



Preliminary Study of Common House Gecko (*Cosymbotus platyurus*) Density in Java Island

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Abstract

Common house gecko (*Cosymbotus platyurus*) is the most abundant house gecko species in Indonesia. The geckos live in home yard, garden, and in homes. It is part of food chain in its habitat, as its preys include cockroaches, flies, and termites. Previous studies found that this gecko are not found in mountainous area in West Java. In this study, the researchers observe population density of common house geckos in various types of habitats (houses and parks) with their home territory. The methods used were direct survey methods followed by literature study. The study is conducted in Java island (Jakarta, Tangerang, Bandung, Bogor, Sleman). Preliminary result of this study is house geckos are very active at night, because of the effect of light produced by lights that attract the attention of insects, gecko food.

Keywords: Ecology, common house gecko, density, habitat, *Cosymbotus platyurus*

1. Introduction

The SVL length (Length from head to tip of tail) ranges from 4-6.3 cm. The head with the muzzle is longer than the distance from the eye to the ear canal. Ear holes are small, oval and oblique. The rostral is square and slightly angular. The nostrils are bordered by the rostral, first upper labial scales and the three nasal sides. Upper labial scales 9-11 and lower labial 7-8. The mental part is wide with triangular or pentagonal scales in the number of two pairs. The middle mental scales are wide while the posterior ones are smaller. Body flat dorsoventral with small scales on the dorsal and broad on the head. *C. platyurus* has a widening of the skin from the axilla to the base of the hind limbs. On the posterior part of the hind leg (femur) there is also a widening of the skin. The cycloid ventral scales overlap. Males with femoral Polres numbering 34-39 extend without breaking. Tail flat with sharp sides covered by small uniform scales. The ventral part of the tail has transverse scales. Legs with membranes up to half the fingers. Growing color is generally gray-brown with varying marble hues (Matsu and Oku, 2002; Smith et al., 2012; Rakhmiyati and Luthfi, 2016; McKay and Phillips, 2012).

Geckos (family Gekkonidae) have skin characteristics that look soft even though they remain scaly, are active at night (nocturnal) and can sever the tip of their tail (autotomy) as a form of self-defense and avoid predators (Barton, 2007; Leo et al., 2020; Novianti et al., 2019; Rakhmiyati and Jaã, 2018)

Cosymbotus platyurus is a species of common house gecko that is commonly found in Indonesia. This species has a wide range of distribution including India, Southeast Asia, to Australia. The successful distribution of this species is due to human intervention, as well as the high adaptability of this species both from a physiological perspective such as food dynamics, reproduction time, and camouflage that allows this species to adapt to its environment and avoid predators (Carranza and Arnold, 2006; Tkaczenko et al., 2014; Bansal and Karanth, 2010).

Relatives of common house gecko scattered throughout the Indonesian Archipelago have been described in terms of taxonomy and morphology. However, knowledge about this animal has not been widely disclosed. Meanwhile, data on habitat selection, geographical distribution and reproductive ecology are still scant (Reyes and Carmona-Galindo, 2014; Callaway et al., 2011; Hoskin, 2011; Vanderduys and Kutt, 2013).

The success of the species *Cosymbotus platyurus* in adapting as evidenced by the wide distribution of this species, the authors are interested in researching the camouflage strategy of this species. This study aims to assess the camouflage of the common house gecko *Cosymbotus platyurus* in 2 types of habitats (natural and urban) and also to understand the camouflage strategy used by this species to adapt to its environment.

2. Methodology

Sampling of common house gecko in the field using the Visual Encounter Survey method combined with study literature. Sampling is done by walking along the sampling area for a specified time (± 1 hour). Existing common house gecko were caught, and then recorded the type of substrate.

Taking pictures before and after sampling. The gecko was placed on the same substrate as the location of its discovery. Each specimen was then photographed using a cell phone camera. The image format used is JPEG and it is done around their respective homes.

The image used is an image that includes the specimen and its background. The images obtained are selected first. Color checker photos are imported into Canva in JPEG format for profile images. similar shooting conditions will be calibrated according to the created profile. The profile that has been created is then used as the standard for photos taken under similar conditions.

3. Results and Discussion

Based on the results and observations made in their respective residences, it was concluded that there were so many house gecko reactions to the ecology in their respective residences (See Table 1).

Table 1. Recapitulation of the results of the census of the wood gecko around houses in the Java area.

No.	Location	Time (Western Indonesian Time)	Observed results
1	Utan Kayu Selatan, East Jakarta	14.00	Geckos do not move, observing prey in the form of ants carrying dead mosquitoes on the floor.
2	Serang, Banten	09.00	The silent gecko slowly severs its tail (possibly feeling threatened by the presence of bystanders).
3	Bogor, West Java	19.00	The gecko looked at the other common house gecko and one stuck out his tongue.
4	Dago Bandung, West Java	19.00	Geckos monitor another common house gecko that are active.
5	Sleman, Central Java	19.00	The gecko preys on a fly after 5 minutes of watching the fly's movement.

Common house gecko (*Cosymbotus platyurus*) is an animal that is classified as a nocturnal animal (See Figure 1). This gecko was observed to be most active at certain times of the day, namely in the first 6 hours after sunset, then the activity of this gecko decreased from midnight to morning, then increased slightly during the day, until it returned again at peak hours of activity namely at night.



Figure 1. Geckos do not move, observing prey in the form of ants carrying dead mosquitoes on the floor

In general, animals that are nocturnal are inactive or rest during the day. To avoid detecting predators during the day, there are several strategies that nocturnal animals use, such as camouflage or hiding in the sky safe place. This is because individuals with darker body colors are able to achieve higher body temperatures when compared to individuals with lighter body colors. In addition, individuals in low-temperature habitats tend to have darker body colors than individuals in higher-temperature habitats.



Figure 2. One of the common house gecko looks at the other common house gecko.



Figure 3. Geckos monitor another common house gecko that are active.

4. Conclusion

Based on the results obtained, it can be concluded that the common house gecko *Cosymbotus platyurus* has different ecological behavior in each place, depending on the time of observation (morning, afternoon, evening and night). *C. Platyurus* dominant a lot of activity at night at room temperature. Because at night many insects are attracted to the light, this causes *C. Platyurus* to be more active in searching for prey.

References.

- Bansal, R., & Karanth, K. P. (2010). Molecular phylogeny of *Hemidactylus* geckos (Squamata: Gekkonidae) of the Indian subcontinent reveals a unique Indian radiation and an Indian origin of Asian house geckos. *Molecular Phylogenetics and Evolution*, 57(1), 459-465.
- Barton, D. P. (2007). Pentastomid parasites of the introduced Asian house gecko, *Hemidactylus frenatus* (Gekkonidae), in Australia. *Comparative parasitology*, 74(2), 254-259.
- Callaway, Z., Thomas, A., Melrose, W., Buttner, P., & Speare, R. (2011). *Salmonella* Virchow and *Salmonella* Weltevreden in a random survey of the Asian house gecko, *Hemidactylus frenatus*, in houses in northern Australia. *Vector-Borne and Zoonotic Diseases*, 11(6), 621-625.
- Carranza, S., & Arnold, E. N. (2006). Systematics, biogeography, and evolution of *Hemidactylus* geckos (Reptilia: Gekkonidae) elucidated using mitochondrial DNA sequences. *Molecular phylogenetics and evolution*, 38(2), 531-545.
- Goldberg, S. R., & Kraus, F. (2016). Reproduction in the common house gecko, *Hemidactylus frenatus* (Squamata: Gekkonidae) from Hawaii. *The Herpetological Bulletin*, 136, 10-12.




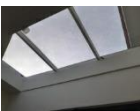


- Hoskin, C. J. (2011). The invasion and potential impact of the Asian House Gecko (*Hemidactylus frenatus*) in Australia. *Austral Ecology*, 36(3), 240-251.
- Leo, S., Suherman, M., Permatasari, A., Suganda, D., & Zulamri, W. N. (2020). Herpetofauna diversity in Zamrud National Park, Indonesia: baseline checklist for a Sumatra peat swamp forest ecosystem. *Amphibian & Reptile Conservation*, 14(2), 250-263.
- Matsuo, K., & Oku, Y. (2002). Endoparasites of three species of house geckoes in Lampung, Indonesia. *Journal of Helminthology*, 76(1), 53-57.
- McKay, J. L., & Phillips, B. L. (2012). Climatic determinants of the reproductive timing in the Asian house gecko, *Hemidactylus frenatus* Duméril and Bibron (Gekkonidae). *Raffles Bulletin of Zoology*, 60, 583-588.
- Novianti, T., Juniantito, V., Jusuf, A. A., Arida, E. A., Jusman, S. W. A., & Sadikin, M. (2019). Expression and role of HIF-1 α and HIF-2 α in tissue regeneration: a study of hypoxia in house gecko tail regeneration. *Organogenesis*, 15(3), 69-84.
- Rakhmiyati, R., & Jaâ, M. (2018). Alizarin Red S-Alcian Blue Staining for Regenerated tail of Common House Gecko (*Hemidactylus frenatus*). *Biology, Medicine, & Natural Product Chemistry*, 7(2), 57-59.
- Rakhmiyati, R., & Luthfi, M. J. (2016). Histological study of common house Gecko (*Hemidactylus frenatus*) regenerated tail. *Biology, Medicine, & Natural Product Chemistry*, 5(2), 49-53.
- Reyes, N., & Carmona-Galindo, V. (2014). Proposal of predator-mediated control of the Chagas vector, *Triatoma infestans*, with the common house gecko. *Bulletin of the Southern California Academy of Sciences*, 113(2), 131-132.
- Smith, K. F., Yabsley, M. J., Sanchez, S., Casey, C. L., Behrens, M. D., & Hernandez, S. M. (2012). Salmonella isolates from wild-caught Tokay geckos (*Gekko gecko*) imported to the US from Indonesia. *Vector-Borne and Zoonotic Diseases*, 12(7), 575-582.
- Tkaczenko, G. K., Fischer, A. C., & Weterings, R. (2014). Prey preference of the Common House Geckos *Hemidactylus frenatus* and *Hemidactylus platyurus*. *Herpetol Notes*, 7, 483-488.
- Vanderduys, E. P., & Kutt, A. S. (2013). Is the Asian house gecko, *Hemidactylus frenatus*, really a threat to Australia's biodiversity?. *Australian Journal of Zoology*, 60(6), 361-367.

Appendix

Location : Perum Taman Graha Asri Serang

Description of the scene where the gecko was found:



- ✓ The house is on the side of the road, there is a field in front of the house
- ✓ The location of the gecko's discovery on the roof (ceiling) of the laundry room
- ✓ The atmosphere of the house is not much, with sufficient natural lighting (sunlight)

Day	Checklist			Photo			Description			Temperature °C
	09.00	14.00	19.00	09.00	14.00	19.00	09.00	14.00	19.00	
Monday, 20 September 2021	✓	-	-		-	-	Just dirt on the floor	-	-	28°
Tuesday, September 21, 2021	-	✓	-	-		-	-	Seen 4 common house gecko on the roof kopdar	-	
Wednesday, September 22	-	✓	-	-		-	-	Seen on the roof of the house alone	-	
Thursday, September 23, 2021	-	✓	-	-		-	-	Seen there are 2 common house gecko on the roof of the house	-	
Friday, September 24, 2021	-	✓	-			-	Seen a black gecko on the roof of the house	Seen there is a gecko on the roof of the house	-	

Location : Jalan Dago, Bandung

Description of the scene where the gecko was found:









- ✓ The house is on the side of the road
- ✓ The location of the gecko's discovery on the living room wall measuring 3 x 5 meters²
- ✓ The atmosphere of the house is full of things, tends to be bright

Day	Checklist			Photo			Description			Temperature °C
	09.00	14.00	19.00	09.00	14.00	19.00	09.00	14.00	19.00	
Monday, 20 September 2021	-	-	-	-	-	-	-	-	-	22°
Tuesday, September 21, 2021	-	-	-	-	-	-	-	-	-	
Wednesday, September 22, 2021	-	-	-	-	-	-	-	-	-	
Thursday, September 23, 2021	-	-	✓	-	-		-	-	Found A Gecko Under The Floor	
Friday, September 24, 2021	-	-	✓	-	-		-	-	Found A Gecko On The Wall, Probably Looking For Prey	

Location : Utan Kayu Selatan, East Jakarta

Description of the scene where the gecko was found:

- ✓ The house is in the alley
- ✓ Locations for finding common house gecko on the walls of the living room, kitchen and bathroom
- ✓ The atmosphere of the house is full of things, tends to be bright



Day	Checklist			Photo			Description			Temperature °C
	09.00	14.00	19.00	09.00	14.00	19.00	09.00	14.00	19.00	
Monday, September 20, 2021	✓	✓	-			-	Seen a gecko stuck on mouse glue this morning	A gecko is seen quietly observing its prey in the form of an ant carrying a dead mosquito	-	30°
Tuesday, September 21, 2021	-	✓	✓	-	Didn't have time to take a photo		-	Seen a gecko fell in the turtle pond and was eaten by the turtle	A gecko is on the bathroom wall	
Wednesday, September 22, 2021	✓	-	-		-	-	A gecko was seen on the terrace wall, it looked like he had just woken up.	-	-	
Thursday, September 23, 2021	-	✓	✓	-			-	A gecko seems to be chasing its partner about to mate in the kitchen	A gecko seems to be quietly observing the surroundings in the living room before it preys on mosquitoes	
Friday, September 24, 2021	✓	-	✓		-		2 common house gecko chasing each other, 1 gecko hiding behind a water pipe on the terrace wall of the house	-	Found a gecko in the living room, seen beside the window of the house	

Location : Bogor

Description of the scene where the gecko was found:

- ✓ The house is on the side of the road



- ✓ The location of the gecko's discovery on the living room wall measuring 3 x 5 meters²
- ✓ The atmosphere of the house is full of things, tends to be bright

Day	Checklist			Photo			Description			Temperature °C
	09.00	14.00	19.00	09.00	14.00	19.00	09.00	14.00	19.00	
Monday, 20 September 2021	-	-	-	-	-	-	-	-	-	27°
Tuesday, September 21, 2021	-	-	-	-		-	-	Find 1 Gecko That Is Silent	-	
Wednesday, September 22, 2021	-	-	-	-	-	-	-	-	-	
Thursday, September 23, 2021	-	✓	-	-		-	-	Find 1 Gecko Sitting In The Same Place	-	
Friday, September 24, 2021	-	-	-	-	-	-	-	-	-	

Location: Purwobinangun Pakem, Sleman – DIY

Description of the scene where the gecko was found:

- ✓ The house is on the side of the road
- ✓ The location of the gecko's discovery on the living room wall measuring 3 x 5 meters²
- ✓ The atmosphere of the house is full of things, tends to be bright

Day	Checklist			Photo			Description			Temperature °C
	09.00	14.00	19.00	09.00	14.00	19.00	09.00	14.00	19.00	
Monday, 20 September 2021	-	✓	✓	-	No Picture		-	A Gecko Approaches The Dishwasher	4 Common House Gecko Approach The Light Source (Lamp) Because There Are Insects Flying Around There	28°
Tuesday, September 21, 2021	-	-	✓	-	-		-	-	A Gecko On The Floor Is Approaching Prey In The Form Of Ants	

<p>Wednesda y, September 22, 2021</p>	<p>✓</p>	<p>✓</p>	<p>✓</p>				<p>A Gecko Is Seen Crawling On The Wall</p>	<p>3 Common House Gecko Seen On The Roof Of The House</p>	<p>2 Common House Gecko Are Seen Approaching The Light Source (Lamp)</p>	
<p>Thursday, September 23, 2021</p>	<p>-</p>	<p>-</p>	<p>✓</p>	<p>-</p>	<p>-</p>		<p>-</p>	<p>-</p>	<p>Seen 3 Common House Gecko Approaching The Light Source (Lamp) And The Dish Washer With Leftover Food</p>	
<p>Friday, September 24, 2021</p>	<p>✓</p>	<p>-</p>	<p>✓</p>		<p>-</p>		<p>A Gecko Is Seen On The Roof Of The House, Just Standing Still</p>	<p>-</p>	<p>Seen 2 Common House Gecko Approaching The Light Source (Lights) Because There Is Prey (Insects)</p>	