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REDISCOVERY OF MODIGLIANI'S NOSE-HORNED LIZARD, *Harpesaurus modiglianii* VINCIGUERRA, 1933 (REPTILIA: AGAMIDAE) AFTER 129 YEARS WITHOUT ANY OBSERVATION

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Abstract

The Modigliani's nose-horned lizard, *Harpesaurus modiglianii* Vinciguerra, 1933, is one of the rarest lizards in the world, known only from its single type specimen collected in 1891, from North Sumatra, Indonesia. During explorations of the forests surrounding Lake Toba and its caldera, we discovered a population of *H. modiglianii* at an elevation of 1,675 m a.s.l., and provide the first data on its habitat. We here re-describe the species based on an examination of its type and new material, and provide an English translation of the complete original description which was originally written in Italian.

Key words: Living population, Toba Caldera, Northern Sumatra, Indonesia, elevation forest.

Introduction

The herpetological diversity of Sumatra remains substantially underexplored despite being the sixth largest island in the world and certainly the home of extremely diverse biota, among which are many endemics (Iskandar *et al.* 2017). Few herpetofaunal species have been added to this

island's list since World War II (Iskandar & Mumpuni 2004): only sixteen species of lizards were described from mainland Sumatra during the last decade and half of them were agamid lizards (Amarasinghe *et al.* 2015, Iskandar *et al.* 2017, Grismer *et al.* 2014, Harvey *et al.* 2014, 2015, 2017a,b, 2018). With the exception of

Dendragama diodema, all of the new agamid lizards discovered during the last decade in Sumatra originated from the southern and southwestern parts of the Island (see Harvey *et al.* 2017b), reflecting a lack of survey effort in the island's north and centre.

The delimitation and content of the genus *Harpesaurus* - most species of which are known from small numbers of specimens - is not fully understood (Parker 1924, King 1978, Moody 1984, Böhme 1989, Lardner *et al.* 2010). A.H.A. Duméril in A.M.C. Duméril & A.H.A. Duméril (1851) described the first nose-horned lizard species (most likely from Java Island, Indonesia) and placed it within his newly described monotypic genus *Arpephorus* as *A. tricinctus*. Subsequently Boulenger (1885) synonymised the genus *Arpephorus* with a new genus *Harpesaurus* because the generic name *Arpephorus* was preoccupied by *Arpephorus* Stephens, 1829 for a Coleopteran genus (Insecta).

Mertens (1924) described a new genus *Hylagama*, in which he placed his new species *Hylagama borneensis* collected from Central Borneo.

A similar species, *Harpesaurus thescelorhinos* King, 1978, was described from the Niah and Kapit areas of Sarawak, 100–200 km from the type locality of *Hylagama borneensis*. King (1978) did not compare his *Harpesaurus* species with *Hylagama borneensis*, probably because it was listed within another genus. Moody (1984) strongly argued that the genus *Hylagama* should be retained as a valid monotypic genus [with *Hylagama borneensis*] and synonymised *Harpesaurus thescelorhinos* within *Hylagama borneensis*. Furthermore Moody (1984) considered the holotype of *Hylagama borneensis* as lost and designated FMNH 138196 erroneously as a lectotype (must be neotype) to replace the lost holotype of *Hylagama borneensis*. Schlüter & Hallermann (1997) rediscovered the holotype (SMNS 4596) of *Hylagama borneensis* in the herpetology collection at Staatliches Museum für Naturkunde in Stuttgart, hence invalidating Moody's (1984) neotype designation. Manthey (2010) considered *Hylagama borneensis* as belonging to the genus *Harpesaurus*.

Another nose-horned lizard was described by Parker (1924), who placed it in a new genus *Thaumatorhynchus*. Later, Vinciguerra (1933) and Wermuth (1967) synonymised the genus *Thaumatorhynchus* with *Harpesaurus* due to

minor morphological differences between the two. Even though Teynié *et al.* (2010) placed *Thaumatorhynchus brooksi* again within its former genus, we follow Wermuth (1967) and place that species in the genus *Harpesaurus*. Manthey (2010) published the first images of a living specimen of *H. brooksi*, and also followed the taxonomic placement of Wermuth (1967).

As treated here, the genus *Harpesaurus* consists of six species: *H. beccarii* Doria, 1888, *H. brooksi* (Parker, 1924) and *H. modiglianii* Vinciguerra, 1933 from Sumatra; *H. ensicauda* Werner, 1913 from Nias Island; *H. tricinctus* (A.H.A. Duméril, 1851) presumably from Java, and *H. borneensis* (Mertens, 1924) from Borneo. The Modigliani's nose-horned lizard is one of the rarest lizards in Sumatra, having not been recorded since its original description almost 90 years ago from a museum specimen. The species is only known from its holotype (MSNG 32191) collected in 1891 and stored in alcohol. The specimen was collected from "Si-Rambé Forest" in North Sumatra (*vide* Vinciguerra, 1933), from which the exact locality cannot be traced today (Capocaccia 1961).

During explorations of the forests in northern Sumatra in June 2018, we collected one naturally dead specimen and observed one live specimen of the genus *Harpesaurus*. We could clearly attribute both specimens to the species *H. modiglianii*. The two specimens (one naturally dead and one live) we found are the second known records for the species and our following observations are the first data on the biology of this species. Here we re-describe the species based on its holotype which is compared with the newly discovered specimen which was naturally dead and discoloured. The discovery of the third specimen (the live specimen which was not collected), allowed us to provide further notes on the live colouration and the first data on its *in-situ* behaviour and natural history.

Material and methods

On 15 June 2018, during a field survey in the forests around the caldera of Toba supervolcano, North Sumatra Province, Indonesia (fig. 1), we found a dead agamid specimen on the forest floor that we could refer to the genus *Harpesaurus*. From its state of decomposition we concluded that the specimen had been dead for 2–3 days, although it still remained suitable for a through full morphological assessment. Curiously it was not eaten by a predator and the explanation for its death remains unknown.

Examination showed it to be a male belonging to *H. modiglianii*. We preserved the whole specimen fixing in 10% buffered formalin prior to its storage in 70% ethanol. It was deposited in the Museum of Zoology, Research Center for Climate Change, University of Indonesia (UIMZ 0169). After a couple of days, we again extensively surveyed for 5 nights the habitats around the place where we found that dead specimen. On 18 June 2018 at 20:45 hr we found the first live specimen of *H. modiglianii* lying on a low branch, probably sleeping.

After photographing, the following morphometric characters were taken with a Mitutoyo digital calliper to the nearest 0.1 mm, the specimen was released in the same habitat on the same night: snout–vent length (SVL, measured from tip of snout to anterior margin of vent), axilla–groin length (AG, distance between axilla and groin), head length (HL, distance between posterior edge of mandible and tip of snout), head width (HW, maximum width of head), head depth (HD, dorso-ventral distance between occiput and throat), eye–nostril length (EN, distance between anterior-most point of orbit and posterior border of nostril), snout length (ES, distance between anterior-most point of orbit and tip of snout), nasal appendage length (NAL, measured from tip of snout to tip of appendage), internarial distance (IN, shortest dorsal distance between inner margins of nares), orbit diameter (ED, horizontal largest diameter of orbit), interorbital width (IO, shortest distance between upper margins of orbits), eye to mandible length (MBE, distance between posterior-most point of orbit and posterior angle of the mandible bone), tympanum diameter (TYD, longest diameter of the tympanum), tympanum–eye length (TYE, distance between anterior-most margin of tympanum and posterior-most margin of orbit), upper arm length (UAL, distance between axilla and angle of elbow), lower-arm length (LAL, distance from elbow to wrist with both upper arm and palm flexed), palm length [PAL, distance between wrist (carpus) and tip of longest finger, with both palm and lower arm flexed], finger length [FL, from tip of finger, to the junction with the adjacent digit, excluding the claw (palmure)], femur length (FEL, distance between groin and knee), tibia length (TBL, distance between knee and heel, with both tibia and tarsus flexed), foot length (FOL, distance between heel and tip of longest toe, with both foot and tibia flexed) toe length (TL, from tip of

toe, to the junction with the adjacent digit, excluding the claw), tail base width (TBW, largest diameter of tail base), tail length (TAL, measured entire tail from posterior margin of vent to tail tip).

Meristic characters were taken as follows: supralabials (SUP) and infralabials (INF), counted from first labial scale towards gape up to distinctly larger scale than the granular scales at gape on both sides; scales from eye to tympanum (ETS), count scale rows from posterior-most point of orbit to anterior-most point of tympanum; canthus rostralis scales (CR), counted from the first scale posterior to supranasal, to the end of supraciliary ridge; nuchal crest (NC), count number of spines on the dorsal head; dorsal spines (DS), count number of spines on the dorsal body from neck until the level of vent (in case of separate from nuchal crest); nuchal spines (NS), count number of spines on the dorsal head until neck (in case of separate from dorsal crest); dorso-nuchal spines (DNS), count number of spines on the dorsal head and body until the level of vent (in case of continuous nuchal and dorsal crest); tail spines (TS), count number of spines on the dorsal tail from the level of vent to tip of tail; midbody scales (MBS), count of scales around midbody (across whole body); ventral scales (VEN), counted from first scale posterior to mental (gular included), to last scale anterior to vent; subdigital lamellae on toe IV (SDL), from first proximal enlarged scissor wider than twice the width of the largest palm scale, to distalmost lamella at tip of digit.

Museum acronyms follow Uetz *et al.* (2019). Specimens of *Harpesaurus* were examined at the Muséum national d'histoire naturelle (Reptiles & Amphibians), Paris, France (MNHN-RA); Museo Civico di Storia Naturale di Genova, Genova, Italy (MSNG); Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany (ZFMK); and Museum of Zoology, Research Center for Climate Change, University of Indonesia (UIMZ). We used a Leicawild M3Z and a ZEISS DCR dissecting microscope to examine the external morphology of specimens and a Canon EOS 7D SLR digital camera to take photographs. The conservation status of the species was evaluated using the IUCN Standards and Petitions Subcommittee (2016): Version 12 guide was used to assess their risk of extinction.

Natural history observations were made by looking with the naked eye at the animal from a

distance of at least 3–4 m, being careful not to disturb it.

Harpesaurus modiglianii Vinciguerra, 1933
(Figs 1–6; Tables 1, 2)

Holotype. Adult male, MSNG 32191, SVL 79.0 mm, collected from Si-Rambé Forest, North Sumatra (*foresta di Si-Rambé nella parte nord di Sumatra*), Indonesia, by Dr. Elio Modigliani in 1891 (Capocaccia 1961). An English translation of the original description of *H. modiglianii* is provided (Appendix I), which was originally written in Italian.

Other specimen (n=1). Adult male, UIMZ 0169, Mt. Sibuatan Forested area (2°52'N, 98°27'E; alt. 1675 m a.s.l.) Lingga Raja, Pegagan Hilir, Dairi, North Sumatra, Indonesia, by C.A. Putra on 15 June 2018.

Redescription of holotype. A well preserved adult male specimen, SVL 79.0 mm; head moderately large (HL 32.5% of SVL), elongate (HW 50.2% of HL), narrow (HW 16.3% of SVL), distinct from neck; snout long (ES 91.5% of HW); snout length greater than orbit diameter (ES 196.7% of ED); interorbital distance broad (IO 38.5% of HL); eye large (ED 23.3% of HL); pupil rounded; ear-opening shallow and ovoid, its greatest diameter being dorsoventrally, with enlarged unkeeled scales anteriorly but not enlarged posteriorly; tympanum smaller than orbit (TYD 53.3% of ED); no spines above the tympanum but three enlarged, keeled scales above, separated from the tympanum by a single smaller row of scales; diameter of eyes slightly greater than tympanum–eye distance (ED 109.1% of TYE); forehead concave; scales on snout slightly keeled, similar in size with those of the occipital region; scales on interorbital and supercilium area keeled; nuchal crest, 6 spines (among which first 5 enlarged); rostral scale width greater than height, posteriorly in contact with the first supralabial, in contact superiorly with the prenasal and four snout scales which forms the nasal appendage; the nasal appendage is pointed, elongate (NAL 94.1% of ES; NAL 43.2% HL), laterally flattened, covered with two rows of scales (a row of five enlarged scales interiorly and a row of six snout scales exteriorly); two elongated supranasals on each side, a single prenasal; nostril rounded and located in the middle of an undivided nasal plate; single postnasal; canthus rostralis and supraciliary edges sharp; parietal plate lozenge-

shaped (anterior sides shorter than posterior sides), no “pineal eye”, parietal plates larger than adjacent plates. Mental rhombus-shaped, its transversal width greater than its antero-posterior length, posteriorly laterally in contact with two enlarged postmentals (but smaller than mental) separated by a smaller scale preventing the contact between them. Gular fold short and its length approximately 25% of SVL, but dispersed and its depth approximately 75% of HD; chin, throat, and mid-gular area covered with smooth, overlapping, slightly acuminate scales; posterior part of lateral gular scales enlarged and slightly keeled; two scale rows separate orbit from supralabials; supralabials 8 (6th located in mid orbit position, 3rd–7th larger in size); infralabials 8, decreasing in size towards mouth gape.

Body slender (AG 44.6% of SVL); mid dorsal scales equal, keeled, mucronate, pointing backwards and upwards; scales on dorsum at midbody larger in size than those of venter at the symmetrical level; dorsal crest continuous stopping at mid-tail, 40 spines; lateral body scales enlarged, slightly keeled, mucronate, larger than dorsals, pointing backwards and downwards; 41 scales around midbody; pectoral scales equal, mucronate and keeled; abdominal scales not enlarged, keeled, and acuminate; ventral keels forming regular and parallel continuous ridges; no preanal or femoral pores. Ventrals, 84.

Upper arm greater than lower arm (UAL 107.6% of SVL; LAL 16.6% of SVL); femur greater than tibia (FEL 19.1% of SVL; TBL 17.3% of SVL; FEL 110.2% of TBL). Dorsal scales on fore and hind limbs enlarged, keeled, overlapping, and mucronate; ventral scales on upper and lower arm not enlarged, slightly keeled, overlapping, and mucronate; scales on dorsal and ventral surface of thigh slightly keeled, overlapping and mucronate; keels on dorsal and ventral arm and foot forming a series of continuous parallel ridges. Subdigital lamellae entire, 21 subdigital lamellae on the toe IV; relative length of fingers 3 > 4 > 5 > 2 > 1, and toes 4 > 5 > 3 > 2 > 1.

Tail complete; tail base swollen, scales on post cloacal area small, bluntly pointed and smooth; ventral scales on tail enlarged and strongly keeled; dorsal scales on tail slightly keeled, overlapping, directed straight backwards, keels forming continuous parallel ridges.

Colouration. In preserved specimen (holotype, fig. 2A). Dorsum bluish grey; snout,

Plate 01



Figure 1. The distribution map of *H. modiglianii* in North Sumatra region: the red circle shows the location of the rediscovered specimen; the yellow circle is based on a photographic evidence shared in social media; the exact location of type locality is unknown.



Figure 2. (A) Holotype male (79.0 mm SVL) of *H. modiglianii* (MSNG 32191) from Si-Rambé Forest in North Sumatra, collected in 1891; (B) Second specimen of *H. modiglianii* (UIMZ 0169), male (77.5 mm SVL) from Mt. Sibuatan Forested area in North Sumatra, collected in 2018 (Scale: 10 mm).

neck, nuchal area brownish; tail with distinct brownish bands; limbs, anterior flank, along vertebral area blue; venter light bluish white, while throat and pectoral area, palm and foot are dark cream; white patches on gular pouch, under the eye, and in the post tympanic area.

In life (based on new material; figs. 2B–4), dorsum uniform luminous green; venter and dorsal spines yellowish green; four chestnut colour patches under the eye, under the tympanum, on the shoulder, and upper arm. Figure 4 represents the same individual in undisturbed situation (before capturing, fig. 4A), and disturbed situation (after capturing, fig. 4B)

Natural History. The elevation of the moist forest area we surveyed was 1,675 m a.s.l. and the air temperature was cold. No nearby stream was observed at the survey site, but a seasonal pool was present around 1 km away from the location. The weather was misty in the morning and windy for the rest of the day until late afternoon on both days of observation. The habitat was wet due to the rainy season (June–July). The canopy was dominated by large trees, but there were many open places under a mid-layer of medium size trees covered with mosses; the forest floor was mostly leaf litter and moss (fig. 5A).

Table 1. Morphometric and meristic character comparison of some *Harpesaurus* species, based on available museum specimens (Appendix II); holotype of *H. ensicauda* is lost (*vide* Hallermann 1998); “—” unknown.

character	Male				
	<i>H. modiglianii</i>		<i>H. beccarii</i>	<i>H. ensicauda</i>	<i>H. tricinctus</i>
	MSNG 32191 holotype	UIMZ 0169 new material	ZFMK 48896 (Böhme 1989)	Based on Werner (1913)	MNHN-RA 0623 holotype
SVL	79.0	77.5	80.0	60.0	60.0
AG	35.2	39.9	45.4	—	29.3
HL	25.7	24.0	21.2	14.0	17.4
HW	12.9	12.7	11.5	7.0	8.9
HD	15.4	10.0	12.5	—	8.6
TYE	5.5	5.0	5.1	—	4.4
TYD	3.2	2.8	3.1	—	1.1
ED	6.0	5.2	4.7	—	5.1
EN	8.4	7.9	6.9	—	4.8
ES	11.8	10.4	10.5	—	6.9
NAL	11.1 (single)	12.1 (single)	4.7, 4.1 (couple)	—	22.0 (single)
IN	3.9	3.9	3.1	—	2.3
IO	9.9	6.9	9.3	—	4.5
FEL	15.1	14.6	15.4	—	11.0
TBL	13.7	13.2	14.2	—	9.7
FOL	17.6	17.9	14.3	—	11.0
TL IV	10.9	9.8	9.2	—	4.4
UAL	14.1	13.9	11.5	—	9.4
LAL	13.1	12.7	12.0	—	9.3
PAL	10.2	10.2	9.7	—	8.5
TBW	7.2	5.0	5.5	—	3.5
TAL	135.0	135.0	151.0	60.0	86.0
SUP	7	8	8	—	8
ETS	4	4	5	—	9
CR	4	4	4	—	4
NC	6	6	9	0	8
DS	18	17	13	0	22
TS	22	18	16	0	40+
MBS	41	39	53	—	41
VEN	84	86	82	—	100
SDL on T4	(R 22, L 21)	22	22	—	21

Table 2. Diagnostic characters among some *Harpesaurus* species, based on museum specimens (Appendix II) and/or original descriptions; “—” unknown.

Character	<i>H. modiglianii</i>	<i>H. beccarii</i>	<i>H. ensicauda</i>	<i>H. tricinctus</i>
SVL	79.0	80.0	60.0	60.0
HL/AG	73%	47%	—	59%
NAL/HL	43%	22%	—	126%
SVL/TAL	58%	53%	100%	70%
Number of nasal appendages	single	couple	single	single
ETS	4	5	—	9
Number of nuchal crest spines	6	9	0	8
Number of dorsal + tail spines	40	29	0	62+
Number of ventral scales	84	82	—	100
Continuation of tail spines	50% < of TAL	~20% of TAL	—	100% of TAL
Lateral body scales	enlarged	Not-enlarged	—	Not-enlarged
Inter-orbital scales	Not-enlarged	enlarged	enlarged	Not-enlarged

When we found the living *H. modiglianii*, it was on a horizontal tree branch (3 cm diameter) approximately 4 m above the ground, and it was keeping the head downwards. When it was kept for a while in captivity on a tree branch, it moved slowly on that tree branch. Shortly after capture, the animal showed wagging locomotion behaviour similar to chameleons, and rapidly hid behind branches and the body colour suddenly turned to greenish brown and the chestnut coloured patches turned to white. Within a few minutes, the yellowish green spines and venter turned to a chestnut colour (fig. 4B). After relaxing, it returned its body colour to its original green, which most likely is the colour adopted when not stressed. Our observation confirms that the species is diurnal and arboreal. Convergence in behaviour and physiology of skin colour with African mountain chameleons is striking and reflects a deep arboreal specialisation.

Conservation status. The species has been previously assessed as Data Deficient (DD) by the IUCN, and this new data has allowed a more precise assessment of its extinction risk. The application of the IUCN Red List criteria (2016: version 12) shows that *H. modiglianii* is Endangered (EN) as it is restricted to an area of occupancy (AOO) of 8–12 km² where two individuals were recorded within 500 m distance (our observations), and a third individual within 20 km distance, based on photographic evidence shared in social media. We summarize the known distribution on a map (fig. 1). The habitat where our two recent specimens were observed is in moderately high-elevation forest, but outside protected areas. That forest is highly threatened by large scale exploitation including

clear cutting, and the habitat is highly disturbed by heavy machines (fig. 5B).

Discussion

The systematics of the Southeast Asian radiation of arboreal agamids is poorly understood and in need of precise molecular studies in order to attribute correct generic assignment to the recognized species. The definition and content of the genus *Harpesaurus* remains uncertain following the above-summarised taxonomic actions (Böhme 1989).

Meiri *et al.* (2018) highlighted that 14% of lizard diversity is restricted to a single locality, often in inaccessible regions. Since many face severe extinction risk, while current knowledge is inadequate to properly assess their conservation status, Meiri *et al.* (2018) recommended that such species become the focus of taxonomic, ecological and survey efforts. Extensive field work and sampling of Indonesian arboreal agamids, especially those living at high altitudinal isolated mountains in Sumatra, are necessary and should be the focus of modern field research. Land management authorities should consider protecting the habitat of *H. modiglianii* and other such rare mountain taxa, and rigorously enforce existing laws, especially those relating to logging. We have observed some attempts of trading of this species via social media applications, and the local traders offer this species for USD 100 per individual. Most of the captured individuals by the traders were fully grown adult males, captured from forested areas around Berastagi (1,300 m a.s.l.). Considering the current habitat destruction and threats from pet traders we highlight the conservation urgency for relevant

Plate 02

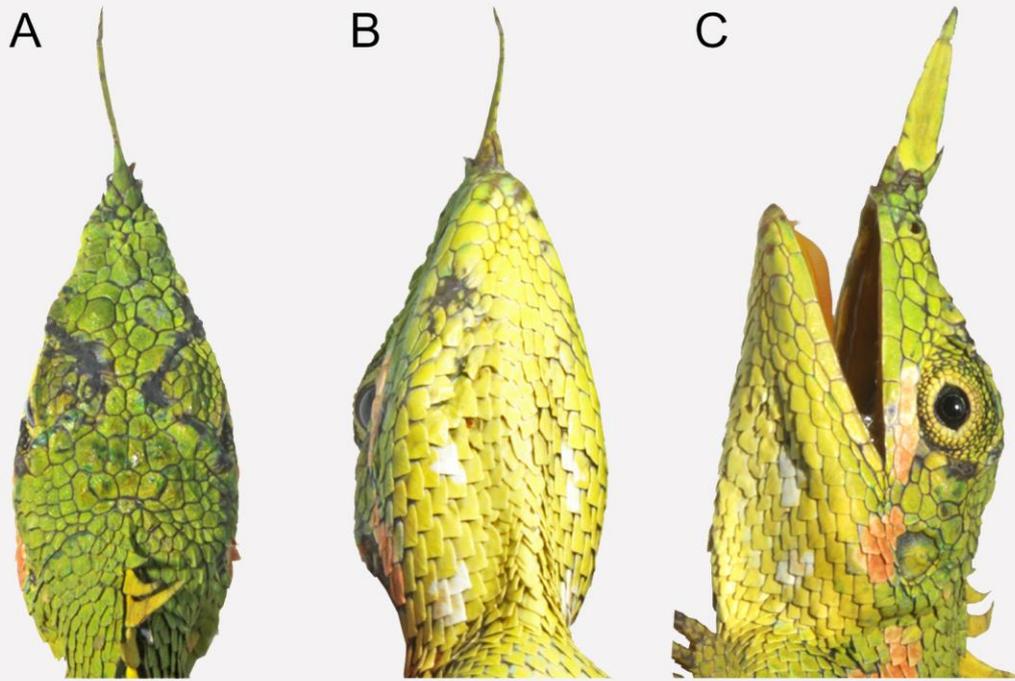


Figure 3. *H. modiglianii* (not collected) live adult male at 1,675 m elevation of Mt. Sibuatan Forested area, North Sumatra, Indonesia; (A) dorsal head view; (B) ventral head view; (C) lateral head view (left).



Figure 4. *H. modiglianii* (not collected) live adult male at 1,675 m elevations of Mt. Sibuatan Forested area; general body coloration (A) before capturing (undisturbed situation); (B) after capturing (disturbed situation).

Plate 03



Figure 5. (A) Habitat of *H. modiglianii* where the live specimen was found, (B) clearcutting near the species' habitat.

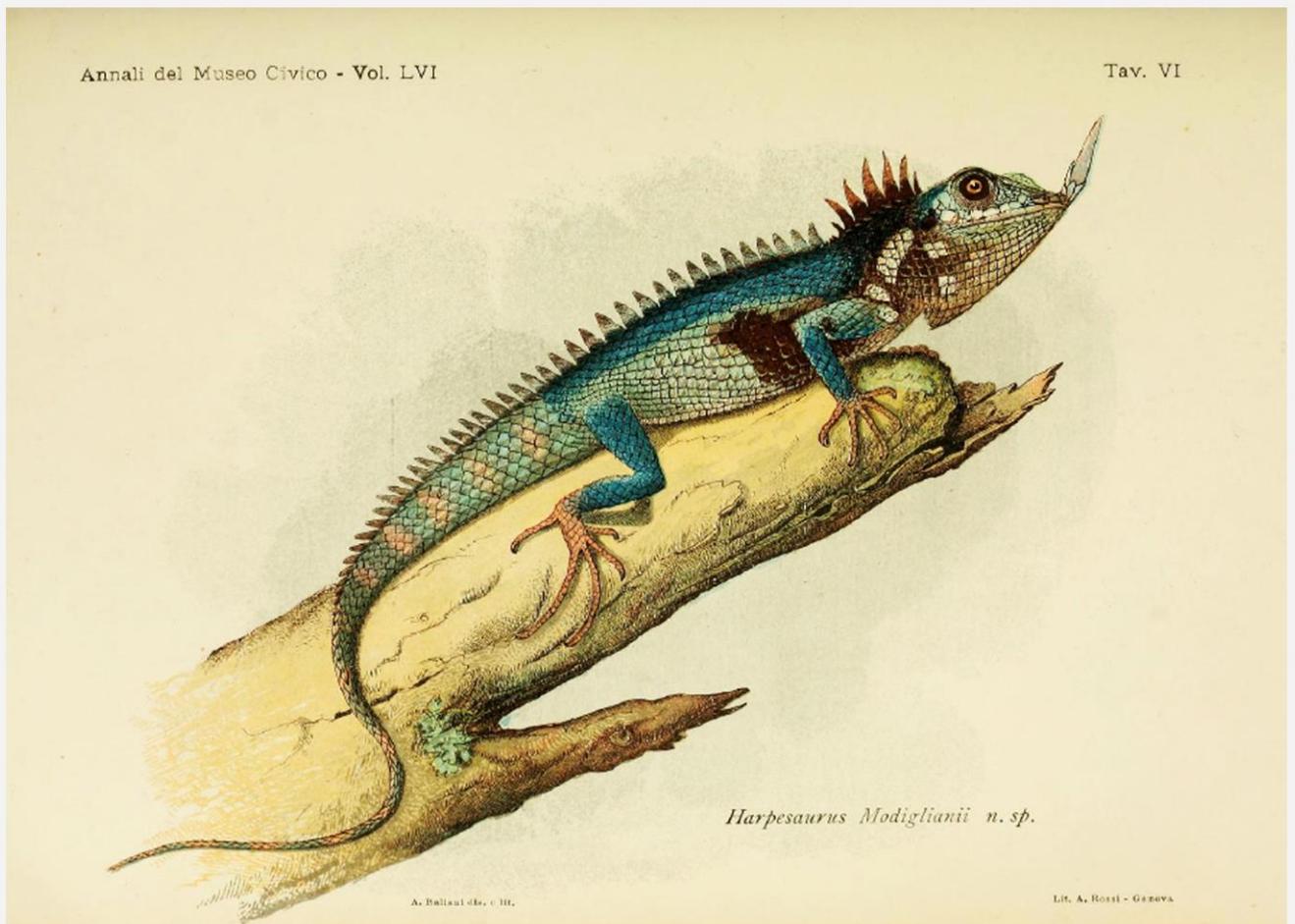


Figure 6. The original figure of *H. modiglianii* illustrated by Armando Baliani; reprinted from Vinciguerra, 1933 (Annali del Museo civico di storia naturale di Genova 56, pl. VI).

government authorities, especially here we propose to include this species into the list of protected species (P.106) of the regulation of the ministry of environment and forestry, Republic of Indonesia (Nomor P.106 / MENLHK / SETJEN / KUM.1/12/2018).

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Appendix I. English translation of the original description of *H. modiglianii* Vinciguerra, 1933.

DESCRIPTION OF A NEW SPECIES OF *HARPESAURUS* FROM SUMATRA
BY D. VINCIGUERRA

(Plate VI).

The rich herpetological material carried by Dr. Elio Modigliani during his travels, not yet completely illustrated, includes a notable lizard that is worth to be known. It was quickly identified by Marquis Giacomo Doria as a new species of *Harpesaurus* and it was assigned to the name *H. Modiglianii*, but this name was unpublished. Thus, I thought it was necessary to describe this reptile maintaining the name chosen by the prominent museum founder.

Three species belonging to the genus *Harpesaurus*, characterized by a sickle-shaped appendix, are already known: one from Java, one from Sumatra, and one from Nias. The first one was described by A. Dumeril in 1851 and it was named *tricinctus* ⁽¹⁾, assigning it to the genus *Arpephorus*, already used by Fischer de Waldheim for a beetle, and it is characterized by small equal dorsal scales arranged in series; the second one is *H. Beccarii* ⁽²⁾, described by Doria with a double nasal appendix and rhomboidal scales; the third one is *H. ensicauda* ⁽³⁾, lacking the dorsal crest and with smooth scales.

Recently, a fourth species was described by Parker for this genus, under the name *Thaumatorhynchus Brooksi*, ⁽⁴⁾ coming from Sumatra (Benculen) and having a gular sac, small keeled dorsal scales, cylindrical rostral appendix, 12 or 13 superior labials, dorsal crest represented by an indefinite series of large keeled scales, and the nuchal one formed by 7 small separated triangular scales.

This species is similar to *Modiglianii* because of the presence of a small gular sac, but it can be distinguished by the cylindrical and not compressed nasal appendix. Other species of lizards having a nasal appendix are the *Ceratophora* from Ceylon which can be distinguished by the lack of tympanum.

This is the description of this new *Harpesaurus*.

⁽¹⁾ A. Dumeril. Cat. Méth. Rept. 1851, pag. 93.

⁽²⁾ Doria. Ann. Mus. Civ. Genova, vol. XXVI, pag. 646. tav. VIII, fig. 2.

⁽³⁾ Werner, Mitt. Natur. Mus. Hamburg XXX, pag. 8.

⁽⁴⁾ Parker H. W. – Ann. & Mag. of Nat. Hist., Ninth. Ser. vol. XIV, 1924, pag. 624, fig. pag. 625

Harpesaurus Modiglianii n. sp.

Rostral appendix as long as the head, simple, formed by a sickle-shaped compressed scale, upward and with its basis surrounded by some rather large scales. Head with medium-sized irregular scales and with erratic tubercles, partly polygonal. Lower rostral with a marked rostral angle. Nostrils located in an elongated scale, separated by the rostral scale by a smaller scale. Tympanum a little smaller than the eye. Eight upper and seven lower labials. Projecting snout. Nuchal crest formed by 7 scales, the 4th one being longer but lower than the back, separated by the dorsal crest by a small gap. Body compressed, with a crest extending from the nape to the tail half much lower than the nuchal one, and covered by large keeled scales in irregular series. Ventral scales heavily keeled. Keeled legs scales, with the exception of fingers. Long compressed tail with two series of keeled scales.

Body coloration blue, with white spots on head sides, more evident on the right side. Fourth or fifth upper labial scales white colored. Small gular sac. Dark nuchal crest and head sides; a dark spot on the anterior part of the thorax. Tail with indefinite reddish patches.

SVL without rostral appendix	83 mm
Tail length	139 mm
Rostral appendix length	6 mm

This species is dedicated to the famous explorer, recently passed away, who discovered it in the Si-Rambé Forest in the northern part of Sumatra.

I want to acknowledge my friend Armando Baliani for the beautiful and the accurate lithographic reproduction of this elegant species.

Appendix II. Other specimens examined

Harpesaurus beccarii (1 ex.): Sumatra: Sidjungjung: ZFMK 48896

H. modiglianii (2 ex.): Sumatra: Si Rambé: MSNG 32191 (holotype); Mt. Sibuatan: UIMZ 0169

H. tricinctus (1 ex.): Java?: MNHN-RA 0623 (holotype by monotypy)

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