

The Diversity of Reptiles on Several Habitat Types in Campus Area of Sriwijaya University Indralaya, Ogan Ilir

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ABSTRAK

Penelitian yang berjudul Keanekaragaman Jenis Amfibi di Kawasan Kampus Universitas Sriwijaya Indralaya Kabupaten Ogan Ilir Provinsi Sumatera Selatan ini bertujuan untuk mengetahui keanekaragaman jenis amfibi yang terdapat di dalam kawasan tersebut. Penelitian ini dilaksanakan pada bulan Maret sampai dengan bulan Mei 2015, bertempat di kawasan kampus Universitas Sriwijaya, Indralaya. Metode penelitian yang digunakan dalam penelitian ini adalah metode jalur (*Transect*) dengan cara menempatkan 7 garis transek/jalur dengan arah memotong garis kontur. Teknik pengumpulan data dengan menggunakan metode *Visual Encounter Survey* (VES) dan metode *Pit-Fall Trap* yang dikombinasikan dengan metode *Straight Line* dan pagar pembatas (*drift fence*). Hasil dari penelitian ini tercatat 11 jenis amfibi dari 5 suku (famili) dari Ordo Anura. Indeks keanekaragaman rata-rata di kawasan Universitas Sriwijaya Indralaya tersebut adalah 1,70 yang termasuk ke dalam kategori sedang.

Kata kunci : Universitas sriwijaya, amfibi, transek, keanekaragaman

ABSTRACT

The Diversity of Reptiles on Several Habitat Types in Campus Area of Sriwijaya University Indralaya, Ogan Ilir was aimed to determine the diversity of amphibian species present in this area. The research has been done in March until May 2015, in the campus of the Sriwijaya University, Indralaya. The method in this study is use the transect method by placing seventh transect line on line with the direction of cutting contour lines. Data collection techniques using the *Visual Encounter Survey* (VES) and *Pit-Fall Trap* method in combination with the *Straight Line Method and Fence* (*Drift Fence*). Results from this study recorded 11 species of amphibians from five families of the Anura Order. Average diversity index at Sriwijaya University Indralaya region is 1.70 which fall into the medium category.

Key words : Sriwijaya university, amphibians, transect,diversity

INTRODACTION

Indonesia has a high biodiversity and occupies an important position in the world's biodiversity or called megabiodiversity country (Primack et al., 1998).

Indonesia's land area covers 1.3% of the total land around the world with 7.3% of reptiles (511 species, 150 endemic) of reptile species overall. (Primack et al., 1998 MoF 1994; Mittermeier et al. 1997 in Bappenas, 2003).

Collecting reptile fauna in Sumatra is still very limited during the last 50-60 years (Inger and Iskandar, 2005). This leads to a lot of reptiles in Sumatra unknown and the collection of the last herpetologists have rarely even unsatisfactory (Inger and Alexander, 2005; Teynié et al., 2010; Tapley and Muurman, 2011). Herpetofauna both in terms of taxonomy, biological characteristics and ecological characteristics are still little known. Similarly, the deployment of its kind (Iskandar and Erdelen, 2006). The existence of reptiles found throughout the world almost to a height of more than 4,500 meters above sea level. Spread throughout the continent and some remote islands the world except Antarctica. Their habitat variety ranging from rain forests, planted forests, savannahs, grasslands, deserts and scrub, but it does not make reptiles can be found elsewhere (Cogger and Zwifel 2003 in Yanuarefa et al., 2013).

Sriwijaya University is located in District North Indralaya, Ogan Ilir, South Sumatra, which consists of a stretch of swampy lowlands very broad. Main Campus Indralaya with an area of 712 hectares located 38 kilometers to the south of the city of Palembang (BAPSI, 2008). This area consists of the building and other support facilities, shrubs with trees, lowland swamp contained in some parts of the campus as well as rubber plantations, oil palm and gelam. Such conditions make it possible for a reptile to establish habitat.

MATERIALS AND METHODS

This study will be conducted in March and May 2015. The study was conducted in the area Location Campus Sriwijaya University, Indralaya. The method used in this research is the method of Visual Encounter Survey (Mc Diarmid et al., 2012) as well as passive method using glue traps and pitfall traps and drift-trap on the fence along the 800-meter transect lines. Active search carried out at night (19:00 to 23:00) and early morning (08:00 to 11:00) actively with two repetitions for each track. Observations started from zero on each line.

RESULTS AND DISCUSSION

4.1. Reptiles kind in Central Campus of the University of Sriwijaya Indralaya

Based on the observations that have been made, the number of species of reptiles have been found in all study sites in Central Campus of the University of Sriwijaya as many as 14 species of 7 families and single orders (Table 4.1). Family found that Scincidae, Agamidae, Lacertidae, Geckonidae, Varanidae (lizard-kadalan group); Colubridae and Elapidae (group of snakes).

Table 4.1. Reptile encounter throughout transect study.

No.	Ordo	Family	Genus	Species
1		Scincidae	1	1
2		Agamidae	1	1
3	Squamata	Lacertidae	1	1
4		Geckonidae	2	3
5		Varanidae	1	1
6		Colubridae	5	5
7		Elapidae	2	2
			13	14

Nowhere other than Squamata order at this location. In contrast to previous studies that have been conducted in South Sumatra obtained more than one order as Crocodylia, and Chelonii, such as research and Muurmans Tapley (2012) on Bangkaru Island, Sumatra and Joseph (2008) in Jambi for example. This likely occurred because of habitat in the area of the university campus Sriwijaya not support life for other orders. The number of human activity and the lack of shelter and food resources make them unable to live well. List of species of reptiles found in the study site and its conservation status is shown in Table 4.2, while the description of each type are presented in Appendix 1.

4.2. Diversity Type Reptiles At Each transect

Species diversity index is determined by using a formula-Wiener Shannon Diversity Index. In Table 4.3. presented a list of types of whole transect studies as well as species diversity indices.

4.2. The types of reptiles found in the region Indralaya Sriwijaya University.

Species	England Name	Local Name	Conservation Status (IUCN, 2015)
1. <i>Ahaetula prasina</i>	Oriental Whip Snake	Ular Gadung	LC
2. <i>Enhydryis Enhydryis</i>	Rainbow Water-Snake	Ular Air Pelangi	LC
3. <i>Ptyas korros</i>	Indo-Chinese Rat Snake	Ular Tikus/Ular Jali	NE
4. <i>Bungarus candidus</i>	Malayan Crait	Ular Weling	LC
5. <i>Dendrelaphis pictus</i>	Painted Bronze-back	Ular Tambang	NE
6. <i>Naja sumatrana</i>	Sumatran Cobra	Kobra	LC
7. <i>Homalopsis buccata</i>	Banded Swamp Snake	Ular Kadut	LC
8. <i>Eutropis multifasciata</i>	Many-lined Sun Skink	Bengkarung/Kadal Kebun	NE
9. <i>Hemidactylus frenatus</i>	Common House Gecko	Cicak Kayu	LC
10. <i>Hemidactylus platyurus</i>	Flat-Tailed House Gecko	Cicak Tembok	NE
11. <i>Takydromus sexlineatus</i>	Asian Grass Lizard	Kadal Rumput	LC
12. <i>Draco sumatranus</i>	Common Gliding Lizard	Kadal Terbang	NE
13. <i>Gekko gekko</i>	Tokay gecko	Tokek Rumah	NE
14. <i>Varanus salvator</i>	Common Water Monitor	Biawak Asia	LC

Description: Category of endangered species IUCN 2015, LC= Least Concern/ low risk, NE= Not Evaluated.

From all the findings obtained, Gekkonidae family has the greatest number of individuals compared with the other family that is found in the transect 6 with habitat type edificarian (buildings such as lectures and residential buildings). *Hemidactylus frenatus* *Hemidactylus platyurus* and are found on the walls and ceiling of the house (Chan-ard et al., 2015). The number of buildings or buildings of lectures affect the number of species because of the availability of food such as insects, and the walls of the building makes the residence ideal for them to carry out their activities. *Hemidactylus frenatus* counted 47 individuals, nine individuals and 12 individuals *Hemidactylus platyurus* of *Gekko gekko*. While the number of individuals of the species found are the least *Naja sumatrana* and *Bungarus Candidus*, each only one individual in the whole transect observation.

Figure 4.1. indicates that the results of the index in each habitat there has a different value. This shows that there are different types of habitat that has the type of

vegetation and different types of communities. Differences shown that transects 1 is equal to 1.79 (medium category); Transect 2 at 1.74 (medium category); 3 transects amounted to 1.33 (medium category); Transect 4 1,37 (medium category); 5 transects of 0.56 (low category); 6 transect of 0.89 (low category); 7 transects of 0.8 (low category); and the last transect 8 amounted to 1.46 (medium category).

Table 4.3. The types of reptiles found in the region Indralaya Sriwijaya University.

Species	T1	T2	T3	T4	T5	T6	T7	T8	Ti
<i>Ahaetula prasina</i>	0	1	2	0	0	0	0	0	3
<i>Enhydria Enhydria</i>	2	0	0	0	0	0	0	0	2
<i>Ptyas korros</i>	0	0	0	0	1	0	0	1	2
<i>Bungarus candidus</i>	1	0	0	0	0	0	0	0	1
<i>Dendrelaphis pictus</i>	0	1	0	1	0	0	0	0	2
<i>Naja sumatrana</i>	1	0	0	0	0	0	0	0	1
<i>Homalopsis buccata</i>	2	0	0	1	0	0	0	0	3
<i>Eutropis multifasciata</i>	4	9	1	1	0	0	1	3	19
<i>Hemidactylus frenatus</i>	0	3	0	0	3	47	5	3	61
<i>Hemidactylus platyurus</i>	0	0	1	0	0	9	1	0	11
<i>Takydromus sexlineatus</i>	0	7	0	3	0	0	0	1	11
<i>Draco sumatranus</i>	1	2	0	5	0	1	0	0	9
<i>Gekko gecko</i>	0	1	0	0	0	12	0	0	13
<i>Varanus salvator</i>	1	2	1	0	0	0	0	1	5
Species Total	8	7	4	5	2	4	3	5	143
Total Individuals	12	26	5	11	4	69	7	9	

Description: T = transects, Ti = total individuals of each species, T1 = bog cape broke, T2 = shrubs, T3 = swamp Housing Lecturer, T4 = arboretum, T5 = palm, T6 = edificarian, T7 = ruderal, and T8 = green open space

The total of the overall index of diversity on campus Regions UNSRI 1.78 (medium category) with a total of 14 species. Whereas the highest diversity index obtained at the first transect at the Cape End marsh habitat that is as much as 1.79 in the medium category. Obtained a total of 8 types with a total of 12 individuals were obtained by habitat type in the form of swamp communities to make this place ideal for reptiles to live. According to Michael and Lindenmayer (2010) of wetlands and water flow is used as a place to find food and shelter for some aquatic and non aquatic reptiles. Access to water is essential. When performing data retrieval, there are a number of very abundant frog so that it can be a food source for several species of snakes for example *Bungarus candidus*.

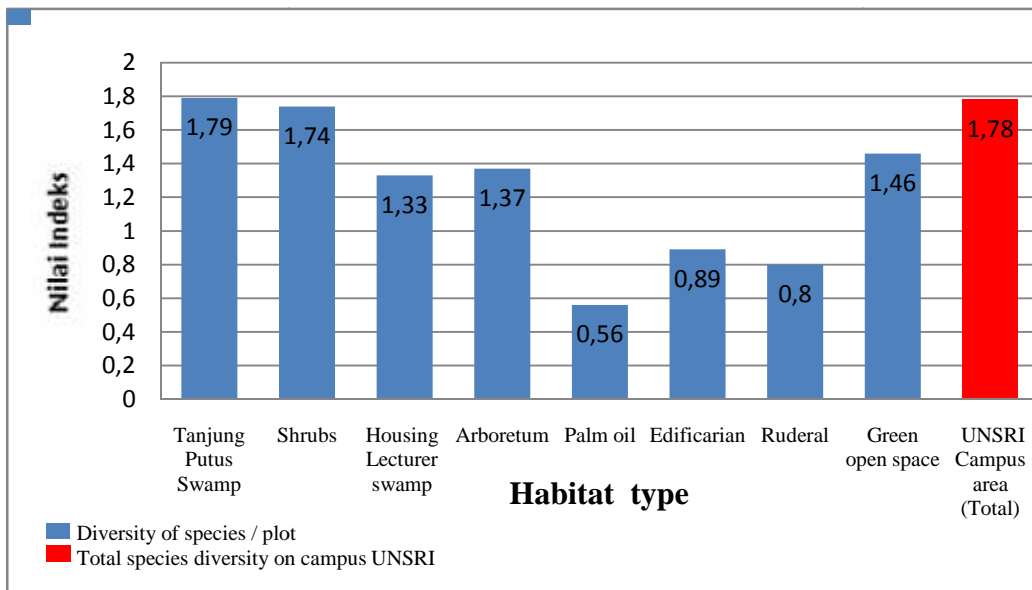


Figure 4.1. Reptile Diversity Index value chart on the Different Types in the Are Habitat Campus UNSRI Indralaya

In addition to the frog, bog waters are also inhabited by fish into food are living aquatic reptiles. In addition to food, it also provides a habitat cover (protective) were quite good. Aquatic reptiles found in this habitat *Homalopsis buccata* and *Enhydris enhydris*. Both species live in freshwater, commonly found in stagnant water or water with slow flow and prey fish (Mistar, 2008).

Habitat bushes into second place in terms of the diversity index value that is equal to 1.74 (medium category) by as much as 7 kinds of species, and 26 total individuals. Terrestrial lizards dominate namely *eutropis multifasciata* ranks second highest as many as 19 individuals and followed with a total of 7 individuals of the species in the habitat *Takydromous sexlineatus* shrubs. According to Michael and Lindenmayer (2010) grass plants often used by terrestrial lizard-kadala to find food (foraging) and shelter (shelter). Besides these areas provide a place for basking activities (sunbathing) during the day because it does not have many trees as cover. Yanuarefa et al. (2012) mentions that the reptiles especially lizards gain heat by basking in the sun so as to obtain optimum heat.



Figure 4.2. (A) *Gekko gecko*. (B) *Hemidactylus platyurus*. (C) *Draco sumatranus*. (D) *Varanus salvator*. (E) *Eutropis multifasciata*. (F) *Takydromus sexlineatus*. (G) *Dendrelaphis pictus*. (H) *Ahaetulla prasina*.

Dendrelaphis pictus encountered on transects Arboretum silent while waiting for prey on a twig with a height of about ± 2 m above the ground at night. *Pictus Dendrelaphis* known commonly found in secondary forests and arboreal life (Mistar, 2008). Two individuals *Ahaetulla prasina* found in swamps Housing Lecturer at night on shrubs and in the daytime was found sunbathing on a dead tree branch. According Mistar (2008) is the active species in the trees during the day and sometimes at night.

Varanus Salvator found at some point transects, one of them in the area of scrubland at the Department of Biology. Lizard frequently found midmorning while sunbathing. In addition, the presence of prey in the form of chicks pet owners around the building department to make lizards often appear to eat it. In addition, the lizards are also found in the transect studies that have a source of water and forage fish such as swamps Housing Lecturer, a small lizard found was swimming menyembrangi tributaries. Yanuarefa et al. (2012) mentions that there are many lizards found nowhere are many sources of water such as swamps.

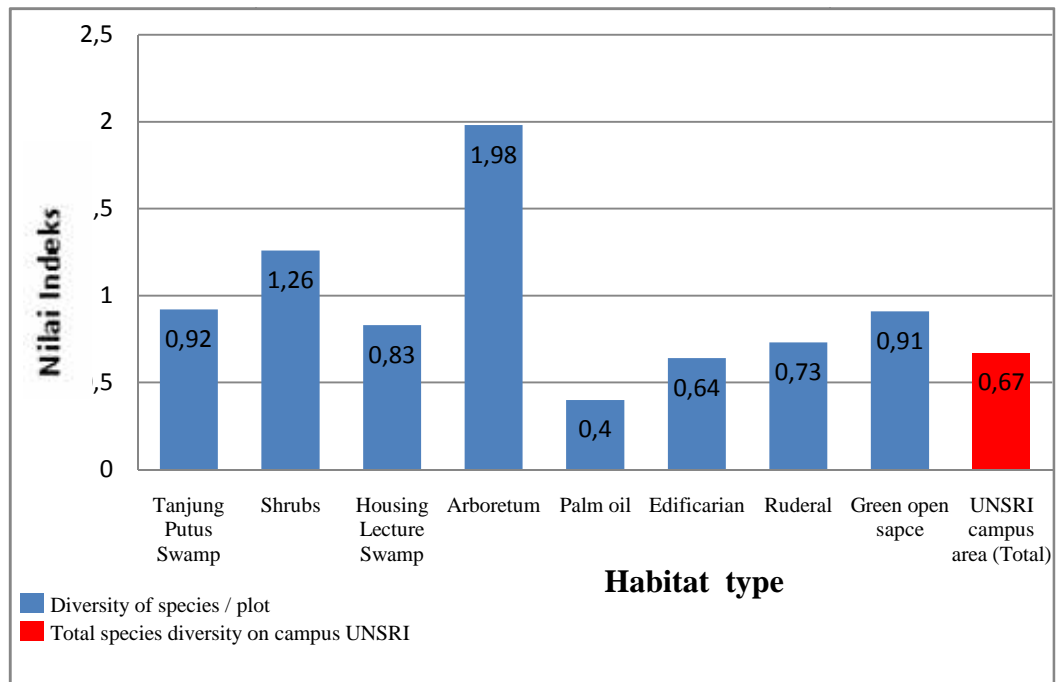


Figure 4.3. Evenness value chart on the type Reptile Habitat Types in the Area Campus UNSRI Indralaya.

4.3. Evenness Type

Results showed that the highest equity value present in the marsh area of the Cape End (Figure 4.3). The highest evenness obtained in place when the number of individuals who obtained a little (have the same abundance). while conversely the habitats found many individuals of one species causes evenness to be lower (Gotelli and Graves, 1996).

At the Arboretum area has a high equity value because almost all of the species are found to have the same abundance that one individual for one of its kind. While in the area have a tendency edificarian low because the number of individuals of the species *Hemidactylus frenatus* that dominates the area.

4.4. Rhythm and Deployment Activity

Reptiles are found grouped into several groups based on the rhythms of activity and dissemination are arboreal, semi arboreal, teresetrial, aquatic and semi-aquatic and diurnal and nocturnal presented in Table 4.4.

Table 4.4. Activity rhythm Reptiles

Ritme Persebaran	Diurnal	Nocturnal
Arboreal	<i>Ahaetula prasina</i>	<i>Dendrelaphis pictus</i>
	<i>Draco sumatranus</i>	<i>Hemidactylus frenatus</i>
	–	<i>Hemidactylus platyurus</i>
Semi Arboreal	<i>Takydromus sexlineatus</i>	–
Terrestrial	<i>Naja sumatrana</i>	–
	<i>Ptyas korros</i>	–
	<i>Eutropis multifasciata</i>	–
	<i>Varanus salvator</i>	–
Akuatik	–	<i>Enhydryis Enhydryis</i>
	–	<i>Homolapsis Buccata</i>
Semi Akuatik	–	<i>Bungarus candidus</i>

Nocturnal group is a group of reptiles are active at night as many as 6 different types, and the diurnal group which is a group active during the day as much as 7 kinds. While based on the place, living arboreal reptiles are the type who spends almost all its activities in the tree. as many as 5 kinds. only one type of semi-arboreal life or conduct most of their activities in the trees and the rest on the ground. terrestrial reptiles counted four types of reptiles that spend most of their activities on the ground. as much as 3 species are aquatic reptiles that spend almost all activities carried out in the water. The latter is a semi-aquatic reptiles or who spend most of their activities in the outskirts waters found only one type only.

Table 4.4. showed that the reptile activity rhythms in activity time has almost the same number of species. As for the rhythm of activity according to a beraktifitasnya, arboreal also have an adequate amount of time equal to that diurnal and nocturnal activity. In contrast to the arboreal and terrestrial reptiles that all species are active during the day (diurnal), as well as aquatic and semi-aquatic reptile that has the result that is not the whole inversely the species active at night (nocturnal).

4.5. Physical Chemistry and Research Track

The water temperature in all study sites ranging 21,4oC to 28,1oC, while the air temperature 25,7oC to 28,9oC. The highest air humidity recorded at the

Arboretum swamp area which reached 89.3% and the lowest is in the border area of swamp Housing Lecturer at around 74.6%. The size of the water pH range from 4,5 - 5,5 (see Table 4.5).

Table 4.5. Physical and chemical conditions in each transect study.

No. Transek	Lokasi	Suhu (°C)		Kelembaban (%)	pH Air
		Air	Udara		
1	Rawa tanjung Putus	23,6 – 25,7	28,2 – 28,9	78,2 – 81	4,6
2	Semak Belukar	–	27,4 – 28,1	76,3 – 79,5	–
3	Rawa Perumahan Dosen	23,1 – 25,4	27,1 – 28,3	74,6 – 77	4,5
4	Arboretum	21,4 – 25,0	25,7 – 28	74,7 – 89,3	5
5	Perkebunan sawit	23,9 – 26,1	28,5 – 28,9	77,2 – 76,8	5,5
6	Edificarian	–	27,5 – 28,1	75,8 – 77,2	–
7	Ruderal	–	27,4 – 28,1	76,8 – 77	–
8	Ruang Terbuka Hijau	23,6 – 28,1	27,9 – 28,7	77,4 – 80,7	4,5

Line at the promontory dropping swamp is a type of community that is dominated by swamps and humid plains. Although composed of vast swamp area, this place is also covered with several species of trees and is the most dominant acacia and softwood. Depth swamp ankle. In contrast to the lines on the border of the marsh Housing Lecturer, there are two types of vegetation are quite different on the two sides of the right hand part of the swamp which consists mostly of marshes, and some softwood while the right side is a plateau covered with tall acacia trees.

4.6. Threats and Utilization Reptiles

Reptiles plays an important role in human life, especially snakes, turtles and lizards are used as food and skin that is used to make products that are used for daily needs (Russell and Bauer, 2000). Reptiles are also a food source for other animals such as birds. Some species of reptiles and even serve as top predators in the food chain which plays an important role in the ecosystem. Most lizards like Geckonidae and Scincidae species feed on insects and other invertebrates that can help control the pest for farmers (Michael and Lindenmayer, 2010).

Reptiles, especially snakes are often killed because it is considered as a threat. In the study site was rarely seen some reptiles died because with or accidentally killed. Examples Ptyas korros and Varanus Salvator found dead alongside a road

for dead hit by a vehicle. This suggests that the presence of human activity can affect the life of the reptile.

In addition, depreciation and loss of habitat is the main threat to reptiles (Ruler, 2008). Incessant land clearing which is often done in several locations the habitat of reptiles as well as fires that often occur during the dry season makes the reptiles that live in these places to move to another place to get food and new dwellings. In addition, according to Joseph (2008) activities of the conversion of a habitat such as clearing land to build new buildings or just cleaning causes new habitat that is very different from before and is thought to cause the shift of groups of reptiles like habitat vegetation mixture into groups of reptiles who like more open habitats with uniform vegetation.

It shows the need for discretion in the open land and manage development to develop Sriwijaya University Campus area.

CONCLUSION

Based on the research that has been conducted, it is concluded that the highest diversity index obtained at the Cape End marsh habitat that is equal to 1.79 (medium category) and the lowest is the habitat Palm Plantation in the amount of 0.56 (lower category). Number of reptile species that exist in the region Sriwijaya University Campus as many as 14 species were included in 7 families and divided into two sub-orders with a total index of 1.78 (medium category) evenness index of 0.67. Further monitoring is required on the diversity of reptiles in the region Sriwijaya University. Further research can be done in different seasons to make it look different numbers of species in different weather conditions. Moreover, research must be done in different aspects such as activity / behavior of reptiles. Need added method of questionnaires and interviews to reproduce information about the reptile species that exist in the area of Campus UNSRI.

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