naja kaouthia</i>	Monocled Cobra		EN	II	IIB	
21.	<i>Ophiophagus hannah</i>	King Cobra	VU	CR	II	IB	

22.	<i>Cuora mouhoti</i>	Keeled Box Turtle	EN		II	IIB	
23.	<i>Cyclemys oldhamii</i>	Oldham's Leaf Turtle	EN		II	IIB	
24.	<i>Mauremys sinensis</i>	Chinese Striped-necked Turtle	CR				
25.	<i>Sacalia quadriocellata</i>	Four-Eyed Turtle	CR		II	IIB	
26.	<i>Indotestudo elongata</i>	Elongated Tortoise	CR	EN	II	IIB	
Tổng số			11	12	11	10	8

Notes: *RBVN (2007) = Vietnam Red Data Book. Part I. Animals. Descriptions of nationally endangered species of wild animals: CR = Critically Endangered, EN = Endangered, VU = Vulnerabile. IUCN (2023) = The IUCN Red List of Threatened Species: CR = Critically Endangered, EN = Endangered, VU = Vulnerabile, NT = Near Threatened. Decree 84 (2021) = Governmental Decree No. 84/2021/ND-CP, dated on 22 September 2021, by the Government of Vietnam on the management of endangered wild flora and fauna: Group IB = prohibit exploitation and use for commercial purpose and Group IIB = limit exploitation and use for commercial purpose. CITES (2023) = Convention on International trade in Edangered species of wild fauna and flora.*