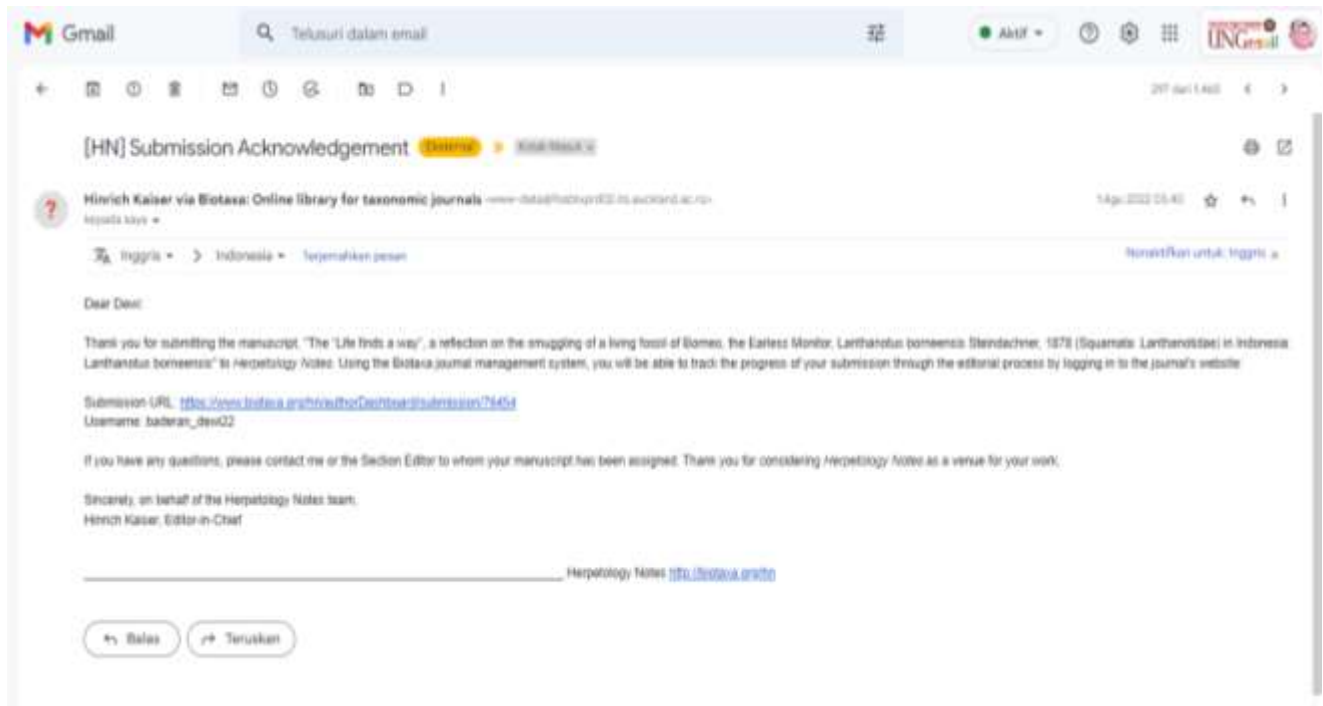


SUBMIT



“Life finds a way”, a reflection on the smuggling of a living fossil of Borneo, the Earless Monitor, *Lanthanotus borneensis* Steindachner, 1878 (Squamata: Lanthanotidae) in Indonesia

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The Borneo Earless Monitor *Lanthanotus borneensis* Steindachner, 1878 is enigmatic, and poorly known species, and considered the sole living representative of the family Lanthanotidae (Das, 2013; Das & Auliya, 2021). This species is endemic to the island of Borneo, where it has been confirmed in the Malaysian State of Sarawak; and the Indonesian provinces of West and North Kalimantan (Das, 2004; Yaap et al., 2012; Vergner, 2013; Uetz et al., 2001). No fossil materials of *L. borneensis* have been found, but a related Lanthanotid from the Cretaceous 75 million years ago of the Gobi desert (Mongolia) was named *Cherminotus* (Pianka 2004). *Lanthanotus borneensis* inhabits s lowland localities below 400 m

elevation in forests with clear and rock streams; and has also been reported from agricultural lands (such as palm oil plantation), but only in the vicinity of forests with good canopy cover and freshwaters (Das & Auliya, 2021; Stoner & Nijman, 2015; Langner, 2017). Small rocky hill streams within forests or in dense vegetation with good canopy cover are potential habitats for *L. borneensis*, based on the observation of this species in small streams in West Kalimantan at night or during daylight (Arida et al., 2018).

“Life finds a way” is a famous quotation of a character from the 1993 Hollywood production, Jurassic Park, Dr. Ian Malcolm, who describe several of lizard species where its females have the ability of parthenogenetically ‘self-breeding’, while they had not found any potential male for mating (Arif, 2016). In his book, “Life Finds a Way”, biologist Andreas Wagner reveals the deep symmetry between innovation in biological evolution and human cultural creativity (Wagner, 2019). Until recently, *L. borneensis* was one of the greatest herpetological rarities that only known from isolated localities in Borneo, but it is surprisingly since the last decade, that the species have appeared on sale online, with a high demand and is currently on display at several zoos in Japan, Hong Kong, Europe and USA (Stoner & Nijman, 2015; Rehak et al., 2019; Jumle & Badola, 2020; Nijman, 2021). Despite being protected in three countries of its range states of Indonesia (Kalimantan), Malaysia (Sarawak), and even Brunei Darussalam (where the species has not yet been recorded), the lack of regulations protecting the species in consumer states enables international trade (Auliya et al., 2016). Due to its rarities in the wild, we report and summarize smuggling of *L. borneensis* in Indonesia in recent years, to illustrate how local hunters and sellers finds a way to ship this lizard abroad.

Records of smuggling of *L. borneensis* were compiled from available information, particularly from local media and social media in internet sources. There are 10 reports of smuggling of *L. borneensis* in Indonesia during 2015 to 2022 as summarized d below:

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- On 14 March 2016, the Natural Resources Conservation Agency (Balai Konservasi Sumber Daya Alam or BKSDA) West Kalimantan Province managed to secure 17 individuals of *L. borneensis* at Supadio Pontianak International Airport which will be sent via a delivery service with the aim of Batam (Riau Province, Sumatra). The method used to smuggle *L. borneensis* was to pack the lizards in a plastic box, he box is put into a cardboard box of instant noodles. In order to deceive the officers, the smugglers use false sender and recepient information (Aditya, 2016; Sudirmansyah, 2016).
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- On 26 April 2022, the Borneo Trans Mandiri (an autobus transportation company) and the Natural Resources Conservation Agency of West Kalimantan, thwarted 10 *L. borneensis* in two boxes of food to be sent to Medan, **n**orth Sumatra (Eno, 2022).
- On 6 July 2022, the Indonesia National Police of Kubu Raya District of West Kalimantan and Borneo Trans Mandiri thwarted four *L. borneensis* in two boxes of food to be sent to Java (Fig. 1; Adi, 2022).

In Indonesia, *L. borneensis* has been listed as protected species under **the Second Amendment** to **the** regulation of the Minister of Environment and Forest Number P.20/MENLHK/SETJEN/KUM.1/6/2018 regarding protected species of plants and animals (Ministry of Forestry and Environment, 2018). However, smuggling of *L. borneensis* always found every year **between** 2015 to 2018, absent in 2019 to 2020, and recorded again in 2021 to 2022. The discontinuous smuggling records of *L. borneensis* in 2019 to 2020 could be impact of Covid19 pandemic, where all **Indonesian provinces were** quarantined and shipping restricted. Our monitoring on social media and internet sources found **that** *L. borneensis* **is also kept** as pets by reptile **hobbyists** in some cities in Indonesia, including Payakumbuh (West Sumatra), Bandung (West Java), Jakarta, Malang (East Java), Surabaya (East Java), Kumai (Central Kalimantan), Bontang (East Kalimantan) and Banjarbaru (South Kalimantan).

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Our findings suggest **that** smuggling of *L. borneensis* in Indonesia **were** collected from West Kalimantan Province. It is clear **this** Province **needs** to take action for **its** conservation. Key institutions who prevent smuggling of *L. borneensis* in Indonesia are Natural Resources Conservation Agency, Airport's Agricultural Quarantine Agency, Avian Security at airports, Indonesia National Police **as well as** private

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Acknowledgements

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Figures

Figure 1.



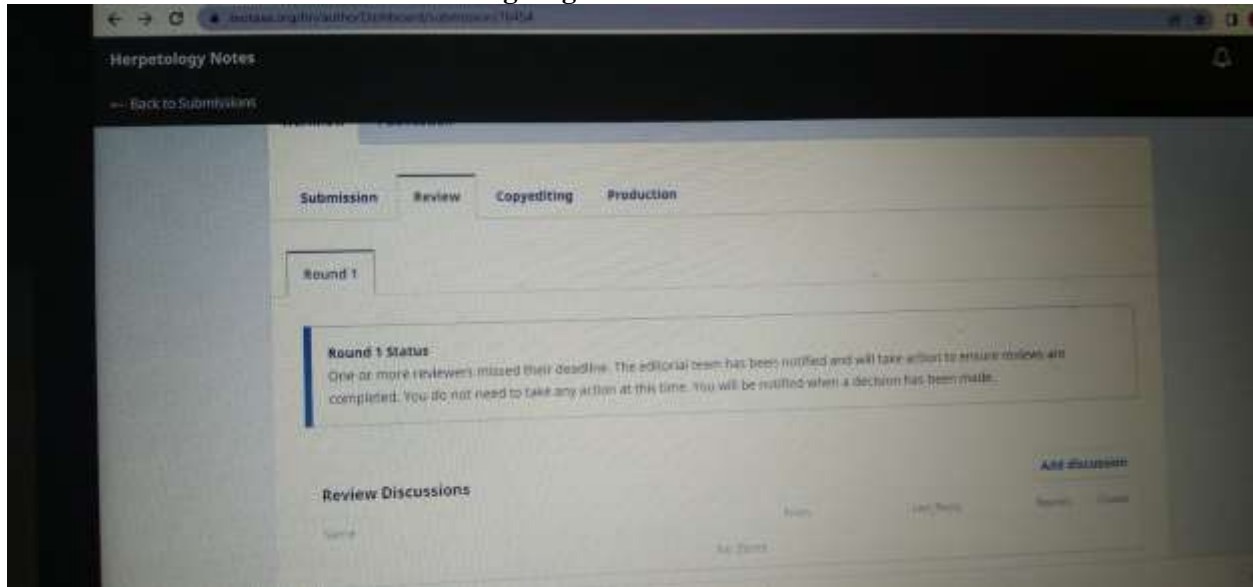
Figure 1. The Borneo Earless Monitor *Lanthanotus borneensis* have been failed to smuggling to Java by Indonesia National Police of Kubu Raya District, 6 July 2022, West Kalimantan Province, Indonesia. Photo by Adi/mabesbharindo.com.

REVISI

INTRUKSI REVISI 1

Round 1

Langsung lewat OJS Jurnal



14 September 2022

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We are very grateful to Prof. Indraneil Das and anonymous reviewers for their comments on an early draft of this manuscript. We thank Mr. Adi (mabesbharindo.com) for allowing us use his photo in this paper.

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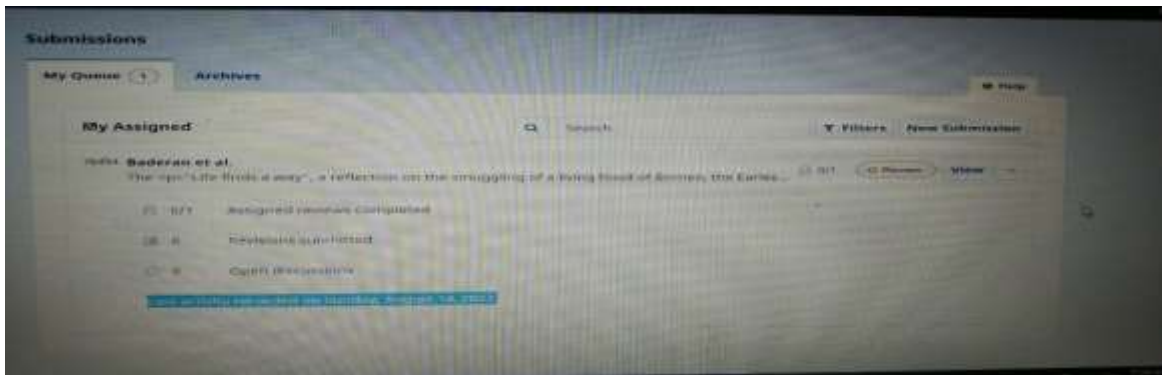
Figures

Figure 1.

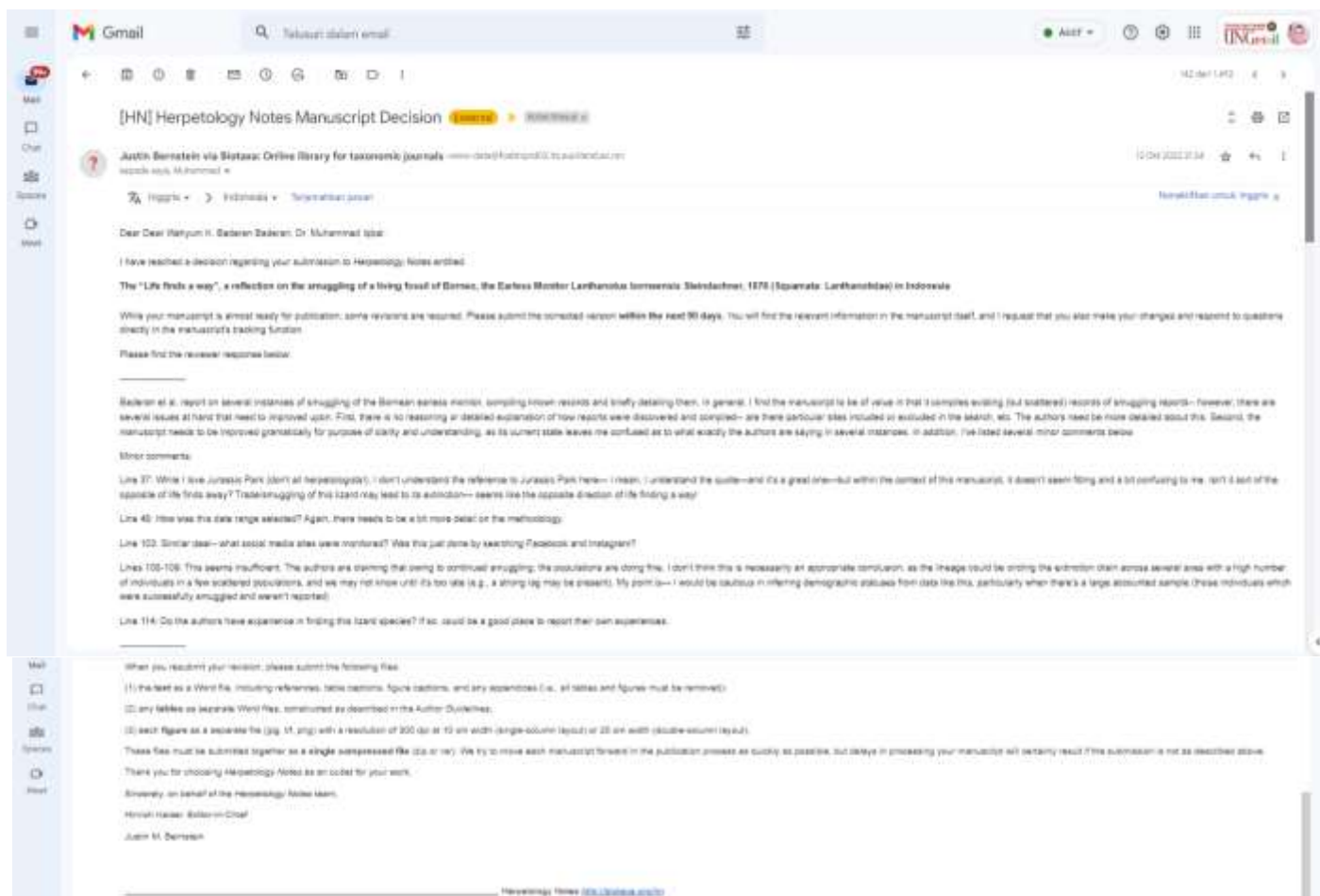


Figure 1. The Borneo Earless Monitor *Lanthanotus borneensis* have been failed to smuggling to Java by Indonesia National Police of Kubu Raya District, 6 July 2022, West Kalimantan Province, Indonesia. Photo by Adi/mabesbharindo.com.

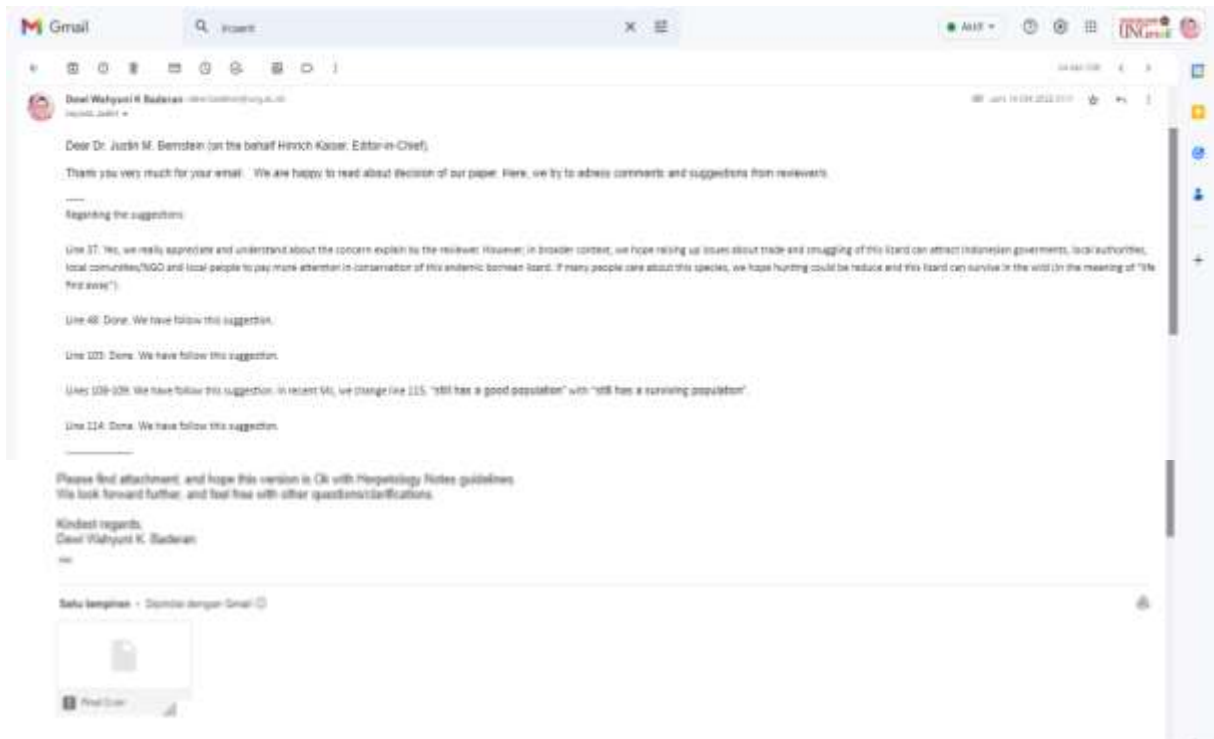
INTRUKSI REVISI 2 Round 2 Lewat OJS Jurnal



Lewat Email Jurnal 12 Oktober 2022



Perbaikan dikirimkan lewat email dan ojs jurnal, 14 Oktober 2022

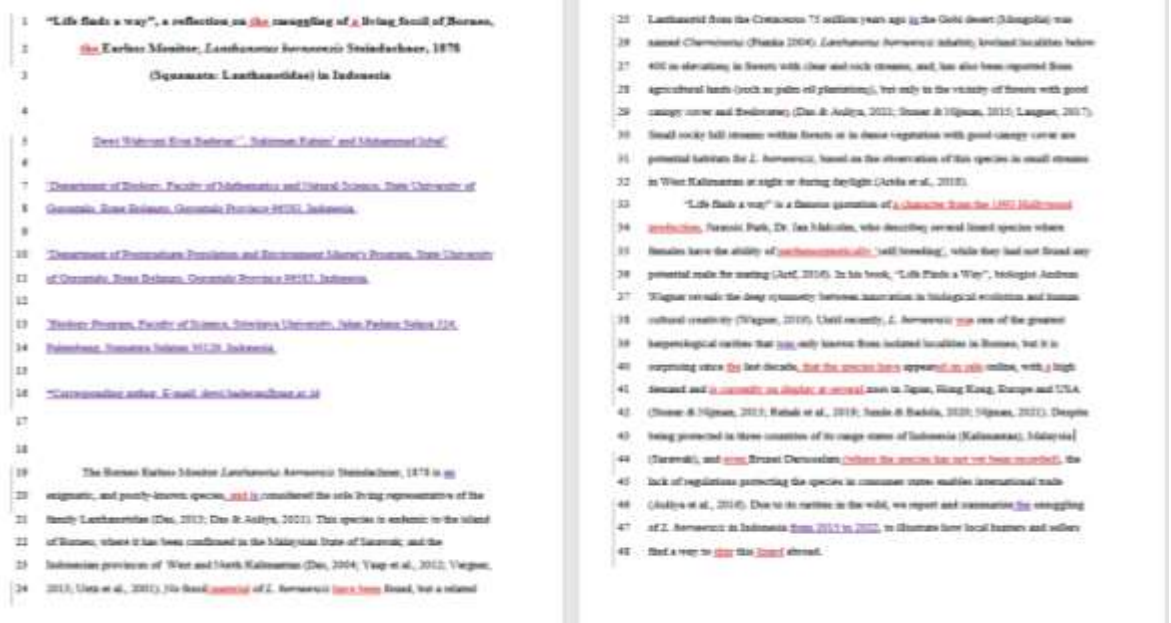


Isi Lampiran Perbaikan Revisi -2, Terkirim 14 Oktober 2022

Final 2.rar 2 item

Baderan et al_Smuggling Borneo earless monitor (Pre-review)-1_Final_revised.docx

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Records of the smuggling of *I. borneensis* were compiled from available information, particularly from local media and social media to internet sources. There are 10 reports of smuggling of *I. borneensis* in Indonesia [from 12 October 2011 to 2 July 2022](#) as summarized below:

- On 12 October 2011, a German citizen was arrested at Soekarno Hatta [Airport](#) by Indonesia National Police in Jakarta while trying to carry eight *I. borneensis* hidden in his body. Eight *I. borneensis* were brought from West Kalimantan for Rp. 10,000 per individual (i.e. \$4), so the passengers paid Rp. 400,000 (i.e. \$12) in total to get them; he [consumed](#) [individuals](#) brought *I. borneensis* to Jakarta via Supadio International Airport, West Kalimantan (Arwan, 2013; Felisiani, 2015).
- On 14 March 2016, the Natural Resources Conservation Agency (Badan Konservasi Sumber Daya Alam or BKSDA) West Kalimantan Province managed to secure 17 individuals of *I. borneensis* at Supadio Pontianak International Airport which will be sent via a delivery service with the aid of Batang (Batu Putean, Sarawak). The method used to smuggle *I. borneensis* [was to](#) pack the lizards in a plastic box, the box is put [into](#), into a cardboard box of instant noodles, [to](#) deceive the officers, the smugglers use false number and [on-line information](#) (Aditya, 2018; Sukmaningsih, 2018).
- On 18 May 2017, a Japanese man has been arrested by Arisan Security and Soekarno Hatta Airport's Agricultural Quarantine Agency while transiting in Jakarta's International Airport after being found to be travelling with four suitcases and a box containing a total of 257 reptiles, including four *I. borneensis* (Adi, 2017; Kinale & Narain, 2020).

- On 7 November 2017, the Natural Resources Conservation Agency of West Kalimantan Province managed to secure one *I. borneensis* (Shahabuddin, 2017; Patta, 2017).
- On 18 January 2018, the Forestry Police for cargo delivery at Singadit Airport and the Natural Resources Conservation Agency of West Kalimantan Province have managed to secure delivery of one *I. borneensis* and include [total cost](#) abroad (Batu Pontianak to Pontianak, North Sumatra) using express courier services (Anshala, 2018).
- On 24 and 27 April 2018, [the](#) wildlife team of the Natural Resources Conservation Agency of West Kalimantan Province managed to secure delivery of one *I. borneensis* and include [total cost](#) sent to Pontianak (North Sumatra) using express courier services (Anshala, 2018).
- The wildlife team of the Natural Resources Conservation Agency of West Kalimantan Province has failed deliver *I. borneensis* via the delivery service at Supadio Airport: two individuals on 24 April 2018, and eight individuals on 27 April 2018 (KSDAK, 2018).
- On 17 May 2021, Arisan Security and Supadio Airport's Agricultural Quarantine Agency have been failed deliver four *I. borneensis* and a box of *Philips* plants *Aglaonema* sp. which will be sent via the delivery service at Supadio Airport (Awan, 2021).
- On 26 April 2022, the Borneo Trans Mandiri (an express transportation company) and the Natural Resources Conservation Agency of West Kalimantan thwarted 10 *I. borneensis* in two boxes of food to be sent to Medan, North Sumatra (Ras, 2022).

- On 6 July 2022, the Indonesia National Police of Kalimantan District of West Kalimantan and Borneo Trans Mandiri thwarted four *I. borneensis* in two boxes of food to be sent to Jera (Fig. 1; Adi, 2022).

In Indonesia, *I. borneensis* has been listed as protected species under [the](#) Second Amendment to [the](#) regulation of the Minister of Environment and Forest Number P.20/MENLHK/SETEN/KUM.1/6/2018 regarding protected species of plants and animals (Ministry of Forestry and Environment, 2018). However, smuggling of *I. borneensis* [was](#) always found every year [between](#) 2015 to 2018, almost [from](#) 2019 to 2020, and recorded again [from](#) 2021 to 2022. The discontinuous smuggling records of *I. borneensis* [from](#) 2019 to 2020 could be [the](#) impact of COVID-19 pandemic, where all Indonesian provinces [were](#) quarantined and shipping restricted. Our [pieces of information are derived from internet sources and social media \(particularly from Facebook and Instagram\)](#). Both Facebook and Instagram are two social media that have many users in Indonesia (Karimah, 2021). Our studies suggest that *I. borneensis* [is also kept as pet](#) by reptile hobbyists in some cities in Indonesia, including Pekanbaru (West Sumatra), Bandung (West Java), Jakarta, Malang (East Java), Surabaya (East Java), Kuning (Central Kalimantan), Bontang (East Kalimantan) and Banjarbaru (South Kalimantan).

Regular records of smuggling of *I. borneensis* from 2015 to 2022 suggest that this species likely still [has a](#) [surviving](#) population in certain habitats [within its distribution range](#). The first author has familiar with herpetological studies, particularly in [Sulawesi](#) (Hamid et al., 2015; Mudo et al., 2018). The first author has experience in lizard surveys (Gahal et al., 2021; Praveiro & Jofal, 2022), but fail to discover this species during his visit to Kalimantan from 2017 to 2021 (October 2017 in Kotawaringin Timur of Central Kalimantan, August 2018 in Kotawaringin District of South Kalimantan, October 2018 in

Kotawaringin District of South Kalimantan, March 2019 in Bako Ulu of Central Kalimantan, March–November 2020 in West Kalimantan, February 2021 in Kaba Pasa District of West Kalimantan, June 2021 in Kutawaringin District of West Kalimantan, July 2021 in Sekonyer District of Central Kalimantan, October 2021 in Landak District of West Kalimantan, and December 2021 in Seruyan District of Central Kalimantan). Based on a Youtube channel about [an](#) expedition of *I. borneensis* in Western Kalimantan (Pauji Petaling, 2019), local people explained this species (locally called "kalid dari" or "kalid baru"), usually found when they go hunting mammals at night, and not move when approached. Langer (2017) reported that when detected, *I. borneensis* remain motionless "frozen" on the ground in the head torch beam. Based on these behaviours, it is clear *I. borneensis* relatively easy to [catch](#) in the wild. An investigation to learn about [the](#) hunting and trading of *I. borneensis* in West Kalimantan found that hunting involve local people and [a middleman \(dealer\)](#) who will manage to ship this species abroad (Arifa et al., 2018). This investigation suggests local hunters know [the](#) exact localities of *I. borneensis*, and [keep the](#) secret. Nover (2018) reported that almost *I. borneensis* available for sale on social media and reptile forums since 2012 no doubt originated from Indonesian Borneo, where an investigation indicates collectors regularly travel there, and local villagers [are eager to](#) [supply](#) them. It is no wonder [that](#) in 2015 and 2017, a German and a Japanese national were arrested at the Soekarno Hatta International Airport in Jakarta for attempting to smuggle *I. borneensis* out of the country, reportedly [purchased](#) from Kalimantan (Arwan, 2015; Felisiani, 2015; Adi, 2017; Jansen & Kridaningsih, 2018; Kinale & Narain, 2020). Our findings suggest [that](#) [the](#) smuggling of *I. borneensis* in Indonesia [were](#) collected from West Kalimantan Province. It is clear [the](#) Province [needs](#) to take action for [the](#) conservation. Key institutions [that](#) [the](#) prevent smuggling of *I. borneensis* in Indonesia are Natural Resources Conservation Agency, Airport's Agricultural Quarantine Agency, Arisan

Security at airports, Indonesia National Police [as well as](#) private sector (Bromo Train
Mandiri, an aviation transportation company). Regarding conservation actions in place for *E.*
hermanni, Das & Aditya (2022) suggest locality records and refer to sites where the species
occurs need to be monitored and managed, particularly in protected areas, [and](#) park staff
needs to control illegal collecting activities. Furthermore, a prerequisite to [improving](#) and
train authorities and relevant stakeholders are required in the future.

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[to use his photo](#) in this paper.

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Records of [the](#) smuggling of *E. hermanni* were compiled from available information,
particularly from local media and social media in internet sources. There are 10 reports of
smuggling of *E. hermanni* in Indonesia [from 12 October 2017 to 8 July 2022](#) as summarized
below:

- On 12 October 2017, a German citizen was arrested at Sukarno Hatta Airport by
Indonesia National Police in Jakarta while trying to carry eight *E. hermanni*
lizards in his body. Eight *E. hermanni* were brought from West Kalimantan for
Rp. 50,000 per individual (i.e. \$4), so the perpetrators paid Rp. 400,000 (i.e. \$32) in
total to get them; the [successful](#) [infiltration](#) brought *E. hermanni* to Jakarta via
Supadio International Airport, West Kalimantan (Arwen, 2017; Peliandri, 2017).
- On 14 March 2018, the Natural Resources Conservation Agency (Field
Conservation Transfer Day's Allowance or KESDIA) West Kalimantan Province managed
to secure 17 individuals of *E. hermanni* at Supadio Pontianak International
Airport which will be sent via a delivery service with the aim of Bontas (Bontas
Bontas, Sumatra). The method used to smuggle *E. hermanni* [was to](#) pack the
lizards in a plastic box, so that it [was](#) [not](#) a confirmed box of [the](#) [lizards](#) [smuggled](#).
To deceive the officers, the smugglers use false number and [no](#) [present](#) [information](#)
(Aditya, 2018; Indriyandayani, 2018).
- On 18 May 2021, a Japanese man has been arrested by Arisan Security and
Indonesia Hatta Airport's Agricultural Quarantine Agency while transiting in
Jakarta's International Airport after being found to be traveling with four suitcases
and a box containing a total of 210 reptiles, including five *E. hermanni* (Adi,
2021; Khaba & Marus, 2020).

- On 7 November 2017, the Natural Resources Conservation Agency of West
Kalimantan Province managed to secure one *E. hermanni* (Shahdizoglu, 2017;
Petrus, 2017).
- On 18 January 2018, the Forestry Police for cargo delivery at Supadio Airport and
the Natural Resources Conservation Agency of West Kalimantan Province have
managed to secure delivery of one *E. hermanni* and exclude [them](#) [from](#) [the](#) [country](#)
(from Pontianak to Penang, Sumatra) using express courier
services (Ardila, 2018).
- On 24 and 27 April 2018, [the](#) [wildlife](#) [team](#) [of](#) [the](#) [Natural](#) [Resources](#) [Conservation](#) [Agency](#) [of](#) [West](#) [Kalimantan](#) [Province](#) [managed](#) [to](#) [secure](#) [delivery](#) [of](#) [one](#) [E.](#) [hermanni](#) [and](#) [exclude](#) [them](#) [from](#) [the](#) [country](#)
(from Pontianak to Penang, Sumatra) using express courier
services (Ardila, 2018).
- The wildlife team of the Natural Resources Conservation Agency of West
Kalimantan Province has failed deliver *E. hermanni* via the delivery service at
Supadio Airport: two individuals on 24 April 2018, and eight individuals on 27
April 2018 (KESDIA, 2018).
- On 17 May 2021, Arisan Security and Supadio Airport's Agricultural Quarantine
Agency have been failed deliver five *E. hermanni* and a box of [Pithecia](#) [phlegma](#)
[sp.](#) which will be sent via the delivery service at Supadio Airport
(Azen, 2021).
- On 28 April 2022, the Bromo Train Mandiri (an aviation transportation company)
and the Natural Resources Conservation Agency of West Kalimantan threatened 10
E. hermanni in two boxes of food to be sent to Medan, [North](#) [Sumatra](#) (Eko,
2022).

On 6 July 2022, the Indonesia National Police of Koba Raya District of West Kalimantan and Borneo Trans Mandiri thwarted four *Z. borneensis* in two boxes of food to be sent to Java (Fig. 1; Adi, 2022).

In Indonesia, *Z. borneensis* has been listed as protected species under the second amendment to the regulation of the Ministry of Environment and Forest Number P.29/MENLHK/SETJEN/KM.1-6/2018 regarding protected species of plants and animals (Ministry of Forestry and Environment, 2018). However, smuggling of *Z. borneensis* still always found every year between 2015 to 2018, almost from 2019 to 2020, and recorded again from 2021 to 2022. The discontinuous smuggling records of *Z. borneensis* from 2019 to 2020 could be the impact of Covid19 pandemic, where all Indonesian province were guaranteed and shipping restricted. Our view of information are derived from internet sources and social media (particularly from Facebook and Instagram). Both Facebook and Instagram are two social media that have user users in Indonesia (Makamah, 2021). Our findings suggest that *Z. borneensis* is also kept as pet by reptile hobbyists in some cities in Indonesia, including Pekanbaru (West Sumatra), Bandung (West Java), Jakarta, Malang (East Java), Surabaya (East Java), Komati (Central Kalimantan), Bontang (East Kalimantan) and Banjarmasin (South Kalimantan).

Regular records of smuggling of *Z. borneensis* from 2011 to 2022 suggest that this species likely still has a significant population in certain habitat within its distributional range. The first author has familiar with herpetological studies, particularly in Indonesia (Jumartin et al., 2012; Mardia et al., 2018). The third author has experience in forest surveys (Gibai et al., 2021; Prasetyo & Juhel, 2022), but had to discuss this species status for study in Kalimantan from 2017 to 2021 (October 2017 in Kotawaringin Timur of Central Kalimantan, August 2019 in Kutubaya District of South Kalimantan, October 2019 in

Kamohar District of South Kalimantan, March 2020 in Bako Iba of Central Kalimantan, March/November 2020 in West Kalimantan, February 2021 in Koba Raya District of West Kalimantan, June 2021 in Kutubaya District of West Kalimantan, July 2021 in Sukamara District of Central Kalimantan, October 2021 in Lawele District of West Kalimantan, and December 2021 in Seruyan District of Central Kalimantan).

Based on a Youtube channel about an expedition of *Z. borneensis* in Western Kalimantan (Pagi Perialang, 2018), local people explained this species (locally called "kadai ibar" or "kadai ibar"), usually found when they go hunting mammals at night, and not move when approached. Langner (2017) reported that when detected, *Z. borneensis* remain motionless "frozen" on the ground in the head torch beam. Based on these behaviour, it is clear *Z. borneensis* relatively easy to catch in the wild. An investigation to learn about the hunting and trading of *Z. borneensis* in West Kalimantan found that hunting involving local people and a middleman (broker) who will manage to ship this species abroad (Arida et al. 2018). This investigation suggest local sources know the exact location of *Z. borneensis*, and from these source. Niyon (2018) reported that almost *Z. borneensis* available for sale on social media and reptile forums since 2012 no doubt originated from Indonesian Borneo, where an investigation indicates collectors regularly travel there, and local villagers are sage to locate them. It is no wonder that in 2015 and 2017, a German and a Japanese national were arrested at the Soekarno Hatta International Airport in Jakarta for attempting to smuggle *Z. borneensis* out of the country, reportedly purchased from Kalimantan (Arwan, 2015; Politiani, 2015; Adi, 2017; Jasson & Krishnasamy, 2018; Khale & Naras, 2020).

Our findings suggest that the smuggling of *Z. borneensis* in Indonesia was collected from West Kalimantan Province. It is clear that Province needs to take action for its conservation. Key institutions that are prevent smuggling of *Z. borneensis* in Indonesia are Natural Resources Conservation Agency, Airports Agricultural Quarantine Agency, Airline

Security at airports, Indonesia National Police is still in private sector (Borneo Trans Mandiri, an airlines transportation company). Regarding conservation actions in place for *Z. borneensis*, Das & Andriyana (2021) suggest locality records and relevant sites where the species occurs need to be monitored and managed, particularly in protected areas, and park staff needs to control illegal collecting activities. Furthermore, a prerequisite to enforcing and train authorities and relevant stakeholders are required in the future.

Acknowledgements

We are very grateful to Prof. Indukut Das and the anonymous reviewers for their comments on an early draft of this manuscript. We thank M. Adi (madelharinda.com) for allowing us to see his photo in this paper.

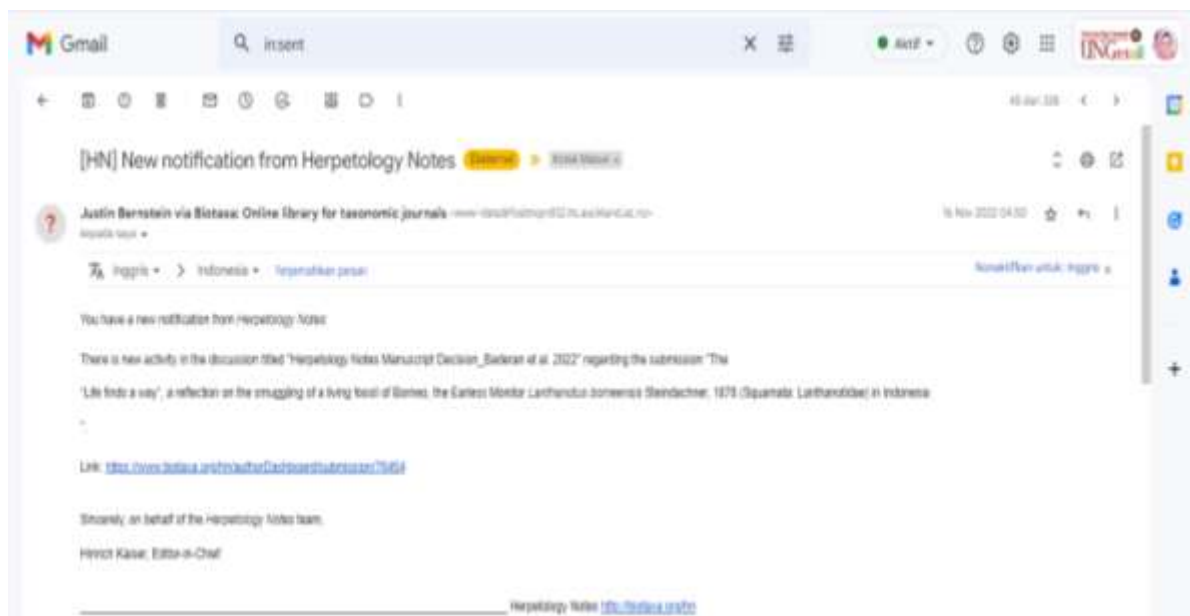
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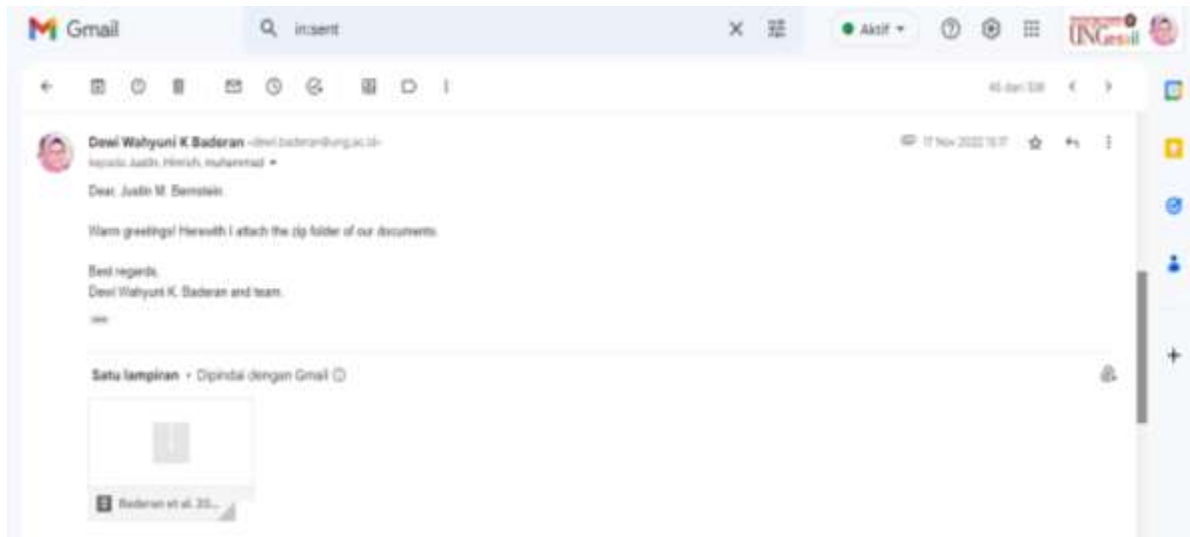
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INTRUKSI REVISI 3
Email masuk 16 November 2022, Diskusi

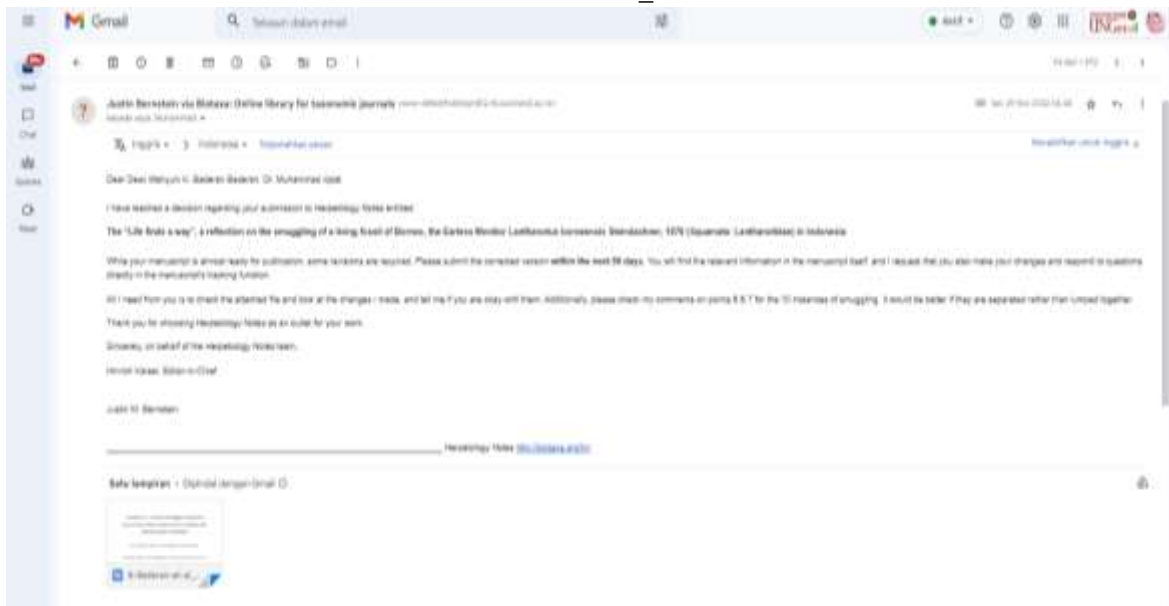


Balasan Email, 17 November 2022



INTRUKSI REVISI 4

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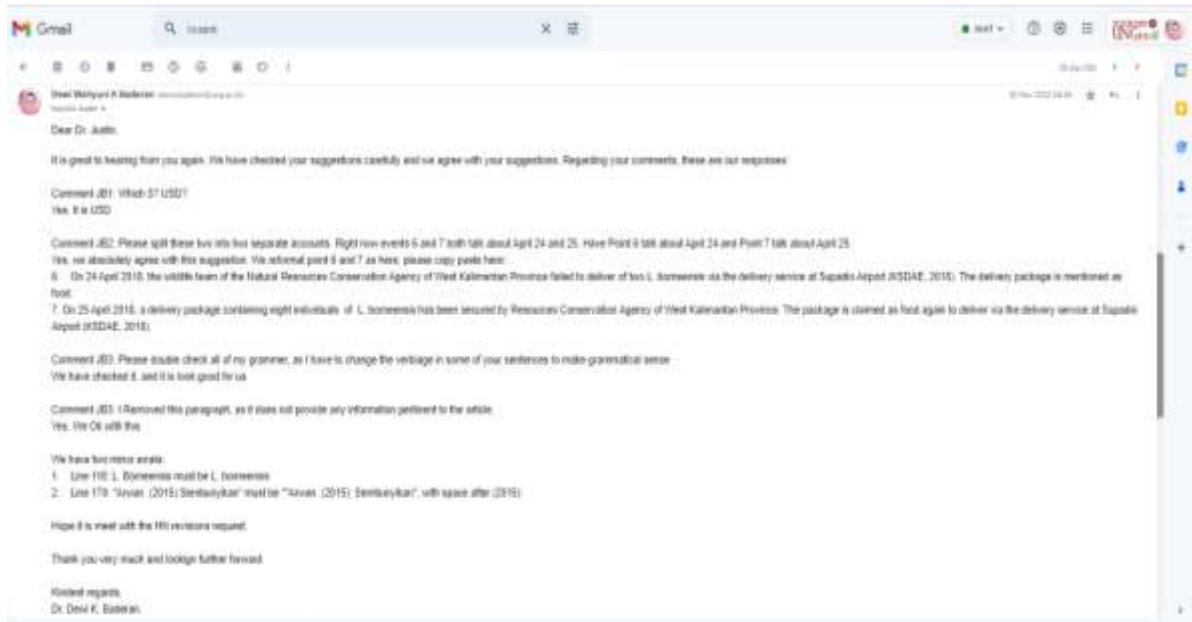
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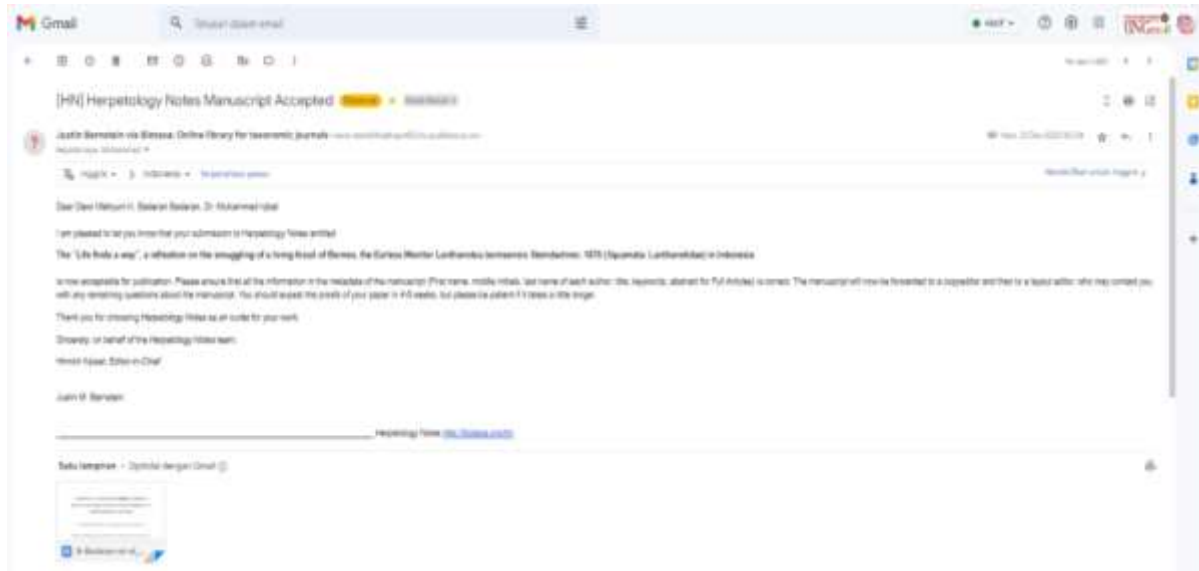
391 Taweret, Besenight (1966: 163), Mahes, Maehes (1st cent), Sakhmet (1st cent), Beses
392 (Ancient Egyptology), Besenight (Ancient Egyptology) and Besenight (Ancient Egyptology)
393 Records of smuggling of Z. besenight from 2011 to 2022 suggest that this species still
394 has a certain population in certain habitats within its distributional range.
395 Based on a Youtube channel about the reptiles of Z. besenight in Vietnam
396 (Taweret, Besenight, 2016), local people apparently use species (locally called 'sao
397' or 'saoi' (sao), usually found on tree or leaning materials at night, that snakes
398 that Z. besenight does not move much when approached. Lagunas (2017) reported that when
399 hunted, Z. besenight usually retreats into 'holes' on the ground where head with the neck
400 goes. Based on these behaviors, it is clear Z. besenight is naturally easy to catch in the field.
401 An advertisement in Laos about the hunting and selling of Z. besenight in Vietnam (Taweret,
402 Besenight, 2016) showed that local people and a middleman (middle) who will manage to dig
403 the species (called 'sao' or 'saoi'). This advertisement suggests that snakes have the
404 same locations that Z. besenight inhabits, and they may live close to each other. These (2016)
405 reported that most of the Z. besenight population be sold on street markets and reptile houses
406 since 2012. They reported that local hunters, however, when no investigations about
407 collectors explicitly named them, and local villages are eager to supply them. These authors
408 suggest that, such as in 2012 and 2017 when a Chinese individual and a Japanese individual
409 were arrested at the Indochina China International Airport in Hanoi for attempting to smuggle
410 Z. besenight out of the country, reportedly purchased from Vietnamese (Lagunas, 2017).
411 Vietnam, 2002; AA, 2017; Taweret & Taweret, 2014; Kanda & Pavan, 2020).
412 One thing suggests that the smuggling of Z. besenight in Indonesia was affected
413 from Vietnamese practices. This practice would benefit those investigators who in-
414 terested the least upon the best outcome that prevent smuggling of Z. besenight in Indonesia
415 (Indonesian Biodiversity Conservation Agency, Animal Husbandry Conservation Agency, and

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Perbaikan Revisi 4 Langsung di jawab lewat Email_30 November 2022



ACCEPTED



Accepted dengan Revisi ke-5, 22 Desember 2022

| | | |
|--|--|--|
| <p>1 "Life Finds a Way": A reflection on the smuggling of a living fossil of</p> <p>2 Borneo, the Kribia Monitor, <i>Lanthanotus borneensis</i> Steudachner, 1878</p> <p>3 in Indonesia (Squamata: Lanthanotidae)</p> <p>4</p> <p>5 Dewi Wulandari Rival Bakriani¹, Muhammad Iqbal² and Muhammad Iqbal³</p> <p>6</p> <p>7 ¹ Department of Biology, Faculty of Mathematics and Natural Science, State University of</p> <p>8 Gorontalo, State Biology, Gorontalo Province 94133, Indonesia</p> <p>9 ² Department of Postgraduate Population and Environment Master's Program, State</p> <p>10 University of Gorontalo, State Biology, Gorontalo Province 94133, Indonesia</p> <p>11 ³ Biology Program, Faculty of Science, Sebelas Maret University, Jalan Peking Selatan 22A,</p> <p>12 Palembang, Sumatera Selatan 30139, Indonesia</p> <p>13 * Corresponding author. E-mail: dewanibakriani@gmail.com</p> <p>14</p> <p>15 The Borneo Kribia Monitor <i>Lanthanotus borneensis</i> Steudachner, 1878 is an</p> <p>16 enigmatic, poorly-known lizard species, and is considered the sole living representative of the</p> <p>17 family Lanthanotidae (Das, 2015; Das & Jolly, 2021). This species is endemic to the island</p> <p>18 of Borneo, where it has been confirmed in the Malaysian state of Sarawak, and the Indonesian</p> <p>19 provinces of West Kalimantan and North Kalimantan (Das, 2014; Yap et al., 2012; Virgin,</p> <p>20 2013; Das et al., 2011). No fossil material of <i>L. borneensis</i> have been found, but a related</p> <p>21 Lanthanotid from the Cretaceous 70 million years ago in the Gobi desert (Mongolia) was</p> <p>22 named <i>Cheloniosaurus</i> (Pomel 1846). <i>Lanthanotus borneensis</i> inhabits lowland habitats below</p> <p>23 400 m elevations in forests with clear or rock streams, and, has also been reported from</p> <p>24 agricultural lands (such as palm oil plantations), but only in the vicinity of forests with good</p> <p>25 canopy cover and freshwater (Das & Andry, 2021; Das & Nijman, 2021; Langsat, 2017).</p> | | <p>26 Small rocky hill streams within forests or in dense vegetation with good canopy cover are</p> <p>27 potential habitats for <i>L. borneensis</i>, based on the observation of this species in small streams</p> <p>28 in West Kalimantan at night or during daylight (Andri et al., 2018).</p> <p>29 "Life Finds a Way" is a Chinese quote from a character in the 1995 Hollywood</p> <p>30 production, Jurassic Park. In the movie, Dr. Ian Malcolm describes several lizard species whose</p> <p>31 females have the ability of parthenogenetically "self-fertilizing", while they had not found any</p> <p>32 potential male for mating (Andri, 2018). In his book, "Life Finds a Way", biologist Andreas</p> <p>33 Wagner reveals the deep resonance between innovation in biological evolution and human</p> <p>34 cultural creativity (Wagner, 2010). Until recently, <i>L. borneensis</i> was one of the greatest</p> <p>35 herpetological mysteries that was only known from isolated localities in Borneo. However, in the</p> <p>36 last decade, this species has appeared on sale online, with a high demand in the pet trade and</p> <p>37 is also on display at several zoos in Japan, China, and several parts of Europe and USA (Stoner</p> <p>38 & Nijman, 2012; Bakshi et al., 2018; Fauda & Bakshi, 2020; Nijman, 2021). Despite being</p> <p>39 protected in three countries of its range (Indonesia (Kalimantan), Malaysia (Sarawak), and</p> <p>40 Brunei Darussalam (where the species has not yet been recorded)), the lack of regulations</p> <p>41 protecting the species in commerce states enables international trade (Andry et al., 2016). Due</p> <p>42 to its rarity in the wild, we report and summarize the smuggling of <i>L. borneensis</i> in Indonesia</p> <p>43 from 2013 to 2022, to illustrate how local business and others find a way to ship this lizard</p> <p>44 abroad.</p> <p>45 Records of the smuggling of <i>L. borneensis</i> were compiled from publicly available</p> <p>46 information, particularly from social media and social media internet sources. There are 31</p> <p>47 reports of smuggling of <i>L. borneensis</i> in Indonesia from 12 October 2013 to 9 July 2022 as</p> <p>48 summarized below:</p> <p>49 1. On 12 October 2013, a <i>Gecko</i> lizard was arrested at Indonesia State Airport by</p> <p>50 Indonesian National Police in Jakarta while trying to carry eight <i>L. borneensis</i> lizards on</p> |
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10 In person, eight *L. borealis* were bought from Vira Kalimantan for Rp. 11,000 per
 11 individual or 90, to the population paid Rp. 400,000 (-) 300 to end in person, the
 12 concerned individual bought *L. borealis* to (Mara via Sepatol International
 13 Airport, Vira Kalimantan (Vira, 2015; Poliana, 2010)).

14 2. On 14 March 2016, the Natural Resources Conservation Agency (State Environmental
 15 Protection Days Area or BESDA) Vira Kalimantan Province attempted to rescue 17
 16 individuals of *L. borealis* at Sepatol International Airport, intended to be
 17 sent via a delivery service to Betan (East Pontianak, Indonesia). The method used to
 18 smuggle *L. borealis* was to pack the birds in a plastic bag and put them into a
 19 cardboard box of instant noodles. To secure the officers, the smugglers tried to use
 20 blue smoke and request witnesses (Aditya, 2018; Sulaiman, 2018).

21 3. On 15 May 2017, a Japanese man was arrested by State Security and Defense (State
 22 Airport Agricultural Quarantine Agency while crossing in Jakarta International
 23 Airport after being found to be traveling with blue smoke and a box containing a total
 24 of 253 species, including five *L. borealis* (AA, 2017; Kurni & Yana, 2020).

25 4. On 7 November 2017, the Natural Resources Conservation Agency of Vira Kalimantan
 26 Province managed to rescue six *L. borealis* (Khotimingsih, 2017; Rana, 2017).

27 5. On 12 January 2020, the Forestry Police for cage delivery at Sepatol airport and the
 28 Natural Resources Conservation Agency of Vira Kalimantan Province arrested the
 29 delivery of six *L. borealis* and twelve long and short (five Peranakan
 30 Pongapangan, North Sumatra) using express courier services (Ardika, 2020).

31 6. On 24 and 27 April 2021, the wildlife team of the Natural Resources Conservation
 32 Agency of Vira Kalimantan Province rescued a delivery of six *L. borealis* and
 33 twelve long and short Peranakan (North Sumatra) using express courier services
 34 (Ardika, 2021).

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19 1. The wildlife team of the Natural Resources Conservation Agency of Vira Kalimantan
 20 Province rescued six *L. borealis* via the delivery service at Sepatol Airport. The
 21 individuals on 24 April 2016, and eight individuals on 27 April 2016 (BESDA, 2016).

22 2. On 17 May 2020, Arisa, Security and Sepatol Airport's Agricultural Quarantine
 23 Agency found five *L. borealis* and a box of instant noodles which would
 24 have been sent via the delivery service at Sepatol Airport (Arisa, 2021).

25 3. On 24 April 2020, the Domes Travel Mandiri (an online transportation company) and
 26 the Natural Resources Conservation Agency of Vira Kalimantan discovered 19 *L.*
 27 *borealis* in two boxes of food to be sent to Medan, North Sumatra (D, 2020).

28 4. On 4 July 2021, the Indonesian National Police of Kalimantan District of Vira
 29 Kalimantan and Domes Travel Mandiri found five *L. borealis* in two boxes of food
 30 to be sent to Kota (Fig. 1, AA, 2021).

31 In Indonesia, *L. borealis* has been listed as protected species under the Second
 32 Amendment to the regulation of the Ministry of Environment and Forest (Minister
 33 P.21/MEM/LK/SET/OT/2021/14/2021 regarding protected species of plants and animals
 34 of Indonesia of Priority and Endangered, 2018). However, based on our findings, smuggling of
 35 *L. borealis* was always found every year between 2017 to 2018, almost from 2018 to 2020,
 36 and increased again from 2021 to 2022. The continuous smuggling records of *L. borealis*
 37 from 2018 to 2022 could be the impact of COVID-19 pandemic, where all Indonesian
 38 provinces were quarantined and shipping restricted, or due to a lack of parking rules. The
 39 pieces of information are derived from internet sources and social media (particularly from
 40 Facebook and Instagram). Both Facebook and Instagram are two social media platforms that
 41 have many users in Indonesia (Ramadhani, 2011). Our findings suggest that *L. borealis* is also
 42 kept as pets by reptile collectors in some areas in Indonesia, including Pekanbaru (East

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Perbaikan Revisi ke-5 dari Accepted

“Life finds a way:” A reflection on the smuggling of a living fossil of Borneo, the Earless Monitor *Lanthanotus borneensis* Steindachner, 1878 in Indonesia (Squamata: Lanthanotidae)

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The Borneo Earless Monitor *Lanthanotus borneensis* Steindachner, 1878 is an enigmatic, poorly-known lizard species, and is considered the sole living representative of the family Lanthanotidae (Das, 2013; Das & Auliya, 2021). This species is endemic to the island of Borneo, where it has been confirmed in the Malaysian State of Sarawak; and the Indonesian provinces of West Kalimantan and North Kalimantan (Das, 2004; Yaap et al., 2012; Vergner, 2013; Uetz et al., 2001). No fossil material of *L. borneensis* has been found, but a related Lanthanotid from the Cretaceous 75 million years ago in the Gobi desert (Mongolia) was named *Cherminotus* (Pianka 2004). *Lanthanotus borneensis* inhabits lowland localities below 400 m elevations in forests with clear and rock streams, and; has also been reported from agricultural lands (such as palm oil plantations), but only in the vicinity of forests with good canopy cover and freshwaters (Das & Auliya, 2021; Stoner & Nijman, 2015; Langner, 2017). Small rocky hill streams within forests or dense vegetation with good canopy cover are potential habitats for *L. borneensis*, based on the observation of this species in small streams in West Kalimantan at night or during daylight (Arida et al., 2018).

“Life finds a way” is a famous quote from a character in the 1993 Hollywood production, Jurassic Park. In the movie, Dr. Ian Malcolm describes several lizard species where females have the ability to parthenogenetically ‘self-breeding’, while they had not found any potential male for mating (Arif, 2016). In his book, “Life Finds a Way”, biologist Andreas Wagner reveals the deep symmetry between innovation in biological evolution and human cultural creativity (Wagner, 2019). Until recently, *L. borneensis* was one of the greatest herpetological rarities that was only known from isolated localities in Borneo. However, in the last decade, this species has appeared on sale online, with high demand in the pet trade and is also on display at several zoos in Japan, China, and several parts of Europe and the USA (Stoner & Nijman, 2015; Rehak et al., 2019; Jumle & Badola, 2020; Nijman, 2021). Despite being protected in three countries of its range (Indonesia [Kalimantan], Malaysia [Sarawak], and Brunei Darussalam [Temburong]), the lack of regulations protecting the species in consumer states enables international trade (Auliya et al., 2016; [Universiti Brunei Darussalam, 2022](#)). Due to its rarities in the wild, we report and summarize the smuggling of *L. borneensis* in Indonesia from 2015 to 2022, to illustrate how local hunters and sellers find a way to ship this lizard abroad.

Records of the smuggling of *L. borneensis* were compiled from publicly available information, particularly from local media and social media internet sources. There are 10 reports of smuggling of *L. borneensis* in Indonesia from 12 October 2015 to 6 July 2022 as summarized below:

1. On 12th October 2015, a German citizen was arrested at Soekarno Hatta Airport by Indonesia National Police in Jakarta while trying to carry eight *L. borneensis* hidden on his person. Eight *L. borneensis* were bought from West Kalimantan for Rp. 50,000 per individual (c. [US\\$4](#)), so the perpetrators paid Rp. 400,000 (c. [US\\$32](#)) in total to get them; the concerned individual brought *L. borneensis* to Jakarta via Supadio International Airport, West Kalimantan (Arwan, 2015; Felisiani, 2015).
2. On 14th March 2016, the Natural Resources Conservation Agency (Balai Konservasi Sumber Daya Alam or BKSDA) West Kalimantan Province managed to secure 17 individuals of *L. borneensis* at Supadio Pontianak International Airport, intended to be sent via a delivery service to Batam (Riau Province, Sumatra). The method used to smuggle *L. borneensis* was to pack the lizards in a plastic box and put them into a cardboard box of instant noodles. To deceive the officers, the smugglers tried to use false sender and recipient information (Aditya, 2016; Sudirmansyah, 2016).
3. On 16th May 2017, a Japanese man was arrested by Avian Security and Soekarno Hatta Airport's Agricultural Quarantine Agency while transiting in Jakarta's International Airport after being found to be traveling with four suitcases and a box containing a total of 253 reptiles, including four *L. borneensis* (Adi, 2017; Kitade & Naruse, 2020).
4. On 7th November 2017, the Natural Resources Conservation Agency of West Kalimantan Province managed to secure one *L. borneensis* (Murdaningsih, 2017; Putra, 2017).
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6. On 24th April 2018, the wildlife team of the Natural Resources Conservation Agency of West Kalimantan Province failed to deliver two *L. borneensis* via the delivery service at Supadio Airport (KSDAE, 2018). The delivery package is mentioned as food.
7. On 25th April 2018, a delivery package containing eight individuals of *L. borneensis* has been secured by the Natural Resources Conservation Agency of West Kalimantan Province. The package is claimed as food again to deliver via the delivery service at Supadio Airport (KSDAE, 2018).

8. On 17th May 2021, Avian Security and Supadio Airport's Agricultural Quarantine Agency found four *L. borneensis* and a box of Pitcher plants *Nepenthes* sp. which would have been sent via the delivery service at Supadio Airport (Anon, 2021).
9. On 26th April 2022, the Borneo Trans Mandiri (an autobus transportation company) and the Natural Resources Conservation Agency of West Kalimantan discovered 10 *L. borneensis* in two boxes of food to be sent to Medan, North Sumatra (Eno, 2022).
10. On 6th July 2022, the Indonesia National Police of Kubu Raya District of West Kalimantan and Borneo Trans Mandiri found four *L. borneensis* in two boxes of food to be sent to Java (Fig. 1; Adi, 2022).

In Indonesia, *L. borneensis* has been listed as protected species under the Second Amendment to the regulation of the Minister of Environment and Forest Number P.20/MENLHK/SETJEN/KUM.1/6/2018 regarding protected species of plants and animals (Ministry of Forestry and Environment, 2018). However, based on our findings, smuggling of *L. borneensis* was always found every year between 2015 to 2018, absent from 2019 to 2020, and recorded again from 2021 to 2022. The discontinuous smuggling records of *L. borneensis* from 2019 to 2020 could be the impact of the COVID-19 pandemic, where all Indonesian provinces were quarantined and shipping restricted, or due to a lack of postings online. Our pieces of information are derived from internet sources and social media (particularly from Facebook and Instagram). Both Facebook and Instagram are two social media platforms that have many users in Indonesia (Karimah, 2021). Our findings suggest that *L. borneensis* is also kept as pets by reptile hobbyists in some cities in Indonesia, including Payakumbuh (West Sumatra), Bandung (West Java), Jakarta, Malang (East Java), Surabaya (East Java), Kumai (Central Kalimantan), Bontang (East Kalimantan) and Banjarbaru (South Kalimantan). Records of smuggling of *L. borneensis* from 2015 to 2022 suggest that this species likely still has a surviving population in certain habitats within its distributional range.

Based on a Youtube channel about an expedition of *L. borneensis* in Western Kalimantan (Panji Petualang, 2019), local people explained this species (locally called “kadal duri” or “kadal bisu”) is usually found when they go hunting mammals at night; they mention that *L. borneensis* does not move much when approached. Langner (2017) reported that when detected, *L. borneensis* remain motionless “frozen” on the ground when faced with the torch beam. Based on these behaviours, it is clear *L. borneensis* is relatively easy to catch in the wild. An investigation to learn about the hunting and trading of *L. borneensis* in West Kalimantan found that hunting involves local people and a middleman (reseller) who will manage to ship this species abroad (Arida et al., 2018). This investigation suggests local hunters know the many localities that *L. borneensis* inhabits, and they may keep these secrets. Nuwer (2018) reported that most of the *L. borneensis* available for sale on social media and reptile forums since 2012 likely originated from Indonesian Borneo, where investigations indicate collectors regularly travel there, and local villagers are eager to supply them. Some arrests support this, such as in 2015 and 2017 when a German individual and a Japanese individual were arrested at the Soekarno Hatta International Airport in Jakarta for attempting to smuggle *L. borneensis* out of the country, reportedly purchased from Kalimantan (Arwan, 2015; Felisiani, 2015; Adi, 2017; Janssen & Krishnasamy, 2018; Kitade & Naruse, 2020).

Our findings suggest that the smuggling of *L. borneensis* in Indonesia were collected from West Kalimantan Province. This province would benefit from conservation action to protect this lizard species. Key institutions that prevent smuggling of *L. borneensis* in Indonesia are Natural Resources Conservation Agency, Airport's Agricultural Quarantine Agency, Avian Security at airports, Indonesia National Police as well as private sectors (Borneo Trans Mandiri, an autobus transportation company). Regarding conservation actions in place for *L. borneensis*, Das & Auliya (2021) suggest locality records and relevant sites where the species occurs need to be monitored and managed, particularly in protected areas, and

park staff needs to control illegal collecting activities. Furthermore, a prerequisite to informing train authorities and relevant stakeholders about this illegal trade of animals are required in the future.

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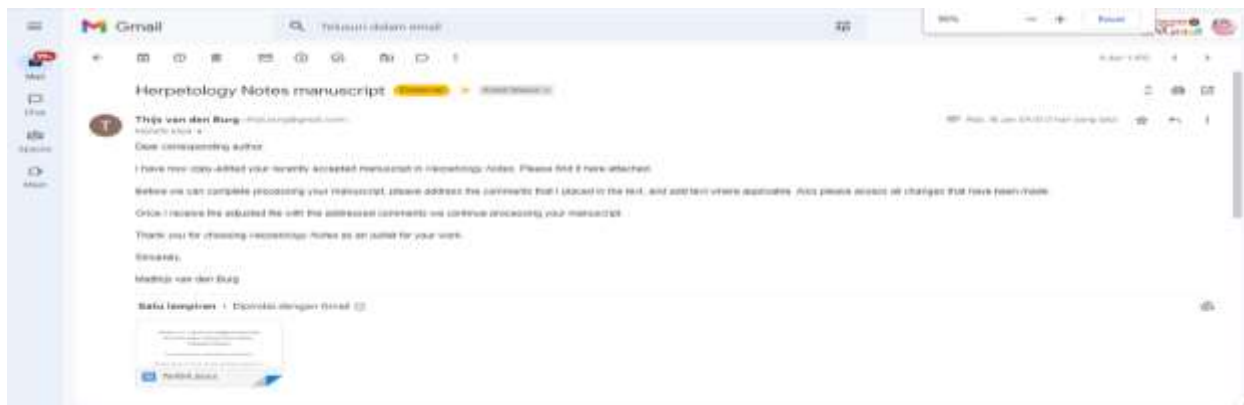
Figures

Figure 1. The Borneo Earless Monitor *Lanthanotus borneensis*, intended to have been smuggled to Java, discovered by the Indonesia National Police of Kubu Raya District, 6th July 2022, West Kalimantan Province, Indonesia. Photo by Adi/mabesbharindo.com.

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including Payakumbuh (West Sumatra), Bandung (West Java), Jakarta, Malang (East Java), Surabaya (East Java), Kumai (Central Kalimantan), Bontang (East Kalimantan) and Banjarbaru (South Kalimantan). Overall, these 2015-2022 smuggling records of *L. borneensis* suggest that surviving populations remain present within its distributional range.

Based on a Youtube channel about an expedition to find of *L. borneensis* in Western Kalimantan (Panji Petualang, 2019), local people explained how species (locally called “kadal duri” or “kadal bisu”) is usually found when they go hunting mammals at night; mentioning that *L. borneensis* does not move much when approached. Langner (2017) reported that when detected (using a torch beam), *L. borneensis* remain motionless “frozen” on the ground. Based on these reports, *L. borneensis* can relatively easily be caught in the wild. An investigation to learn about the hunting and trading of *L. borneensis* in West Kalimantan found that hunting involves local people and a middleman (reseller) who will manage the abroad shipment (Arida et al., 2018). This investigation suggests local hunters know where *L. borneensis* occurs, and they might keep these secrets. Nuwer (2018) reported that most of the *L. borneensis* available for sale on social media and reptile forums since 2012 likely originated from Indonesian Borneo, where investigations indicate collectors regularly travel towards, and local villagers are eager to supply them. Some arrests support this, such as in 2015 and 2017 when respectively a German and Japanese individual were arrested at the Soekarno Hatta International Airport in Jakarta for attempting to smuggle *L. borneensis* out of the country, reportedly purchased from Kalimantan (Arwan, 2015; Felisiani, 2015; Adi, 2017; Janssen and Krishnasamy, 2018; Kitade and Naruse, 2020).

Our findings suggest that the smuggling of *L. borneensis* in Indonesia were collected from West Kalimantan Province. This province would benefit from conservation action to protect this lizard species. Key institutions that prevent smuggling of *L. borneensis* in Indonesia are Natural Resources Conservation Agency, Airport's Agricultural Quarantine Agency, Avian Security at airports, Indonesia National Police as well as private sectors (Borneo Trans Mandiri, an autobus transportation company). Regarding conservation actions in place for *L. borneensis*, Das and Auliya (2021) suggest that locality records and relevant sites where the species occurs need to be monitored and managed, particularly in protected areas, and park staff needs to control illegal collecting activities. Furthermore, a prerequisite to inform train authorities and relevant stakeholders about illegal trade of animals are required in the future.

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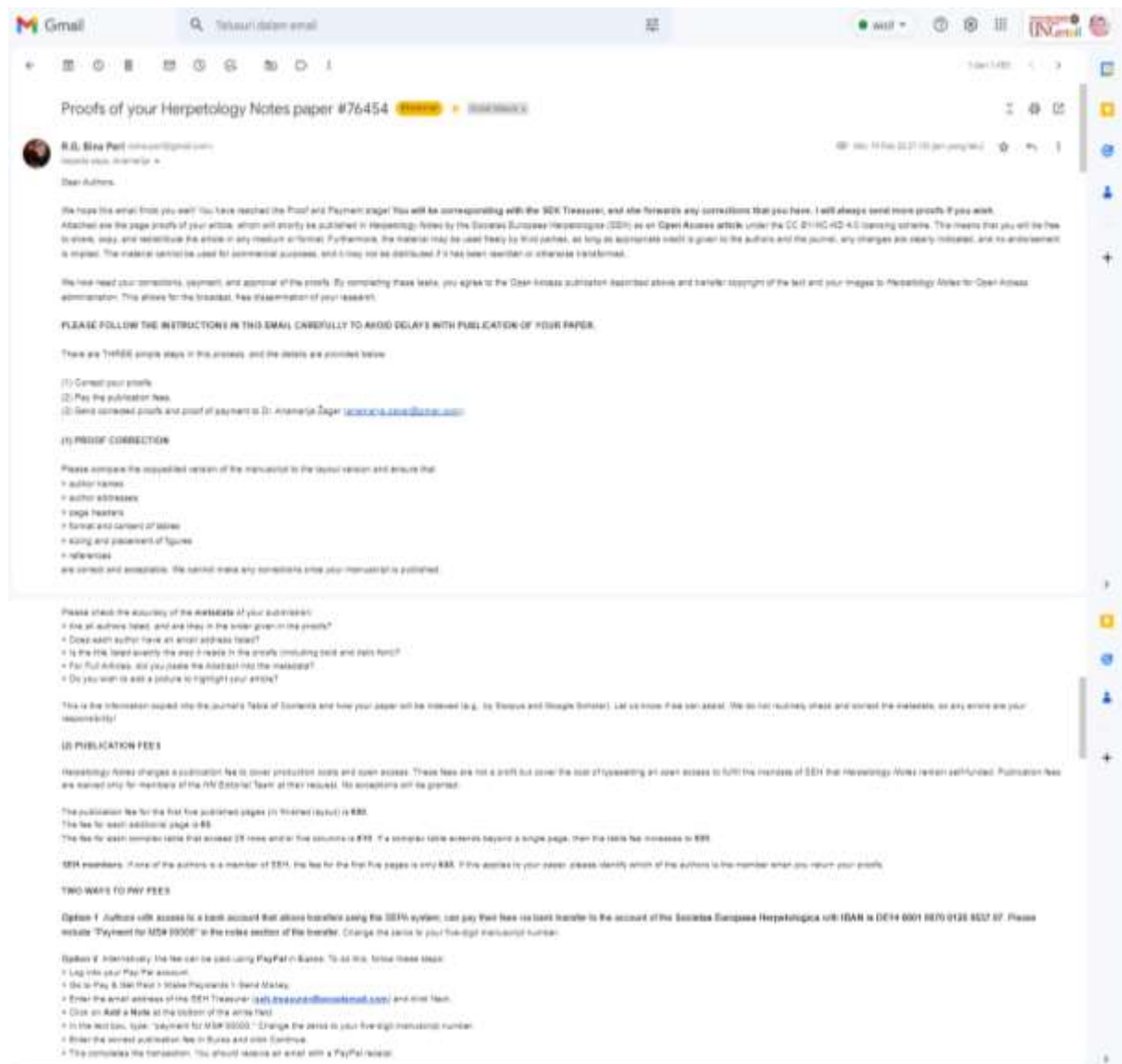
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Figures

Figure 1. The Borneo Earless Monitor *Lanthanotus borneensis*, intended to have been smuggled to Java, discovered by the Indonesia National Police of Kubu Raya District, 6 July 2022, West Kalimantan Province, Indonesia. Photo by Adi/mabesbharindo.com.



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Sally Sampson - Editorial Design Group



"Life finds a way": A reflection on the smuggling of a living fossil, the Borneo Earless Monitor, *Lanthanotus borneensis* (Squamata: Lanthanotidae), in Indonesia

Dewi Wahyuni Kyai Bakar^{a,*}, Sukirman Rahimi^b, and Muhammad Iqbal^c

The Borneo Earless Monitor (*Lanthanotus borneensis*) Steindachner, 1878 is an enigmatic, poorly-known lizard species, and is considered the sole living representative of the family Lanthanotidae (Das, 2013; Das and Auliya, 2021). This species is endemic to the island of Borneo, where it has been confirmed in the Malaysian State of Sarawak, and the Indonesian provinces of West Kalimantan and North Kalimantan (Das, 2004; Yap et al., 2012; Vargner, 2013; Uetz et al., 2001). No fossil material of *L. borneensis* have been found, but a related Lanthanotid from the Cretaceous (75 million years ago) in the Gobi desert (Mongolia) was named *Cherninotus* (Pisera 2004). *Lanthanotus borneensis* inhabits lowland localities below 400 m elevation in forests with clear and rock streams. It has also been reported from agricultural lands (such as palm oil plantations), but only in the vicinity of forests with good canopy cover and freshwater (Stoner and Nijman, 2015; Langner, 2017; Das and Auliya, 2021). Small rocky hill streams within forests or dense vegetation with good canopy cover are potential habitats for *L. borneensis*, based on diurnal and nocturnal observation in small streams in West Kalimantan (Arifa et al., 2015).

"Life finds a way" is a famous quote in the 1993 Hollywood production, *Jurassic Park*. In the movie, Dr. Ian Malcolm describes several lizard species with females having the ability of parthenogenesis (or 'self-breeding') (Arif, 2016). In his book, "Life Finds a Way",

biologist Andreas Wagner reveals the deep symmetry between innovation in biological evolution and human cultural creativity (Wagner, 2019). Until recently, *L. borneensis* was one of the greatest herpetological rarities that was only known from isolated localities in Borneo. However, in the last decade, this species has appeared on sale online, with high demand in the pet trade and is also on display at zoos in Japan, China, and several parts of Europe and the USA (Stoner and Nijman, 2015; Rahak et al., 2019; Jumele and Badola, 2020; Nijman, 2021). Despite being protected in three countries of its range (Indonesia [Kalimantan], Malaysia [Sarawak], and Brunei Darussalam [Temburong]), the lack of regulations that protect the species in consumer states enables international trade (Auliya et al., 2016; Universiti Brunei Darussalam, 2022). Due to its rarity in the wild, we report on and summarise the smuggling of *L. borneensis* in Indonesia from 2015 to 2022, to illustrate how local hunters and sellers find a way to ship this lizard abroad.

Smuggling records of *L. borneensis* were compiled from publicly available information, particularly from local media and social media internet sources. These constituted 10 smuggling reports of *L. borneensis* in Indonesia from 12 October 2015 to 6 July 2022 as summarised below:

1. On 12 October 2015, a German citizen was arrested at Soekarno Hatta Airport by Indonesia National Police in Jakarta while trying to carry eight *L. borneensis* hidden on his person. Eight *L. borneensis* were bought from West Kalimantan for Rp. 50,000 per individual (c. 54 USD), so the perpetrator paid Rp. 400,000 (c. 532 USD) in total to get them; the concerned individual brought *L. borneensis* to Jakarta via Supadio International Airport, West Kalimantan (Arwan, 2015; Felisiani, 2015).
2. On 14 March 2016, the Natural Resources Conservation Agency (Balai Konservasi Sumber Daya Alam or BKSDA) of West Kalimantan

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- Province managed to secure 17 individuals of *I. borneensis* at Supadio Pontianak International Airport, intended to be sent via delivery service to Batam (Riau Province, Sumatra). The method used to smuggle *I. borneensis* was to pack the lizards in a plastic box and put them into a cardboard box of instant noodles. To deceive the officers, the smugglers tried to use false sender and recipient information (Aditya, 2016; Sudimamsyah, 2016).
3. On 16 May 2017, a Japanese man was arrested by Arisan Security and Soekarno Hatta Airport's Agricultural Quarantine Agency while transiting in Jakarta's International Airport after being found to be traveling with four suitcases and a box containing a total of 253 reptiles, including four *I. borneensis* (Adi, 2017; Kintde and Naruse, 2020).
 4. On 7 November 2017, the Natural Resources Conservation Agency of West Kalimantan Province managed to secure one *I. borneensis* (Murdaningah, 2017; Putra, 2017).
 5. On 16 January 2018, the Forestry Police for cargo delivery at Supadio Airport and the Natural Resources Conservation Agency of West Kalimantan Province secured the delivery of one *I. borneensis* and orchids being sent abroad (from Pontianak to Penang, Penang, North Sumatra) using express courier services (Andilala, 2018).
 6. On 24 April 2018, the wildlife team of the Natural Resources Conservation Agency of West Kalimantan Province failed to deliver two *I. borneensis* via the delivery service at Supadio Airport (KSDAE, 2018). The delivery package is mentioned as food.
 7. On 25 April 2018, a delivery package containing eight individuals of *I. borneensis* has been secured by the Natural Resources Conservation Agency of West Kalimantan Province. The package is again claimed as food to deliver via the delivery service at Supadio Airport (KSDAE, 2018).
 8. On 17 May 2021, Arisan Security and Supadio Airport's Agricultural Quarantine Agency found four *I. borneensis* and a box of Pitcher plants *Nepenthes* sp. which would have been sent via the delivery service at Supadio Airport (Anon, 2021).
 9. On 26 April 2022, the Borneo Trans Mandiri (an autobus transportation company) and the Natural Resources Conservation Agency of West Kalimantan discovered 10 *I. borneensis* in two food boxes to be sent to Medan, North Sumatra (Eno, 2022).
 10. On 6 July 2022, the Indonesia National Police of Kubu Raya District of West Kalimantan and Borneo

Trans Mandiri found four *I. borneensis* in two food boxes to be sent to Java (Fig. 1; Adi, 2022).

In Indonesia, *I. borneensis* has been listed as a protected species under the Second Amendment to the regulation of the Minister of Environment and Forest Number P.20/MENLHK/SETJEN/KUM.1/6/2018 regarding protected species of plants and animals (Ministry of Forestry and Environment, 2018). However, based on our findings, smuggling of *I. borneensis* has been found each year between 2015 to 2018, absent from 2019 to 2020, and recorded again from 2021 to 2022. The discontinuous smuggling records of *I. borneensis* from 2019 to 2020 could be the impact of the COVID-19 pandemic, when all Indonesian provinces were quarantined and shipping was restricted, or due to a lack of online postings. Assessed information were derived from internet sources and social media (particularly from Facebook and Instagram); the latter are two social media platforms with many users in Indonesia (Karimah, 2021). Our findings suggest that *I. borneensis* is also kept as a pet by reptile hobbyists in some cities in Indonesia, including Pekanbaru (West Sumatra), Bandung (West Java), Jakarta, Malang (East Java), Surabaya (East Java), Kumai (Central Kalimantan), Bontang (East Kalimantan) and Banjarbaru (South Kalimantan). Overall, these 2015-2022 smuggling records of *I. borneensis* suggest that surviving populations remain present within its distributional range.

Based on a Youtube channel about an expedition to find of *I. borneensis* in Western Kalimantan (Purji Penulung, 2019), local people explained how species (locally called "kadal duri" or "kadal bisu") is usually found when they go hunting mammals at night, mentioning that *I. borneensis* does not move much when approached. Langner (2017) reported that when detected (using a torch beam), *I. borneensis* remain motionless "frozen" on the ground. Based on these reports, *I. borneensis* can relatively easily be caught in the wild. An investigation to learn about the hunting and trading of *I. borneensis* in West Kalimantan found that hunting involves local people and a middleman (reseller) who will manage the abroad shipment (Arida et al., 2018). This investigation suggests local hunters know where *I. borneensis* occurs, and they might keep these secrets. Nurver (2018) reported that most of the *I. borneensis* available for sale on social media and reptile forums since 2012 likely originated from Indonesian Borneo, where investigations indicate collectors regularly travel towards, and local villagers are eager to supply them. Some arrests support this, such as in 2015 and 2017



Figure 1. The Borneo Earless Monitor *Lankosaurus borneensis*, intended to have been smuggled to Java, discovered by the Indonesia National Police of Kubu Raya District, 6 July 2022, West Kalimantan Province, Indonesia. Photo by Aditmasbharinda.com.

when respectively a German and Japanese individual were arrested at the Soekarno Hatta International Airport in Jakarta for attempting to smuggle *L. borneensis* out of the country, reportedly purchased from Kalimantan (Arwan, 2015; Felisiani, 2015; Adi, 2017; Janssen and Krishnasamy, 2018; Kitada and Naruse, 2020).

Our findings suggest that the smuggling of *L. borneensis* in Indonesia were collected from West Kalimantan Province. This province would benefit from conservation action to protect this lizard species. Key institutions that prevent smuggling of *L. borneensis* in Indonesia are Natural Resources Conservation Agency, Airport's Agricultural Quarantine Agency, Asian Security at airports, Indonesia National Police as well as private sectors (Borneo Trans Mandiri, an autobus transportation company). Regarding conservation actions in place for *L. borneensis*, Das and Anliya (2021) suggest that locality records and relevant sites where the species occurs need to be monitored and managed, particularly in protected areas, and park staff needs to control illegal collecting activities. Furthermore, a prerequisite to inform train authorities and relevant

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